



**The West Bengal Power Development Corporation Limited**

(A Government of West Bengal Enterprise)

CIN No. U40104WB1985SGC039154

**Registered & Corporate Office: Bidyut Unnayan Bhaban**

Plot No. : 3/C, L.A. Block, Salt Lake City, Sector – III, Kolkata : 700 098.

Phone : 033-2339 3621, Fax : 033 – 2339 3607 (M&C)

Email. [pchatterjee@wbpdc.co.in](mailto:pchatterjee@wbpdc.co.in)

---

**NIT No: WBPDC/Tend-Adv/CC/16-17/01/Corp** **Date:28.04.2016**

Name of the job : Consultancy Services for Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDC along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60 MW (De-rated Capacity) against original installed Capacity of 82.5 MW.

Date of physical distribution of tender paper : **28.04.2016 to 09.05.2016** from 11.00 hrs. to 16.00 hrs. (except Saturday/Sunday/GoWB holidays).

---

N.B: Entire tender/RFP document can be downloaded from our website: [www.wbpdc.co.in](http://www.wbpdc.co.in) from **28.04.2016** onwards

---

Last date of query submission : Within **10.05.2016** to GM (M&C), Corporate Office, WBPDC.

Date of Pre-bid Discussion : **17.05.2016** at 11.00 hrs.

Last date and time for submission of tender / RFP : **24.05.2016** up to 14.00 hrs.

Opening of technical proposals / bid : **24.05.2016** at 14.30 hrs.

Opening of financial proposals / bid : To be intimated later.

Contact person : Mr. D. Bhattacharya, DGM (M&C), Corporate Office, WBPDC.

Telephone No. and email ID of the contact person : **8336903677, 2339-3633/3625 ; dbhattacharya@wbpdc.co.in**



**The West Bengal Power Development Corporation Limited**

(A Government of West Bengal Enterprise)

CIN No. U40104WB1985SGC039154

**Registered & Corporate Office: Bidyut Unnayan Bhaban**

Plot No. : 3/C, L.A. Block, Salt Lake City, Sector – III, Kolkata : 700 098.

Phone : 033-2339 3621, Fax : 033 – 2339 3607 (M&C)

Email. [pchatterjee@wbpdcl.co.in](mailto:pchatterjee@wbpdcl.co.in)

**NIT No: WBPDC/Tend-Adv/CC/16-17/01/Corp**

**Date:28.04.2016**

**OPEN / PRESS TENDER**

Sealed Tender are invited. by the General Manager (M&C) WBPDC from eligible Agencies/companies in **02 (two) part/step bid system** for the above said subject

**Name of the work:-** Consultancy Services for Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDC along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60 MW (De-rated Capacity) against original installed Capacity of 82.5 MW.

- **Date of physical distribution of tender paper :** On and from **28.04.2016 to 09.05.2016** from 11:00 to 16-00 hrs on all working days (except Saturday / Sunday / GoWB Holidays).

**N.B:** Entire tender/RFP document can be downloaded from our website: [www.wbpdcl.co.in](http://www.wbpdcl.co.in) from **28.04.2016** onwards.

- **Last date of query submission before Pre-Bid discussion:** 10.05.2016.
- **Pre-Bid discussion:** Pre-bid discussion in connection with the tender will be held on 17.05.2016 at 11.00 hrs.
- **Last date and time for submission of complete tender / RFP :** On 24.05.2016 upto 14-00 hrs.
- **Opening of technical proposals / bid :** On 24.05.2016 at 14.30 hrs.
- **Opening of financial proposals / bid :** To be intimated later.
- **Contact person:** Mr. D. Bhattacharya, DGM (M&C), Corporate Office, WBPDC.

**Telephone no: 033-2339-3633/8336903677;**

**e-mail id: [dbhattacharya@wbpdcl.co.in](mailto:dbhattacharya@wbpdcl.co.in)**

For further details, visit our website: [www.wbpdcl.co.in](http://www.wbpdcl.co.in)

**(P.K. Chatterjee)  
GM (M&C)  
CORPORATE, WBPDC**



# ***The West Bengal Power Development Corporation Limited***

( A Government of West Bengal Enterprise )

CIN No. U40104WB1985SGC039154

Registered & Corporate Office: Bidyut Unnayan Bhaban

Plot No. : 3/C, L.A. Block, Salt Lake City, Sector – III, Kolkata : 700 098.

Phone : 033-2339 3621, Fax : 033 – 2339 3607 (M&C)

Email. [pchatterjee@wbpdcl.co.in](mailto:pchatterjee@wbpdcl.co.in)

RFP/NIT No.: WBPDC/Tend-Adv/CC/16-17/01/Corp.

Dated: 28.04.2016.

## **REQUEST FOR PROPOSALS (TENDER DOCUMENT)**

### **Coal Fired Power Station Rehabilitation Project**

Consultancy Services for Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDC along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60 MW (De-rated Capacity) against original installed Capacity of 82.5 MW

#### **Selection of Consultants**

#### **Least Cost Selection [LCS]**



### **THE WEST BENGAL POWER DEVELOPMENT CORPORATION LIMITED**

CIN No. U40104WB1985SGC039154

(A Govt. of West Bengal Enterprise)

Bidyut Unnayan Bhaban

3/C, Block-LA, Sector-III, Salt Lake City

Kolkata-700098.

- Issued to : M/s.....

.....

**(P.K. Chatterjee)**

GM (M&C), CORPORATE  
WBPDC

***The West Bengal Power Development Corporation Limited***

( A Government of West Bengal Enterprise )

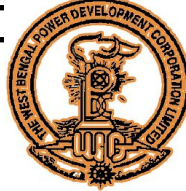
CIN No. U40104WB1985SGC039154

Registered & Corporate Office: Bidyut Unnayan Bhaban

Plot No. : 3/C, L.A. Block, Salt Lake City, Sector – III, Kolkata : 700 098.

Phone : 033-2339 3621, Fax : 033 – 2339 3607 (M&C)

Email. [pchatterjee@wbpdcl.co.in](mailto:pchatterjee@wbpdcl.co.in)



**THE WEST BENGAL POWER DEVELOPMENT  
CORPORATION LIMITED.**

**BANDEL THERMAL POWER STATION**

**REQUEST FOR PROPOSALS**

**Coal Fired Power Station Rehabilitation Project**

**Consultancy Services for Feasibility study of Stage 1  
Bandel Thermal Power Station (BTPS), WBPDC  
along with RLA study of Boiler, Turbine & Generator,  
Critical Piping of one Unit followed by Performance  
Study of the Unit of 60MW (De-rated Capacity)  
against original installed Capacity of 82.5 MW**

**Selection of Consultants**

**Least Cost Selection [LCS]**

***The West Bengal Power Development Corporation Limited***

( A Government of West Bengal Enterprise )

CIN No. U40104WB1985SGC039154

Registered & Corporate Office: Bidyut Unnanyan Bhaban

Plot No. : 3/C, L.A. Block, Salt Lake City, Sector – III, Kolkata : 700 098.

Phone : 033-2339 3621, Fax : 033 – 2339 3607 (M&C)

Email. [pchatterjee@wbpdc.co.in](mailto:pchatterjee@wbpdc.co.in)

---

---

**REQUEST FOR PROPOSALS  
RFP # WBPDC / RLA BTPS 1<sup>st</sup> /**

***Country:*** **India**

***Project Name:*** **Coal Fired Thermal Power Station Rehabilitation Project  
(RLA of BTPS 1<sup>st</sup> Unit, 60 MW under WBPDC)**

***Loan No 7687 –IN & Grant No TF094676***

***Title of Consulting Services:***

***Feasibility study of Stage 1 Bandel Thermal Power Station (BTPS),  
WBPDC along with RLA study of Boiler, Turbine & Generator, Critical  
Piping of one Unit followed by Performance Study of the Unit of 60MW  
(De-rated Capacity) against original installed Capacity of 82.5 MW***

# ***The West Bengal Power Development Corporation Limited***

( A Government of West Bengal Enterprise )

CIN No. U40104WB1985SGC039154

Registered & Corporate Office: Bidyut Unnanyan Bhaban

Plot No. : 3/C, L.A. Block, Salt Lake City, Sector – III, Kolkata : 700 098.

Phone : 033-2339 3621, Fax : 033 – 2339 3607 (M&C)

Email. [pchatterjee@wbpdc.co.in](mailto:pchatterjee@wbpdc.co.in)

---

## **CONTENTS**

Section 1. Invitation For Bids (IFB).....	5
Section 2. Instructions to Consultants.....	7
<b>DATA SHEET</b> .....	24
Section 3. Technical Proposal - Standard Forms.....	29
Section 4. Financial Proposal - Standard Forms.....	41
Section 5. Terms of Reference.....	51
Section 6. Standard Forms of Contract and Annexure.....	78





## Section 1. INVITATION FOR BIDS (IFB)

### THE WEST BENGAL POWER DEVELOPMENT CORPORATION LIMITED

#### Selection of Consultancy Agency from within India for

**Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDCCL along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW**

Date : 28.04.2016.

Loan No. : IBRD Loan No.: 7687-IN, GEF Grant No.: TF 094676

IFB No. : WBPDCCL/Tend-Adv/CC/16-17/01/Corp dt. 28.04.2016

1. The Government of India (hereinafter called “Borrower”) has received a loan from the International Bank for Reconstruction and Development (IBRD) (Loan No. 7687 – IN) (hereinafter called “loan”) and grant from Global Environment Facility (GEF) (Grant No. TF094676) towards the cost of the “**INDIA: Coal Fired Generation Rehabilitation Project**” and it intends to apply a part of the GEF grant for technical assistance for appointing a consultant for ***Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDCCL along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW*** and for eligible payments under the contracts for which this Invitation for Bids is issued.
2. The WBPDCCL now invites proposals to provide the following consulting service: ***Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDCCL along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW***. More details on the services are provided in the Terms of Reference.
3. A firm will be selected under Least Cost Selection (LCS) and procedures described in this RFP (Request for Proposal), in accordance with the policies of the International Bank for Reconstruction and Development (IBRD) detailed in the Guidelines - Selection and Employment of Consultants by World Bank Borrowers which can be found at the following website: [www.worldbank.org/procure](http://www.worldbank.org/procure).



- 
4. Interested eligible Consultants may download RFP (Request for Proposal) from official website of WBPDCCL [www.wbpdcl.co.in](http://www.wbpdcl.co.in) or inspect the RFP (Request for Proposal) documents from the Corporate Office of WBPDCCL at Bidyut Unnayan Bahaman, Plot No.3/C, LA-Block, Sector-III, Salt Lake City, Kolkata 700 098, India (Tel: (91) 33 2339 3633 , (91) 33 2339 3621, Fax No. (91) 033 23393607) e-mail address: [dbhattacharya@wbpdcl.co.in](mailto:dbhattacharya@wbpdcl.co.in), [pchatterjee@wbpdcl.co.in](mailto:pchatterjee@wbpdcl.co.in),
5. A complete set of RFP includes the following documents:  
Section 1 – Invitation for Bids (IFB)  
Section 2 - Instructions to Consultants (including Data Sheet)  
Section 3 - Technical Proposal - Standard Forms  
Section 4 - Financial Proposal - Standard Forms  
Section 5 - Terms of Reference  
Section 6 – Standard Forms of Contract and Annexure
- The application must attach relevant documents in support of their eligibility to Qualification Criteria cited in WBPDCCL website. WBPDCCL will not be held responsible for the postal delay if any, in the delivery of documents or non-receipt of the same.
6. (a) **Date of commencement of distribution of RFP document :** From 28.04.2016 to 09.05.2016 from 11.00 hrs. to 16.00 hrs (except Saturday/Sunday/GoWB holidays).
- (b) **Last date of query submission before Pre-Bid discussion :** Within 10.05.2016.
- (c) **Pre-Bid discussion :** Pre-bid discussion in connection with the tender will be held on 17.05.2016 at 11.00 hrs.
- (d) **Last date and time for submission of Proposals :** 24.05.2016 up to 14.00 hrs.
- (e) **Opening of technical proposals :** 24.05.2016 at 14.30 hrs.
- (f) **Opening of financial proposals :** To be intimated later.

<p><b>N.B:</b> Entire tender/RFP document can be downloaded from our website: <a href="http://www.wbpdcl.co.in">www.wbpdcl.co.in</a> from <b>28.04.2016</b> onwards.</p>
--

---

## Section 2. Instructions to Consultants

*[Note to the Borrower: this Section 2 - Instructions to Consultants shall not be modified. Any necessary changes, acceptable to the Bank, to address specific country and project issues, shall be introduced only through the Data Sheet (e.g., by adding new reference paragraphs)]*

### Definitions

- (a) “Bank” means the International Bank for Reconstruction and Development, Washington, D.C., U.S.A., or the International Development Association, Washington, D.C., U.S.A.
- (b) “Client” means the agency with which the selected Consultant signs the Contract for the Services.
- (c) “Consultant” means any entity or person that may provide or provides the Services to the Client under the Contract.
- (d) “Contract” means the Contract signed by the Parties and all the attached documents listed in its Clause 1, that are the General Conditions (GC), the Special Conditions (SC), and the Appendices.
- (e) “Data Sheet” means such part of the Instructions to Consultants used to reflect specific country and assignment conditions.
- (f) “Day” means calendar day.
- (g) “Government” means the government of the Client’s country.
- (h) “Instructions to Consultants” (Section 2 of the RFP) means the document which provides shortlisted Consultants with all information needed to prepare their Proposals.
- (i) “LOI” (Section 1 of the RFP) means the Letter of Invitation being sent by the Client to the shortlisted Consultants.
- (j) “Personnel” means professionals and support staff provided by the Consultant or by any Sub-Consultant and assigned to perform the Services or any part thereof; “Foreign Personnel” means such professionals and support staff who at the time of being so provided had their domicile outside the Government’s country; “Local Personnel” means such professionals and support staff who at the time of being so provided had their domicile inside the Government’s country.
- (k) “Proposal” means the Technical Proposal and the Financial Proposal.

- 
- (l) “RFP” means the Request For Proposal to be prepared by the Client for the selection of Consultants, based on the SRFP.
  - (m) “SRFP” means the Standard Request for Proposals, which must be used by the Client as a guide for the preparation of the RFP.
  - (n) “Services” means the work to be performed by the Consultant pursuant to the Contract.
  - (o) “Sub-Consultant” means any person or entity with whom the Consultant subcontracts any part of the Services.
  - (p) “Terms of Reference” (TOR) means the document included in the RFP as Section 5 which explains the objectives, scope of work, activities, tasks to be performed, respective responsibilities of the Client and the Consultant, and expected results and deliverables of the assignment.

## **1. Introduction**

- 1.1 The Client named in the Data Sheet will select a consulting firm/organization (the Consultant) from those listed in the Letter of Invitation, in accordance with the method of selection specified in the Data Sheet.
- 1.2 The shortlisted Consultants are invited to submit a Technical Proposal and a Financial Proposal, or a Technical Proposal only, as specified in the Data Sheet, for consulting services required for the assignment named in the Data Sheet. The Proposal will be the basis for contract negotiations and ultimately for a signed Contract with the selected Consultant.
- 1.3 Consultants should familiarize themselves with local conditions and take them into account in preparing their Proposals. To obtain first-hand information on the assignment and local conditions, Consultants are encouraged to visit the Client before submitting a proposal and to attend a pre-proposal conference if one is specified in the Data Sheet. Attending the pre-proposal conference is optional. Consultants should contact the Client’s representative named in the Data Sheet to arrange for their visit or to obtain additional information on the pre-proposal conference. Consultants should ensure that these officials are advised of the visit in adequate time to allow them to make appropriate arrangements.
- 1.4 The Client will timely provide at no cost to the Consultants the inputs and facilities specified in the Data Sheet, assist the firm in obtaining licenses and permits needed to carry out the services, and make available relevant project data and reports.

- 
- 1.5 Consultants shall bear all costs associated with the preparation and submission of their proposals and contract negotiation. The Client is not bound to accept any proposal, and reserves the right to annul the selection process at any time prior to Contract award, without thereby incurring any liability to the Consultants.
- Conflict of Interest**
- 1.6 Bank policy requires that Consultants provide professional, objective, and impartial advice and at all times hold the Client’s interests paramount, strictly avoid conflicts with other assignments or their own corporate interests and act without any consideration for future work.
- 1.6.1 Without limitation on the generality of the foregoing, Consultants, and any of their affiliates, shall be considered to have a conflict of interest and shall not be recruited, under any of the circumstances set forth below:
- Conflicting activities**
- (i) A firm that has been engaged by the Client to provide goods, works or services other than consulting services for a project, and any of its affiliates, shall be disqualified from providing consulting services related to those goods, works or services. Conversely, a firm hired to provide consulting services for the preparation or implementation of a project, and any of its affiliates, shall be disqualified from subsequently providing goods or works or services other than consulting services resulting from or directly related to the firm’s consulting services for such preparation or implementation. For the purpose of this paragraph, services other than consulting services are defined as those leading to a measurable physical output, for example surveys, exploratory drilling, aerial photography, and satellite imagery.
- Conflicting assignments**
- (ii) A Consultant (including its Personnel and Sub-Consultants) or any of its affiliates shall not be hired for any assignment that, by its nature, may be in conflict with another assignment of the Consultant to be executed for the same or for another Client. For example, a Consultant hired to prepare engineering design for an

infrastructure project shall not be engaged to prepare an independent environmental assessment for the same project, and a Consultant assisting a Client in the privatization of public assets shall not purchase, nor advise purchasers of, such assets. Similarly, a Consultant hired to prepare Terms of Reference for an assignment should not be hired for the assignment in question.

**Conflicting relationships**

- (iii) A Consultant (including its Personnel and Sub-Consultants) that has a business or family relationship with a member of the Client's staff who is directly or indirectly involved in any part of (i) the preparation of the Terms of Reference of the assignment, (ii) the selection process for such assignment, or (iii) supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to the Bank throughout the selection process and the execution of the Contract.

1.6.2 Consultants have an obligation to disclose any situation of actual or potential conflict that impacts their capacity to serve the best interest of their Client, or that may reasonably be perceived as having this effect. Failure to disclose said situations may lead to the disqualification of the Consultant or the termination of its Contract.

1.6.3 No agency or current employees of the Client shall work as Consultants under their own ministries, departments or agencies. Recruiting former government employees of the Client to work for their former ministries, departments or agencies is acceptable provided no conflict of interest exists. When the Consultant nominates any government employee as Personnel in their technical proposal, such Personnel must have written certification from their government or employer confirming that they are on leave without pay from their official position and allowed to work full-time outside of their previous official position. Such certification shall be provided to the Client by the Consultant as part of his technical

proposal.

**Unfair  
Advantage**

- 1.6.4 If a shortlisted Consultant could derive a competitive advantage from having provided consulting services related to the assignment in question, the Client shall make available to all shortlisted Consultants together with this RFP all information that would in that respect give such Consultant any competitive advantage over competing Consultants.

**Fraud and  
Corruption**

- 1.7 It is the Bank’s policy to require that Borrowers (including beneficiaries of Bank loans), as well as consultants and their sub-consultants under Bank-financed contracts, observe the highest standard of ethics during the selection and execution of such contracts.<sup>1</sup> In pursuance of this policy, the Bank:
- (a) defines, for the purposes of this provision, the terms set forth below as follows:
- (i) “corrupt practice<sup>2</sup>” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - (ii) “fraudulent practice<sup>3</sup>” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
  - (iii) “collusive practices<sup>4</sup>” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - (iv) “coercive practices<sup>5</sup>” is impairing or harming, or threatening to impair or harm, directly or indirectly,

<sup>1</sup> In this context, any action taken by a consultant or a sub-consultant to influence the selection process or contract execution for undue advantage is improper.

<sup>2</sup> “Another party” refers to a public official acting in relation to the selection process or contract execution. In this context “public official” includes World Bank staff and employees of other organizations taking or reviewing selection decisions.

<sup>3</sup> A “party” refers to a public official; the terms “benefit” and “obligation” relate to the selection process or contract execution; and the “act or omission” is intended to influence the selection process or contract execution.

<sup>4</sup> “Parties” refers to participants in the procurement or selection process (including public officials) attempting to establish contract prices at artificial, non competitive levels.

<sup>5</sup> “Party” refers to a participant in the selection process or contract execution.

---

any party or the property of the party to influence improperly the actions of a party;

- (v) “obstructive practice”
  - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
  - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under sub-clause (e) below.
- (b) will reject a proposal for award if it determines that the consultant recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will cancel the portion of the Loan allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of the Loan were engaged in corrupt, fraudulent, collusive, or coercive practices during the selection process or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur;
- (d) will sanction a consultant, including declaring ineligible, either indefinitely or for a stated period of time, to be awarded a Bank-financed contract if it at any time determines that the consultant has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for, or in executing, a Bank-financed contract; and
- (e) will have the right to require that, in contracts financed by a Bank loan, a provision be included requiring consultants

to permit the Bank to inspect their accounts and records and other documents relating to the submission of proposals and contract performance and to have them audited by auditors appointed by the Bank.

- 1.8 Consultants, their Sub-Consultants, and their associates shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Bank in accordance with the above para. 1.7. Furthermore, the Consultants shall be aware of the provisions on fraud and corruption stated in the specific clauses in the General Conditions of Contract.
- 1.9 Consultants shall furnish information on commissions and gratuities, if any, paid or to be paid to agents relating to this proposal and during execution of the assignment if the Consultant is awarded the Contract, as requested in the Financial Proposal submission form (Section 4).
- Eligibility** 1.10 A firm declared ineligible by the Bank in accordance with the Bank Guidelines On Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants shall be ineligible to be awarded a Bank-financed contract during such period of time as the Bank shall determine.
- Eligibility of Sub-Consultants** 1.11 In case a shortlisted Consultant intends to associate with Consultants who have not been shortlisted and/or individual expert(s), such other Consultants and/or individual expert(s) shall be subject to the eligibility criteria set forth in the Guidelines.
- Origin of Goods and Consulting Services** 1.12 Goods supplied and Consulting Services provided under the Contract may originate from any country except if:
- (i) as a matter of law or official regulation, the Borrower's country prohibits commercial relations with that country; or
  - (ii) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any imports of goods from that country or any payments to persons or entities in that country.
- Only one** 1.13 Shortlisted Consultants may only submit one proposal. If a Consultant submits or participates in more than one proposal,



- 
- Proposal** such proposals shall be disqualified. However, this does not limit the participation of the same Sub-Consultant, including individual experts, to more than one proposal.
- Proposal Validity** 1.14 The Data Sheet indicates how long Consultants’ Proposals must remain valid after the submission date. During this period, Consultants shall maintain the availability of Professional staff nominated in the Proposal. The Client will make its best effort to complete negotiations within this period. Should the need arise, however, the Client may request Consultants to extend the validity period of their proposals. Consultants who agree to such extension shall confirm that they maintain the availability of the Professional staff nominated in the Proposal, or in their confirmation of extension of validity of the Proposal, Consultants could submit new staff in replacement, who would be considered in the final evaluation for contract award. Consultants who do not agree have the right to refuse to extend the validity of their Proposals.
- 2. Clarification and Amendment of RFP Documents** 2.1 Consultants may request a clarification of any of the RFP documents up to the number of days indicated in the Data Sheet before the proposal submission date. Any request for clarification must be sent in writing, or by standard electronic means to the Client’s address indicated in the Data Sheet. The Client will respond in writing, or by standard electronic means and will send written copies of the response (including an explanation of the query but without identifying the source of inquiry) to all Consultants. Should the Client deem it necessary to amend the RFP as a result of a clarification, it shall do so following the procedure under para. 2.2.
- 2.2 At any time before the submission of Proposals, the Client may amend the RFP by issuing an addendum in writing or by standard electronic means. The addendum shall be sent to all Consultants and will be binding on them. Consultants shall acknowledge receipt of all amendments. To give Consultants reasonable time in which to take an amendment into account in their Proposals the Client may, if the amendment is substantial, extend the deadline for the submission of Proposals.
- 3. Preparation of Proposals** 3.1 The Proposal (see para. 1.2), as well as all related correspondence exchanged by the Consultants and the Client, shall be written in the language (s) specified in the Data Sheet.

---

3.2 In preparing their Proposal, Consultants are expected to examine in detail the documents comprising the RFP. Material deficiencies in providing the information requested may result in rejection of a Proposal.

3.3 While preparing the Technical Proposal, Consultants must give particular attention to the following:

(a) If a shortlisted Consultant considers that it may enhance its expertise for the assignment by associating with other Consultants in a joint venture or sub-consultancy, it may associate with either (a) non-shortlisted Consultant(s), or (b) shortlisted Consultants if so indicated in the Data Sheet. A shortlisted Consultant must first obtain the approval of the Client if it wishes to enter into a joint venture with non-shortlisted or shortlisted Consultant(s). In case of association with non-shortlisted Consultant(s), the shortlisted Consultant shall act as association leader. In case of a joint venture, all partners shall be jointly and severally liable and shall indicate who will act as the leader of the joint venture.

(b) The estimated number of Professional staff-months or the budget for executing the assignment shall be shown in the Data Sheet, but not both. However, the Proposal shall be based on the number of Professional staff-months or budget estimated by the Consultants.

For fixed-budget-based assignments, the available budget is given in the Data Sheet, and the Financial Proposal shall not exceed this budget, while the estimated number of Professional staff-months shall not be disclosed.

(c) Alternative professional staff shall not be proposed, and only one curriculum vitae (CV) may be submitted for each position.

**Language**

(d) Documents to be issued by the Consultants as part of this assignment must be in the language(s) specified in the Reference Paragraph 3.1 of the Data Sheet. If Reference Paragraph 3.1 indicates two languages, the language in which the proposal of the successful Consultant will be submitted shall govern for the purpose of interpretation. It is desirable that the firm's

Personnel have a working knowledge of the Client's national language.

**Technical  
Proposal  
Format and  
Content**

3.4 Depending on the nature of the assignment, Consultants are required to submit a Full Technical Proposal (FTP), or a Simplified Technical Proposal (STP). The Data Sheet indicates the format of the Technical Proposal to be submitted. Submission of the wrong type of Technical Proposal will result in the Proposal being deemed non-responsive. The Technical Proposal shall provide the information indicated in the following paras from (a) to (g) using the attached Standard Forms (Section 3). Paragraph (c) (ii) indicates the recommended number of pages for the description of the approach, methodology and work plan of the STP. A page is considered to be one printed side of A4 or letter size paper.

- (a) (i) For the FTP only: a brief description of the Consultants' organization and an outline of recent experience of the Consultants and, in the case of joint venture, for each partner, on assignments of a similar nature is required in Form TECH-2 of Section 3. For each assignment, the outline should indicate the names of Sub-Consultants/ Professional staff who participated, duration of the assignment, contract amount, and Consultant's involvement. Information should be provided only for those assignments for which the Consultant was legally contracted by the client as a corporation or as one of the major firms within a joint venture. Assignments completed by individual Professional staff working privately or through other consulting firms cannot be claimed as the experience of the Consultant, or that of the Consultant's associates, but can be claimed by the Professional staff themselves in their CVs. Consultants should be prepared to substantiate the claimed experience if so requested by the Client.
- (ii) For the STP the above information is not required and Form TECH-2 of Section 3 shall not be used.
- (b) (i) For the FTP only: comments and suggestions on the Terms of Reference including workable suggestions that could improve the quality/ effectiveness of the assignment; and on requirements for counterpart staff and facilities including: administrative support,

---

office space, local transportation, equipment, data, etc. to be provided by the Client (Form TECH-3 of Section 3).

- (ii) For the STP Form TECH-3 of Section 3 shall not be used; the above comments and suggestions, if any, should be incorporated into the description of the approach and methodology (refer to following sub-para. 3.4 (c) (ii)).
- (c) (i) For the FTP, and STP: a description of the approach, methodology and work plan for performing the assignment covering the following subjects: technical approach and methodology, work plan, and organization and staffing schedule. Guidance on the content of this section of the Technical Proposals is provided under Form TECH-4 of Section 3. The work plan should be consistent with the Work Schedule (Form TECH-8 of Section 3) which will show in the form of a bar chart the timing proposed for each activity.
- (ii) For the STP only: the description of the approach, methodology and work plan should normally consist of 10 pages, including charts, diagrams, and comments and suggestions, if any, on Terms of Reference and counterpart staff and facilities.
- (d) The list of the proposed Professional staff team by area of expertise, the position that would be assigned to each staff team member, and their tasks (Form TECH-5 of Section 3).
- (e) Estimates of the staff input (staff-months of foreign and local professionals) needed to carry out the assignment (Form TECH-7 of Section 3). The staff-months input should be indicated separately for home office and field activities, and for foreign and local Professional staff.
- (f) CVs of the Professional staff signed by the staff themselves or by the authorized representative of the Professional Staff (Form TECH-6 of Section 3).
- (g) For the FTP only: a detailed description of the proposed methodology and staffing for training, if the Data Sheet specifies training as a specific component

of the assignment.

- 3.5 The Technical Proposal shall not include any financial information. A Technical Proposal containing financial information may be declared non responsive.
- Financial Proposals**
- 3.6 The Financial Proposal shall be prepared using the attached Standard Forms (Section 4). It shall list all costs associated with the assignment, including (a) remuneration for staff (foreign and local, in the field and at the Consultants' home office), and (b) reimbursable expenses indicated in the Data Sheet. If appropriate, these costs should be broken down by activity and, if appropriate, into foreign and local expenditures. All activities and items described in the Technical Proposal must be priced separately; activities and items described in the Technical Proposal but not priced, shall be assumed to be included in the prices of other activities or items.
- Taxes**
- 3.7 The Consultant may be subject to local taxes (such as: value added or sales tax, social charges or income taxes on non resident Foreign Personnel, duties, fees, levies) on amounts payable by the Client under the Contract. The Client will state in the Data Sheet if the Consultant is subject to payment of any local taxes. Any such amounts shall not be included in the Financial Proposal as they will not be evaluated, but they will be discussed at contract negotiations, and applicable amounts will be included in the Contract.
- 3.8 Consultants may express the price of their services in a maximum of three freely convertible currencies, singly or in combination. The Client may require Consultants to state the portion of their price representing local cost in the national currency if so indicated in the Data Sheet.
- 3.9 Commissions and gratuities, if any, paid or to be paid by Consultants and related to the assignment will be listed in the Financial Proposal Form FIN-1 of Section 4.
- 4. Submission, Receipt, and Opening of Proposals**
- 4.1 The original proposal (Technical Proposal and, if required, Financial Proposal; see para. 1.2) shall contain no interlineations or overwriting, except as necessary to correct errors made by the Consultants themselves. The person who signed the proposal must initial such corrections. Submission letters for both Technical and Financial Proposals should respectively be in the format of TECH-1 of Section 3, and

---

FIN-1 of Section 4.

- 4.2 An authorized representative of the Consultants shall initial all pages of the original Technical and Financial Proposals. The authorization shall be in the form of a written power of attorney accompanying the Proposal or in any other form demonstrating that the representative has been duly authorized to sign. The signed Technical and Financial Proposals shall be marked “ORIGINAL”.
- 4.3 The Technical Proposal shall be marked “ORIGINAL” or “COPY” as appropriate. The Technical Proposals shall be sent to the addresses referred to in para. 4.5 and in the number of copies indicated in the Data Sheet. All required copies of the Technical Proposal are to be made from the original. If there are discrepancies between the original and the copies of the Technical Proposal, the original governs.
- 4.4 The original and all copies of the Technical Proposal shall be placed in a sealed envelope clearly marked “TECHNICAL PROPOSAL” Similarly, the original Financial Proposal (if required under the selection method indicated in the Data Sheet) shall be placed in a sealed envelope clearly marked “FINANCIAL PROPOSAL” followed by the Loan/TA number and the name of the assignment, and with a warning “**DO NOT OPEN WITH THE TECHNICAL PROPOSAL.**” The envelopes containing the Technical and Financial Proposals shall be placed into an outer envelope and sealed. This outer envelope shall bear the submission address, reference number and title of the Loan, and be clearly marked “**DO NOT OPEN, EXCEPT IN PRESENCE OF THE OFFICIAL APPOINTED, BEFORE THE GM (M&C), WBPDC, BEFORE [24-05-2016]**”. The Client shall not be responsible for misplacement, losing or premature opening if the outer envelope is not sealed and/or marked as stipulated. This circumstance may be cause for Proposal rejection. If the Financial Proposal is not submitted in a separate sealed envelope duly marked as indicated above, this will constitute grounds for declaring the Proposal non-responsive.
- 4.5 The Proposals must be sent to the address/addresses indicated in the Data Sheet and received by the Client no later than the time and the date indicated in the Data Sheet, or any extension to this date in accordance with para. 2.2. Any proposal received by the Client after the deadline for submission shall

- be returned unopened.
- 4.6 The Client shall open the Technical Proposal immediately after the deadline for their submission. The envelopes with the Financial Proposal shall remain sealed and securely stored.
- 5. Proposal Evaluation**
- 5.1 From the time the Proposals are opened to the time the Contract is awarded, the Consultants should not contact the Client on any matter related to its Technical and/or Financial Proposal. Any effort by Consultants to influence the Client in the examination, evaluation, ranking of Proposals, and recommendation for award of Contract may result in the rejection of the Consultants' Proposal.
- Evaluators of Technical Proposals shall have no access to the Financial Proposals until the technical evaluation is concluded and the Bank issues its "no objection".
- Evaluation of Technical Proposals**
- 5.2 The evaluation committee shall evaluate the Technical Proposals on the basis of their responsiveness to the Terms of Reference, applying the evaluation criteria, subcriteria, and point system specified in the Data Sheet. Each responsive Proposal will be given a technical score (St). A Proposal shall be rejected at this stage if it does not respond to important aspects of the RFP, and particularly the Terms of Reference or if it fails to achieve the minimum technical score indicated in the Data Sheet.
- Financial Proposals for QBS**
- 5.3 Following the ranking of technical Proposals, when selection is based on quality only (QBS), the first ranked Consultant is invited to negotiate its proposal and the Contract in accordance with the instructions given under para. 6 of these Instructions.
- Public Opening and Evaluation of Financial Proposals (only for QCBS, FBS, and LCS)**
- 5.4 After the technical evaluation is completed and the Bank has issued its no objection (if applicable), the Client shall inform the Consultants who have submitted proposals the technical scores obtained by their Technical Proposals, and shall notify those Consultants whose Proposals did not meet the minimum qualifying mark or were considered non responsive to the RFP and TOR, that their Financial Proposals will be returned unopened after completing the selection process. The Client shall simultaneously notify in writing Consultants that have secured the minimum qualifying mark, the date, time and location for opening the Financial Proposals. The opening date should allow Consultants sufficient time to make arrangements for attending the opening. Consultants'

---

attendance at the opening of Financial Proposals is optional.

- 5.5 Financial Proposals shall be opened publicly in the presence of the Consultants' representatives who choose to attend. The name of the Consultants, and the technical scores of the Consultants shall be read aloud. The Financial Proposal of the Consultants who met the minimum qualifying mark will then be inspected to confirm that they have remained sealed and unopened. These Financial Proposals shall be then opened, and the total prices read aloud and recorded. Copy of the record shall be sent to all Consultants and the Bank.
- 5.6 The Evaluation Committee will correct any computational errors. When correcting computational errors, in case of discrepancy between a partial amount and the total amount, or between word and figures the formers will prevail. In addition to the above corrections, as indicated under para. 3.6, activities and items described in the Technical Proposal but not priced, shall be assumed to be included in the prices of other activities or items. In case an activity or line item is quantified in the Financial Proposal differently from the Technical Proposal, (i) if the Time-Based form of contract has been included in the RFP, the Evaluation Committee shall correct the quantification indicated in the Financial Proposal so as to make it consistent with that indicated in the Technical Proposal, apply the relevant unit price included in the Financial Proposal to the corrected quantity and correct the total Proposal cost, (ii) if the Lump-Sum form of contract has been included in the RFP, no corrections are applied to the Financial Proposal in this respect. Prices shall be converted to a single currency using the selling rates of exchange, source and date indicated in the Data Sheet.
- 5.7 In case of QCBS, the lowest evaluated Financial Proposal (Fm) will be given the maximum financial score (Sf) of 100 points. The financial scores (Sf) of the other Financial Proposals will be computed as indicated in the Data Sheet. Proposals will be ranked according to their combined technical (St) and financial (Sf) scores using the weights (T = the weight given to the Technical Proposal; P = the weight given to the Financial Proposal; T + P = 1) indicated in the Data Sheet:  $S = St \times T\% + Sf \times P\%$ . The firm achieving the highest combined technical and financial score will be invited for negotiations.
- 5.8 In the case of Fixed-Budget Selection, the Client will select



the firm that submitted the highest ranked Technical Proposal within the budget. Proposals that exceed the indicated budget will be rejected. In the case of the Least-Cost Selection, the Client will select the lowest proposal among those that passed the minimum technical score. In both cases the evaluated proposal price according to para. 5.6 shall be considered, and the selected firm is invited for negotiations.

- |                               |     |  |
|-------------------------------|-----|--|
| <b>6. Negotiations</b>        | 6.1 | Negotiations will be held at the date and address indicated in the Data Sheet. The invited Consultant will, as a pre-requisite for attendance at the negotiations, confirm availability of all Professional staff. Failure in satisfying such requirements may result in the Client proceeding to negotiate with the next-ranked Consultant. Representatives conducting negotiations on behalf of the Consultant must have written authority to negotiate and conclude a Contract.   |
| <b>Technical negotiations</b> | 6.2 | Negotiations will include a discussion of the Technical Proposal, the proposed technical approach and methodology, work plan, and organization and staffing, and any suggestions made by the Consultant to improve the Terms of Reference. The Client and the Consultants will finalize the Terms of Reference, staffing schedule, work schedule, logistics, and reporting. These documents will then be incorporated in the Contract as “Description of Services”. Special attention will be paid to clearly defining the inputs and facilities required from the Client to ensure satisfactory implementation of the assignment. The Client shall prepare minutes of negotiations which will be signed by the Client and the Consultant.   |
| <b>Financial negotiations</b> | 6.3 | If applicable, it is the responsibility of the Consultant, before starting financial negotiations, to contact the local tax authorities to determine the local tax amount to be paid by the Consultant under the Contract. The financial negotiations will include a clarification (if any) of the firm’s tax liability in the Client’s country, and the manner in which it will be reflected in the Contract; and will reflect the agreed technical modifications in the cost of the services. In the cases of QCBS, Fixed-Budget Selection, and the Least-Cost Selection methods, unless there are exceptional reasons, the financial negotiations will involve neither the remuneration rates for staff nor other proposed unit rates. For other methods, Consultants will provide the Client with the information on remuneration rates described in the Appendix attached to Section 4 - Financial Proposal - Standard Forms of this RFP. |
| <b>Availability of</b>        | 6.4 | Having selected the Consultant on the basis of, among other  |

---

<b>Professional staff/experts</b>		things, an evaluation of proposed Professional staff, the Client expects to negotiate a Contract on the basis of the Professional staff named in the Proposal. Before contract negotiations, the Client will require assurances that the Professional staff will be actually available. The Client will not consider substitutions during contract negotiations unless both parties agree that undue delay in the selection process makes such substitution unavoidable or for reasons such as death or medical incapacity. If this is not the case and if it is established that Professional staff were offered in the proposal without confirming their availability, the Consultant may be disqualified. Any proposed substitute shall have equivalent or better qualifications and experience than the original candidate and be submitted by the Consultant within the period of time specified in the letter of invitation to negotiate.
<b>Conclusion of the negotiations</b>	6.5	Negotiations will conclude with a review of the draft Contract. To complete negotiations the Client and the Consultant will initial the agreed Contract. If negotiations fail, the Client will invite the Consultant whose Proposal received the second highest score to negotiate a Contract.
<b>7. Award of Contract</b>	7.1	After completing negotiations the Client shall award the Contract to the selected Consultant, publish in UNDB on line and in the Development Gateway the award of the Contract, and promptly notify all Consultants who have submitted proposals. After Contract signature, the Client shall return the unopened Financial Proposals to the unsuccessful Consultants.
	7.2	The Consultant is expected to commence the assignment on the date and at the location specified in the Data Sheet.
<b>8. Confidentiality</b>	8.1	Information relating to evaluation of Proposals and recommendations concerning awards shall not be disclosed to the Consultants who submitted the Proposals or to other persons not officially concerned with the process, until the publication of the award of Contract. The undue use by any Consultant of confidential information related to the process may result in the rejection of its Proposal and may be subject to the provisions of the Bank's antifraud and corruption policy.

## Instructions to Consultants

### DATA SHEET

[Comments in brackets provide guidance for the preparation of the Data Sheet; they should not appear on the final RFP to be delivered to the shortlisted Consultants]

Paragraph Reference	
1.1	<p>Name of the Client: THE WEST BENGAL POWER DEVELOPMENT CORPORATION LIMITED</p> <p>Method of selection: Least-Cost Selection (LCS)</p>
1.2	<p>Financial Proposal to be submitted together with Technical Proposal: <b>Yes</b></p> <p>Name of the assignment is: <i>Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDCCL along with RLA study of Boiler, Turbine &amp; Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW</i></p>
1.3	<p>A pre-proposal conference will be held: Yes Date: 17/05/2016 (day) , Time: 11:00 Hrs. (IST) at Bidyut Unnayan Bhaban, Plot No. 3/C, LA – Block, Sector – III, Salt Lake City, Kolkata 700 098. The Client’s representative is:  <div style="text-align: center;">           Mr. P Chatterjee            GM (M&amp;C)            Address: <b>Bidyut Unnayan Bhaban</b>  <b>Plot No. 3/C, LA – Block, Sector – III,</b>  <b>Salt Lake City, Kolkata 700 098</b> </div>           Telephone: (91) 33 2339 3633 , (91) 33 2339 3621,            Facsimile: (91) 033 23393607            E-mail: <a href="mailto:dbhattacharya@wbpdcl.co.in">dbhattacharya@wbpdcl.co.in</a>, pchatterjee@wbpdcl.co.in</p>
1.4	<p>The Client will provide the following inputs and facilities: As per para 6 of Terms of Reference in Section 5.</p>
1.14	<p>Proposals must remain valid for 180 days from the date of opening of the financial proposal/bid.</p>

2.1	<p>Clarifications/pre-bid queries may be requested as per date schedule (sl. no. 6b of IFB)</p> <p>The address for requesting clarifications is: GM (M&amp;C)  Address: <b>Bidyut Unnayan Bhaban</b>  <b>Plot No. 3/C, LA – Block, Sector – III,</b>  <b>Salt Lake City, Kolkata 700 098</b></p> <p>Telephone: (91) 33 2339 3624 , (91) 33 2339 3621,  Facsimile: (91) 033 23393607  E-mail: <a href="mailto:dbhattacharya@wbpdcl.co.in">dbhattacharya@wbpdcl.co.in</a>, <a href="mailto:pchatterjee@wbpdcl.co.in">pchatterjee@wbpdcl.co.in</a></p>
3.1	Proposals shall be submitted in the following language: English
3.3 (a)	Shortlisted Consultants may associate with other shortlisted Consultants: No
3.3 (b)	The estimated budget for executing the assignment is Rs. 1.15 Crore with tax.
3.4	The format of the Technical Proposal to be submitted is: FTP
3.4 (g)	Training is a specific component of this assignment: No
3.6	Cl. 3.6 in instruction to consultant shall prevail.
3.7	<p>Amounts payable by the Client to the Consultant under the contract to be subject to all taxes as applicable in India: Yes</p> <p>The Client will reimburse the Consultant for indirect local taxes (including service tax) and duties.</p> <p>The Client will not reimburse the Consultant Corporate Tax/TDS.</p> <p>The Client will not reimburse the Consultant income tax paid in India on the remuneration for services provided by the non resident staff of the consultant. The Consultant will be required to submit PAN details to the Project Manager before the submission of the first bill.</p> <p>The tax component should be filled up separately in financial proposal.</p>
3.8	Consultant to state local cost in the national currency: Yes
4.3	<p>Consultant must submit the original and three copies of the Technical Proposal and the original of the Financial Proposal in sealed condition separately.</p> <p>In addition one soft copy of technical proposal (on a CD) must also be submitted in the respective sealed envelope.</p>

4.5	<p>The Proposal submission address is: GM (M&amp;C)  Address: <b>Bidyut Unnayan Bhaban</b>  <b>Plot No. 3/C, LA – Block, Sector – III,</b>  <b>Salt Lake City, Kolkata 700 098</b></p> <p>Telephone: (91) 33 2339 3633 , (91) 33 2339 3621,  Facsimile: (91) 033 23393607  E-mail: <a href="mailto:dbhattacharya@wbpdcl.co.in">dbhattacharya@wbpdcl.co.in</a>, <a href="mailto:pchatterjee@wbpdcl.co.in">pchatterjee@wbpdcl.co.in</a></p> <p>Proposals must be submitted no later than the following date and time: <b>April 24.05.2016 up to 14:00 hrs.</b></p>
5.2 (a)	<p>Qualifying Criteria, sub-criteria, and point system for the evaluation of Full Technical Proposals are (Relevant Documents/orders in support of following criteria are required to be provided) :</p> <p style="text-align: right;"><u>Points</u></p> <p><b>(i) Specific experience of the Consultants relevant to the assignment: [50]</b></p> <p>a) The number of points to be assigned to each sub-criteria and relevant percentage weights are as follows:  (executed /completed similar works as per scope of work for 82.5 MW or above capacity units in any power station in India or any other developing country, during the last Seven years ending last day of month of previous date of RFP/NIT. (Similar works means RLA Turbine, Boiler &amp; Generator, Stress analysis of main critical Piping. Consultant must give reference of carrying out comprehensive health assessment/ feasibility study from environment perspective also and gave recommendation with cost for Renovation &amp; Modernization work for Old Thermal Power Plant.)</p> <p>i) at least one job of minimum value of Rs. 92 lacs, or  ii) at least two jobs of minimum value of Rs. 58 lacs each, or  iii) at least three jobs of minimum value of Rs. 46 lacs each.</p> <p>b) Audited balance sheet for the last three financial years (2012-13, 2013-14 &amp; 2014-15) to satisfy the following criteria:</p> <p>i) Average financial turnover of the bidder during the last 03 years ending with the financial year 2014-15 should be at least Rs. 35 Lacs. (Rupees thirty five lacs only)  ii) Average net worth in three financial years should be positive.</p> <p>The photocopies of following documents should be submitted along with the QR for review.</p> <ul style="list-style-type: none"> <li>● PAN, Current income tax return, Professional Tax and Service Tax registration certificate, VAT registration certificate, Provident Fund (P.F.) Registration certificate, ESI code / workmen Compensation Act and Trade license as applicable.</li> <li>● Work order copy with amount of work executed and scope of work.</li> </ul>

	<ul style="list-style-type: none"> <li>● The proof of execution of work order i.e., Performance certificate / work completion certificate issued from end user / customer.)</li> <li>(ii) Adequacy of the proposed methodology and work plan in responding to the Terms of Reference:             <ul style="list-style-type: none"> <li>a) Technical approach and methodology [10]</li> <li>b) Work plan [5]</li> <li>c) Organization and staffing [5]</li> </ul> <p style="text-align: right;">Total points for criterion (ii): <b>[20]</b></p> </li> <li>(iii) Key professional staff qualifications and competence for the assignment:             <ul style="list-style-type: none"> <li>1) Engineer for NDT in Boiler / Turbine Area [6]</li> <li>2) Engineer for NDT in Boiler / Turbine Area [6]</li> <li>3) Engineer for Test of Hanger &amp; Piping [6]</li> <li>4) Engineer for Test of Generator &amp; Exciter [6]</li> <li>5) Engineer for Test of Civil &amp; Structure [6]</li> </ul> <p style="text-align: right;">Total points for criterion (iii): <b>[30]</b></p> <p>The number of points (weighted rating) to be assigned to each of the above positions or Groups (within Group equal weight will be given for each member rating) shall be determined considering the following three sub-criteria and relevant percentage weights:</p> <ul style="list-style-type: none"> <li>1) General qualifications                 <ul style="list-style-type: none"> <li>a) <i>Educational Qualification</i> [20%]</li> <li>b) <i>Years of relevant Experience</i> [25%]</li> </ul> <p style="text-align: right;"><i>Experience as RLA Consultant of Coal Fired Power Station</i> [45%]</p> </li> <li>2) Adequacy for the assignment [<i>Experience as RLA study of Coal Fired Power Station</i>]                 <ul style="list-style-type: none"> <li>a) Size and number of <i>Coal Fired Power Station</i> [10]</li> <li>b) Years of experience on similar works [45]</li> </ul> <p style="text-align: right;">[55%]</p> </li> </ul> <p style="text-align: right;">Total weight: 100%</p> </li> </ul>
	<p style="text-align: right;">Total points for the five criteria: 100</p> <p>The minimum technical score St required to pass is: <u>80</u> Points</p>
<p><b>5.3</b></p>	<p>Deleted</p>

<b>5.6</b>	<p>The single currency for price conversions is: Indian Rupees</p> <p>The source of official selling rates is: State Bank of India [SBI] B.C. Selling rate of Exchange.</p> <p>The date of exchange rates is: the last date for submission of proposals indicated in Clause 4.5 of Data Sheet.</p>
<b>5.7</b>	Deleted
<b>6.1</b>	<p>Expected date and address for contract negotiations:          Within 10 days from the date of opening of financial proposal.          GM (M&amp;C)          Address: <b>Bidyut Unnayan Bhaban</b>  <b>Plot No. 3/C, LA – Block, Sector – III,</b>  <b>Salt Lake City, Kolkata 700 098</b></p>
<b>7.2</b>	Expected date for commencement of consulting services: Within seven (07) working days from the date of signing of contract.

### **Section 3. Technical Proposal - Standard Forms**

*[Comments in brackets [ ] provide guidance to the shortlisted Consultants for the preparation of their Technical Proposals; they should not appear on the Technical Proposals to be submitted.]*

Refer to Reference Paragraph 3.4 of the Data Sheet for format of Technical Proposal to be submitted, and paragraph 3.4 of Section 2 of the RFP for Standard Forms required and number of pages recommended.

- TECH-1 Technical Proposal Submission Form
- TECH-2 Consultant's Organization and Experience
  - A Consultant's Organization
  - B Consultant's Experience
- TECH-3 Comments or Suggestions on the Terms of Reference and on Counterpart Staff and Facilities to be Provided by the Client
  - A On the Terms of Reference
  - B On the Counterpart Staff and Facilities
- TECH-4 Description of the Approach, Methodology and Work Plan for Performing the Assignment
- TECH-5 Team Composition and Task Assignments
- TECH-6 Curriculum Vitae (CV) for Proposed Professional Staff
- TECH-7 Staffing Schedule
- TECH-8 Work Schedule



---

## Form TECH-1: Technical Proposal Submission Form

---

[Location, Date]

To: [Name and address of Client]

Dear Sirs:

We, the undersigned, offer to provide the consulting services for “Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDCCL along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW” in accordance with your Request for Proposal dated [Insert Date] and our Proposal. We are hereby submitting our Proposal, which includes this Technical Proposal, and a Financial Proposal sealed under a separate envelope.

We are submitting our Proposal in association with: [Insert a list with full name and address of each associated Consultant]<sup>1</sup>

We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification.

If negotiations are held during the period of validity of the Proposal, i.e., before the date indicated in Paragraph Reference 1.12 of the Data Sheet, we undertake to negotiate on the basis of the proposed staff. Our Proposal is binding upon us and subject to the modifications resulting from Contract negotiations.

We undertake, if our Proposal is accepted, to initiate the consulting services related to the assignment not later than the date indicated in Paragraph Reference 7.2 of the Data Sheet.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature [In full and initials]: \_\_\_\_\_  
 Name and Title of Signatory: \_\_\_\_\_  
 Name of Firm: \_\_\_\_\_  
 Address: \_\_\_\_\_

---

<sup>1</sup> [Delete in case no association is foreseen.]

## **Form TECH-2: Consultant's Organization and Experience**

---

### **A - Consultant's Organization**

*[Provide here a brief (two pages) description of the background and organization of your firm/entity and each associate for this assignment.]*

## B - Consultant's Experience

*[Using the format below, provide information on each assignment for which your firm, and each associate for this assignment, was legally contracted either individually as a corporate entity or as one of the major companies within an association, for carrying out consulting services similar to the ones requested under this assignment. Use 20 pages.]*

Assignment name:	Approx. value of the contract (in current Rupee value):
Country: Location within country:	Duration of assignment (months):
Name of Client:	Total N <sup>o</sup> of staff-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current Rupee value):
Start date (month/year): Completion date (month/year):	N <sup>o</sup> of professional staff-months provided by associated Consultants:
Name of associated Consultants, if any:	Name of senior professional staff of your firm involved and functions performed (indicate most significant profiles such as Project Director/Coordinator, Team Leader):
Narrative description of Project:	
Description of actual services provided by your staff within the assignment:	

Firm's Name: \_\_\_\_\_

**Form TECH-3: Comments and Suggestions on the Terms of Reference and on Counterpart Staff and Facilities to be Provided by the Client**

---

**A - On the Terms of Reference**

*[Present and justify here any modifications or improvement to the Terms of Reference you are proposing to improve performance in carrying out the assignment (such as deleting some activity you consider unnecessary, or adding another, or proposing a different phasing of the activities). Such suggestions should be concise and to the point, and incorporated in your Proposal.]*

## **B - On Counterpart Staff and Facilities**

*[Comment here on counterpart staff and facilities to be provided by the Client according to Paragraph Reference 1.4 of the Data Sheet including: administrative support, office space, local transportation, equipment, data, etc.]*

---

## Form TECH-4: Description of Approach, Methodology and Work Plan for Performing the Assignment

---

(For small or very simple assignments the Client should omit the following text in *Italic*)

*[Technical approach, methodology and work plan are key components of the Technical Proposal. You are suggested to present your Technical Proposal (50 pages, inclusive of charts and diagrams) divided into the following three chapters:*

- a) Technical Approach and Methodology,*
- b) Work Plan, and*
- c) Organization and Staffing,*

*a) Technical Approach and Methodology. In this chapter you should explain your understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should highlight the problems being addressed and their importance, and explain the technical approach you would adopt to address them. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.*

*b) Work Plan. In this chapter you should propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR and ability to translate them into a feasible working plan. A list of the final documents, including reports, drawings, and tables to be delivered as final output, should be included here. The work plan should be consistent with the Work Schedule of Form TECH-8.*

*c) Organization and Staffing. In this chapter you should propose the structure and composition of your team. You should list the main disciplines of the assignment, the key expert responsible, and proposed technical and support staff.]*

## Form TECH-5: Team Composition and Task Assignments

---

<b>1. Professional Staff</b>				
Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned

<b>2. Support Staff</b>				
Name of Staff	Firm	Area of Expertise	Position Assigned	Task Assigned

---

## Form TECH-6: Curriculum Vitae (CV) for Proposed Professional Staff

---

**1. Proposed Position** *[only one candidate shall be nominated for each position]:* \_\_\_\_\_

**2. Name of Firm** *[Insert name of firm proposing the staff]:* \_\_\_\_\_

\_\_\_\_\_

**3. Name of Staff** *[Insert full name]:* \_\_\_\_\_

**4. Date of Birth:** \_\_\_\_\_ **Nationality:** \_\_\_\_\_

**5. Education** *[Indicate college/university and other specialized education of staff member, giving names of institutions, degrees obtained, and dates of obtainment]:* \_\_\_\_\_

\_\_\_\_\_

**6. Membership of Professional Associations:** \_\_\_\_\_

\_\_\_\_\_

**7. Other Training** *[Indicate significant training since degrees under 5 - Education were obtained]:* \_\_\_\_\_

\_\_\_\_\_

**8. Countries of Work Experience:** *[List countries where staff has worked in the last ten years]:* \_\_\_\_\_

\_\_\_\_\_

**9. Languages** *[For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing]:* \_\_\_\_\_

\_\_\_\_\_

**10. Employment Record** *[Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.]:*

From [Year]: \_\_\_\_\_ To [Year]: \_\_\_\_\_

Employer: \_\_\_\_\_

Positions held: \_\_\_\_\_



<p><b>11. Detailed Tasks Assigned</b></p> <p><i>[List all tasks to be performed under this assignment]</i></p>	<p><b>12. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned</b></p> <p><i>[Among the assignments in which the staff has been involved, indicate the following information for those assignments that best illustrate staff capability to handle the tasks listed under point 11.]</i></p> <p>Name of assignment or project: _____</p> <p>Year: _____</p> <p>Location: _____</p> <p>Client: _____</p> <p>Main project features: _____</p> <p>Positions held: _____</p> <p>Activities performed: _____</p>
--	--

**13. Certification:**

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.



\_\_\_\_\_ Date: \_\_\_\_\_  
*[Signature of staff member or authorized representative of the staff]* *Day/Month/Year*

Full name of authorized representative: \_\_\_\_\_

### Form TECH-7: Staffing Schedule<sup>1</sup>

N°	Name of Staff	Staff input (in the form of a bar chart) <sup>2</sup>													Total staff-month input			
		1	2	3	4	5	6	7	8	9	10	11	12	n	Home	Field <sup>3</sup>	Total	
<b>Foreign</b>																		
1		[Home]																
		[Field]																
2																		
3																		
n																		
													<b>Subtotal</b>					
<b>Local</b>																		
1		[Home]																
		[Field]																
2																		
n																		
													<b>Subtotal</b>					
													<b>Total</b>					

- 1 For Professional Staff the input should be indicated individually; for Support Staff it should be indicated by category (e.g.: draftsmen, clerical staff, etc.).
- 2 Months are counted from the start of the assignment. For each staff indicate separately staff input for home and field work.
- 3 Field work means work carried out at a place other than the Consultant's home office.

 Full time input  
 Part time input

### Form TECH-8 Work Schedule

N°	Activity <sup>1</sup>	weeks <sup>2</sup>												
		1	2	3	4	5	6	7	8	9	10	11	12	n
1	Study for up-gradation of existing cooling system of Stage I units													
2	Study for achievement of present environment norms (SPM, SO <sub>x</sub> , NO <sub>x</sub> & Hg) using coal of GCV 4000 (Design) – 3300(Worst) kcal/kg													
3	Condition Assessment of existing Civil foundations													
4	Residual Life Assessment of Turbine & Condenser													
5	Residual Life Assessment of Boiler													
6	Residual Life Assessment of Generator & Exciter													
7	RLA/ CA & Stress Analysis of Critical Piping along with Hangers & Supports													
8	Performance Test of Boiler													
9	Performance Test of Mill, Fans, etc													
10	Performance Test of existing ESP, APH													
11	Performance Test of Turbine													
12	Performance Test of BFP, CEP, etc													
13	Assessment of existing Control & Instrumentation System, Electrical System													
14	Techno-commercial viability study													
15	Final Test Report and Recommendation													
n														

- 1 Indicate all main activities of the assignment, including delivery of reports (e.g.: inception, interim, and final reports), and other benchmarks such as Client approvals. For phased assignments indicate activities, delivery of reports, and benchmarks separately for each phase.
- 2 Duration of activities shall be indicated in the form of a bar chart.

## Section 4. Financial Proposal - Standard Forms

*[Comments in brackets [ ] provide guidance to the shortlisted Consultants for the preparation of their Financial Proposals; they should not appear on the Financial Proposals to be submitted.]*

Financial Proposal Standard Forms shall be used for the preparation of the Financial Proposal according to the instructions provided under para. 3.6 of Section 2. Such Forms are to be used whichever is the selection method indicated in para. 4 of the Letter of Invitation.

FIN-1 Financial Proposal Submission Form

FIN-2 Summary of Costs

FIN-3 Breakdown of Costs by Activity

FIN-4 Breakdown of Remuneration

FIN-5 Reimbursable expenses

## Form FIN-1: Financial Proposal Submission Form

---

[Location, Date]

To: [Name and address of Client]

Dear Sirs:

We, the undersigned, offer to provide the consulting services for “Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDC along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW” in accordance with your Request for Proposal dated [Insert Date] and our Technical Proposal. Our attached Financial Proposal is for the sum of [Insert amount(s) in words and figures<sup>1</sup>]. The amount of the local indirect taxes, as listed in Clause 1.8 of SCC is estimated and shown in the summary separately.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. before the date indicated in Paragraph Reference 1.12 of the Data Sheet.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely “Prevention of Corruption Act, 1988.

Commissions and gratuities paid or to be paid by us to agents relating to this Proposal and Contract execution, if we are awarded the Contract, are listed below<sup>2</sup>:

Name and Address of Agents	Amount and Currency	Purpose of Commission or Gratuity
_____	_____	_____
_____	_____	_____
_____	_____	_____

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature [In full and initials]: \_\_\_\_\_

Name and Title of Signatory: \_\_\_\_\_

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

---

<sup>1</sup> Amounts must coincide with the ones indicated under Total Cost of Financial proposal in Form FIN-2.

- 
- 2 If applicable, replace this paragraph with: “No commissions or gratuities have been or are to paid by us to agents relating to this Proposal and Contract execution.”

## Form FIN-2: Summary of Costs

Sl. No.	Item	Costs [Indicate Local Currency]
1	Part A. For Feasibility of running the existing units as mentioned in Cl. 2.1.1 of Section 5. Terms of Reference	
2	Part B. For RLA/ CA/ Integrity Assessment of Boiler, Turbine, etc and Stress Analysis of Critical piping and Hangers as mentioned in Cl. 2.1.2 of Section 5. Terms of Reference	
3	Part C. For Performance Test as mentioned in Cl. 2.1.3 of Section 5. Terms of Reference	
	Total Costs of Financial Proposal	

Item include both test and report for each activity

Indicate the total costs, net of local taxes, to be paid by the Client. Such total costs must coincide with the sum of the relevant Subtotals indicated in all Forms FIN-3 provided with the Proposal.

Local Taxes and Duties	Local indirect Taxes and Duties as defined in Foot Note 3 [excluding service tax] for Lump-Sum Contract	
	Service tax payable in India as defined in Foot Note 3 for Lump-Sum Contract	

---

Total Costs (Including taxes and Duties)	
--	--

- 1 Indicate in Indian currency.
- 2 Indicate the total costs, net of local indirect taxes, as listed in SCC clause 1.8, and to be paid by the Client in each currency [Taxes are to be indicated in item 2]. Such total costs must coincide with the sum of the relevant Subtotals indicated in all Forms FIN-3 provided with the Proposal.
3. a) The client shall reimburse Service Tax payable in India as per applicable Law. The Consultant shall register itself for service tax with appropriate authority in India & shall provide the registration Number to the client.
- b) Tax will be deducted at source as per the prevailing Income Tax Rules.



### Form FIN-3: Breakdown of Costs by Activity<sup>1</sup>

Sl.No.	Activity	Costs <i>[Indicate Local Currency]</i>
1	Study for up-gradation of existing cooling system of Stage I units	
2	Study for achievement of present environment norms (SPM, SO <sub>x</sub> , NO <sub>x</sub> & Hg) using coal of GCV 4000 (Design) – 3300(Worst) kcal/kg	
3	Condition Assessment of existing Civil foundations	
4	Residual Life Assessment of Turbine & Condenser	
5	Residual Life Assessment of Boiler	
6	Residual Life Assessment of Generator & Exciter	
7	RLA/ CA & Stress Analysis of Critical Piping along with Hangers & Supports	
8	Performance Test of Boiler	
9	Performance Test of Mill, Fans, etc	
10	Performance Test of existing ESP, APH	
11	Performance Test of Turbine	
12	Performance Test of BFP, CEP, etc	
13	Assessment of existing Control & Instrumentation System, Electrical System	
14	Techno-commercial viability study	
15	Final Test Report and Recommendation	
	<b>total</b>	

---

	Local Indirect Taxes and Duties payable in India	
	Consultancy Service Tax payable in India	
	<b>TOTAL</b>	

- 1 Form FIN-3 shall be filled for the whole assignment. The sum of the relevant activity of all Forms FIN-3 provided must coincide with the Total Costs of Financial Proposal indicated in Form FIN-2.
- 2 Names of activities (phase) should be the same as, or correspond to the ones indicated in the second column of Form TECH-8.
- 3 Short description of the activities whose cost breakdown is provided in this Form.



## Form FIN-4: Breakdown of Remuneration<sup>1</sup>

(Information to be provided in this Form shall only be used to establish payments to the Consultant for possible additional services requested by the Client)

Name <sup>2</sup>	Position <sup>3</sup>	Staff-month Rate <sup>4</sup>
<b>Foreign Staff</b>		
		[Home]
		[Field]
<b>Local Staff</b>		

- 1 Form FIN-4 shall be filled in for the same Professional and Support Staff listed in Form TECH-7.
- 2 Professional Staff should be indicated individually; Support Staff should be indicated per category (e.g.: draftsmen, clerical staff).
- 3 Positions of the Professional Staff shall coincide with the ones indicated in Form TECH-5.
- 4 Indicate separately staff-month rate and currency for home and field work for foreign staff only.

---

## Form FIN-5: Breakdown of Reimbursable Expenses

---

(Information to be provided in this Form shall only be used to establish payments to the Consultant for possible additional services requested by the Client)

---

N°	Description <sup>1</sup>	Unit	Unit Cost <sup>2</sup>
	Per diem allowances	Day	
	International flights <sup>3</sup>	Trip	
	Miscellaneous travel expenses	Trip	
	Communication costs between [ <i>Insert place</i> ] and [ <i>Insert place</i> ]		
	Drafting, reproduction of reports		
	Equipment, instruments, materials, supplies, etc.		
	Shipment of personal effects	Trip	
	Use of computers, software		
	Laboratory tests.		
	Subcontracts		
	Local transportation costs		
	Office rent, clerical assistance		

1 Delete items that are not applicable or add other items according to Paragraph Reference 3.6 of the Data Sheet.

2 Indicate unit cost and currency.

3 Indicate route of each flight, and if the trip is one- or two-ways.

## Section 5. Terms of Reference

### Feasibility study of Stage 1 Bandel Thermal Power Station, WBPDCCL along with RLA study of Boiler, Turbine & Generator, Critical Piping of one Unit followed by Performance Study of the Unit of 60MW (De-rated Capacity) against original installed Capacity of 82.5 MW

#### 1. Back Ground:

Bandel Thermal Power Station (BTPS) is the first Reheat Regenerative type Pulverised Coal fired Thermal Power Station of India. The Plant was supplied and commissioned as a Turnkey Package under Consultancy of M/s Kuljian Corporation, USA during the year 1965-66.

On behalf of Government of West Bengal, India, M/s Kuljian Corporation, entrusted the Design, Engineering, Erection & commissioning of Steam Generator & its Auxiliaries with M/s BABCOCK & WILCOX, USA, vide Contract No. 334-0399 RB-399 under M/s Kuljian Corporation's Job No. K2171 dated 18th December 1963 & Specification No 1B.

Similar Job for Turbine & its auxiliaries was entrusted with M/s Westinghouse Electric International Company, USA.

The Plant installed with rated Generation Capacity of 330MW (4x82.5MW) and with peaking Generation capacity of each Unit as 87.5MW (for 2hrs.). The Unit No.1, 2, 3 & 4 were commissioned respectively on 4th September'1965, 18th October'1965, 17th February'1966 and 3rd August'1966.

Since inception Units are continuously generating without any Renovation & Modernization. Running hours of units since 1st Synchronisation till 31<sup>st</sup> October 2015 are as detailed below.

Unit No.1	:	312442 hrs.
Unit No.2	:	332726 hrs.
Unit No.3	:	323698 hrs.
Unit No.4	:	313013 hrs.

Authority (WBSEB board) decided to restrict the rated Generation capacity of the Units at 80MW from April' 1974, then to 71MW from April, 1978. Subsequently during late eighties, fly ash collection system of the de-rated Units was augmented by introducing ESP in place of originally installed Mechanical Dust Collectors. Such measure was taken to meet the then applicable environmental norms enforced by Mo E&F. Environmental norm was further tightened during late nineties. However, de-rated 71MW Units could not maintain such stringent norms with its dilapidated auxiliary equipment viz. Mill drive Motors, PA Fans & its drive Motors, Boiler Feed Pumps, etc. and also due to scarcity of design grade coal.

As a result present owner (WBPDCCL) decided to de-rate the Unit capacity further and accordingly, took up the issue with CEA. Subsequently in the year 2006, CEA de-rated the Units' capacity to 60 MW each vide letter No CEA/PLG/DMLF/(DM)/513/2006/783-820 dated 28/12/2006. Till now Units are running with its latest de-rated capacity, i.e., 60 MW.

Government of India has received a loan from the International Bank for Reconstruction and Development (Loan No. 7687-IN) and grant from the Global Environment Facility (GEF) (Grant No. TF094676) towards the cost of the 'India Coal Fired Generation Rehabilitation Project'. A part of the GEF grant for technical assistance will be utilized for RLA study of one unit of Stage 1 of Bandel Thermal Power Station of WBPDCCL.

## 2. OBJECTIVE OF STUDY:

2.1 The purpose of the study is -

2.1.1 **Feasibility** of running the existing units complying the following –

- (a) MoEF Notification S.O. 3305 (E) dated 7<sup>th</sup> December, 2015
- (b) Using the existing Boiler, Turbine, Generator, Fans, Mills, ESP, Boiler Feed Pumps (BFP), Condensate Extraction Pumps (CEP), etc
- (c) Full load operation (60 MW) with 2 mills in service and 1 mill stand by
- (d) Revival of Original capacity of 82.5 MW

2.1.2 Detailed **Residual Life Assessment (RLA)**/ Condition Assessment (CA) / Integrity Assessment of Boiler, Turbine, Condenser and Generator along with Exciter, Critical piping and Hangers. Also Stress Analysis of Critical piping and Hangers.

2.1.3 **Performance Test** of existing Boiler, Turbine, BFP, CEP, Air Pre Heater, Control & Instrumentation System, etc.

### Terms & Conditions

1. The recommendation for Renovation & Modernization/ Life Extension work shall cover all areas/ limitations being faced by unit in order to achieve rated capacity on sustainable basis taking care of specific problems of the unit based on performance history, plant operating conditions, records of maintenance, modification work done, and of inherent/ generic deficiencies being experienced by the operating personnel for the last 5 years of operation.
2. Recommendation must include, but not limited to, various feasible engineering solution along with alternative option of installing a new plant of similar capacity so as to facilitate the Owner to arrive at viable strategic plan complying current statutory environment norm.
3. The Consultant shall clearly declare all/ any deviations, variations from the specified stipulations in Form Tech-3 at Section 3. Technical Proposal of RFP, irrespective of the fact that such deviations/ variation may be standard practice or possible interpretation of the specifications by the Consultant. In case on explicit specific deviations is taken by the bidder in that Form, it will be construed that the Consultant has fully understood the intent and requirements of the specification and shall completely comply to the overall objective specified in Clause 2.1
4. Information on the plant and system contained in this specification shall not be construed in any manner, whatsoever, as to limit the scope of work of the consultant for making comprehensive recommendations for meeting the overall objective specified in Clause 2.1. It is the responsibility of the Consultant to acquaint himself with site conditions before submission of proposal. Consultant shall familiarize himself with the present status of plant, statutory regulations, working conditions, etc.

### 3. SCOPE OF WORK:

Part A. For Feasibility of running the existing units as mentioned in Cl. 2.1.1

1. Study for up-gradation of existing cooling system of Stage I units following MoEF Notification S.O. 3305 (E) dated 7<sup>th</sup> December, 2015 considering the available land of BTPS
2. The proposed cooling system shall also earmark land requirement for unit #5.
3. Achievement of present environment norms (SPM, SO<sub>x</sub>, NO<sub>x</sub> & Hg) following MoEF Notification S.O. 3305 (E) dated 7<sup>th</sup> December, 2015 using coal of GCV 4000 (Design) – 3300(Worst) kcal/kg
4. Condition Assessment of existing Civil foundations of the unit including all Steel structures, Chimney, etc.
5. Techno-commercial viability with respect to prevailing tariff

Part B. For RLA/ CA/ Integrity Assessment of Boiler, Turbine, etc and Stress Analysis of Critical piping and Hangers as mentioned in Cl. 2.1.2

1. Residual Life Assessment of Turbine & Condenser
2. Residual Life Assessment of Boiler
3. Residual Life Assessment of Generator & Exciter
4. RLA/ CA & Stress Analysis of Critical Piping along with Hangers & Supports

Recommendation should include System components life expectancy with sufficient supporting documents/ Report of all tests in original for the RUN/ REPAIR / REPLACE decision of the Consultant.

Part C. For Performance Test as mentioned in Cl. 2.1.3

1. Performance Test of Boiler
2. Performance Test of Mill, Fans, etc
3. Performance Test of existing ESP, APH
4. Performance Test of Turbine
5. Performance Test of BFP, CEP, etc
6. Assessment of existing Control & Instrumentation System, Electrical System  
Test Report and Recommendation for Renovation and Modernization.

In situ testing must be taken up in concurrence/ in presence of WBPDCCL engineer.

### 4. Execution Methodology:

The Technical Study program would be carried out along the following lines and in phases as follows:

#### **PHASE I – DATA ANALYSIS for carrying out Part A & B study mentioned in Cl.3.**

The Consultant shall study the available plot plan, equipment specifications and drawings, design operations data, Operating logs, P&ID, support details, water chemistry etc.



**PHASE II –SITE INSPECTION for carrying out Part A & Part B study mentioned in Cl.3**

Site inspection shall be carried out in phases.

Requisite readings and conditions during normal running of the machine may be obtained in first phase.

Detailed inspection may be done in shutdown.

The team of experts shall visit site for testing's and inspections, & to discuss with the plant operations people to collect details of the various operational/maintenance parameters.

**PHASE III –SUBMISSION OF DRAFT FEASIBILITY STUDY REPORT as per Part A study mentioned in Cl.3 AND DRAFT DETAILED ANALYSIS REPORT FOR RLA / SPA /STRESS ANALYSIS as per Part B study mentioned in Cl.3 with recommendations for run/repair/replace.**

**PHASE IV – SITE INSPECTION for carrying out Part C study mentioned in Cl.3**

Inspection shall be done as and when the unit will be in running condition after overhauling.

**PHASE V –SUBMISSION OF FINAL REPORT**

**5. TIME SCHEDULE & COMPLETION PERIOD:**

**TIME CHART (in days)**

**Time for Part A study as mentioned in Cl.3**

Plant Study	Preparation & Submission of Draft Report by Consultant	Comments from WBPDCCL on Draft Report	Preparation & Submission of Final Report by Consultant	Total Time for Part A study
Action 1	Action 2	Action 3	Action 4	Action 5
10	30	15	15	70

**Time for Part B study as mentioned in Cl.3**

Pre Shutdown Study	Shut Down Study	Preparation & Submission of Draft Report by Consultant	Comments from WBPDCCL on Draft Report	Preparation & Submission of Final Report by Consultant	Total Time for Part B study
Action 6	Action 7	Action 8	Action 9	Action 10	Action 11
10	30	30	10	15	95

**Time for Part C study as mentioned in Cl.3**

Performance Study	Preparation & Submission of Draft Report by Consultant	Comments from WBPDCCL on Draft Report	Preparation & Submission of Final Report by Consultant	Total Time for Part C study
Action 12	Action 13	Action 14	Action 15	Action 16
5	30	10	15	60

- Action 6 - Pre Shutdown activities i.e., hot walk down at site.
- Thickness survey report of Boiler Pressure Part, etc shall be handed over immediately for taking measure during shut down.
- Preliminary Report/ finding based on Action1, Action 6 and Action 7 shall be handed over within 7 working Report.

Total Time for study is around 140 Days (Part A will be parallel to Part B and Part C. Action 4, 10 & 15 are considered parallel.)

#### 6. INPUTS TO BE PROVIDED BY WBPDCCL.

1. Work shop facilities for any machining available in plant.
2. Over head cranes in all three shifts. Operators will be provided if available.
3. Office and store space.
4. Accommodation on chargeable basis at Guest House if available.
5. Electricity, water and compressed air.
6. Condenser in cleaned condition along with tube plates and cleaned tubes.
7. Drawings and data as available.
8. Boiler Pressure Part in cleaned condition
9. Necessary CIB Approval for study of Boiler, if required. Statutory charges for CIB approval will be paid by WBPDCCL. But all other necessary arrangement, supports & documentation required for CIB approval is the responsibility of the agency.

### 7. Detailed Scope of Work:

#### For Study under Cl. 2.1.1

##### 7.1. Civil & Structures

###### 7.1.1 Remaining life assessment

(i) Consultant should perform tests as indicated below, in addition to other tests if deemed necessary.

for steel and concrete structures the tests shall be carried out as per requirement of the area of the structure particularly in the area in which visual observations indicate damages/ distress. The results are then considered on the whole for condition assessment and residual life assessment.

Item Description	Type of test for RLA
Concrete works (general)	VI, CST, HT
Machine foundation	VI, CST, HT, CMT, UPVT
Steel Structures	VI, DPT, TM
Lining of Chimney	VI

#### LEGENDS:

VI- VISUAL INSPECTION

UPVT – ULTRASONIC PULSE VELOCITY TEST

TM – THICKNESS MEASUREMENT

DPT- DYE PENETRATION TEST

CMT – COVER METER TEST

HT – HAMMER TEST

CST- CORE SAMPLE TEST (including testing sample for crushing strength, pH, Cl, SO<sub>4</sub>, Carbonation, etc)

7.1.2 Consultant should assess the structural stability of steel and concrete support structures and foundations with the overall objectives of the study.

- a. The following load bearing and critical civil structure/ foundations (concrete and steel work) shall be studied considering the type of tests mentioned in Cl 7.8.1. The tests as specified shall be carried out on all the cracks/ distress areas observed.

**The list given in (ii), (iii) is indicative one. Consultant shall give detail test considered in Form Tech-3 at Section 3.**

- |       |  |                              |
|-------|--|------------------------------|
| b.    | Turbine Generator & Auxiliaries  | Quantity for each Equipment  |
| i.    | TG Foundation  | 1 no for each test specified |
| ii.   | BFP foundation   | 2 nos                        |
| iii.  | TG House Column Foundation   | random for 2 nos.            |
| c.    | Boiler & Auxiliaries   | Quantity for each Equipment  |
| i.    | Boiler supporting structure  | Minimum 2% per member        |
| ii.   | Boiler Column Foundation   | random for 2 nos.            |
| iii.  | Mill foundation  | 4 nos.                       |
| iv.   | PA Fan foundation  | 2 nos.                       |
| v.    | FD Fan Foundation  | 2nos..                       |
| vi.   | ID Fan Foundation  | 2nos.                        |
| vii.  | Bottom ash hopper structure  | Minimum 2% per member        |
| viii. | Bunker bay supporting structure<br>including bunker supporting structure | Minimum 2% per member        |
| ix.   | Bunker hopper  | 4 nos.                       |
| x.    | Bunker Column Foundation   | random for 2 nos.            |
| xi.   | Duct supporting structure  | Minimum 2% per member        |
| xii.  | ESP area column foundation   | random for 2 nos             |
| xiii. | Chimney shell, lining  | visual inspection.           |

7.1.3 The Consultant shall examine the super structure of the equipment of Unit #1 and suggest addition/ modifications required, if any to make the structure earth quake resistant as per latest standards.

Based on the above studies, if any deficiency is observed, Contractor may have to carry out detailed investigation/ critical examination to assess extent of deterioration in structural joints and concrete members including bolts and nuts in all examined structures

### **For Study under Cl. 2.1.2**

#### **7.2 RLA & Stress Analysis of Critical Pipe**

WBPDCCL will hand over all available documents related to critical pipe. Consultant has to prepare further document if required for the purpose.

#### **Critical Piping System**

- a. Main Steam Line.(MSL) , Cold Reheat Line (CRH), Hot Reheat Line (HRH)
- b. Extraction line from 1 to 5.
  - EXT-1(HPT 11<sup>th</sup> stage/ CR) 32kg/cm<sup>2</sup> to HPH 1
  - EXT-2(IPT 10<sup>th</sup>stage), 11 kg/cm<sup>2</sup>to HPH 2
  - EXT-3(IPT 17<sup>th</sup>stage) to Deareator
  - EXT-4(IPT 22<sup>nd</sup>stage),1.6 kg/cm<sup>2</sup> to LPH heater 2
  - EXT-5(LPT 4<sup>th</sup> stage),0.32 kg/cm<sup>2</sup> to LPH # 1
- c. Boiler Feed Discharge Line (BFD)

#### **Scope of Work for RLA-**

CREEP AND FATIGUE AND PLASTIC DEFORMATION ANALYSIS: Analysis is to be done by different NDT test at different points of Critical Pipe as stated bellow

- a) Bends
- b) Welding
- c) Straight portion

Different points are to be selected on the basis of different service condition and extent of damage found during testing.

To ensure CREEP, FATIG & ULTIMATE strength of the pipe is safe

#### **Scope of Work for Stress Analysis**

Hot Walk Survey

## Cold Walk Survey

### Minimum intent of Tests for Critical Pipe is as follows-

- (i) Record of Piping Anchors Details including their present health conditions after proper cleaning and DPT for any crack detection. Shall be done on random basis for at least 5-10 spots.
- (ii) Dye Penetrate Test of 10 % attachment welds of hanger & support lugs and 10% stubs & branch-offs of the piping systems
- (iii) Ultra Sonic Testing: 10% weld joints in total piping system. On random basis.
- (iv) OD and Thickness measurement: Should be carried out at all Bends & Tees and 18 different spots.
- (v) Metallographic and Replication & Hardness:

Should be carried out at all bends & tees, circumferential weld joints and straight pipes at an interval of maximum 15 mtrs covering entire piping as per scope of work. Total no of spots will be minimum 35 nos.

### **7.3 RLA of turbine:**

#### **7.3.1 Scope of work of RLA study of Turbine( make Westinghouse):**

The scope of work is restricted to the R.L. A. and condition assessment of main turbine & its auxiliaries.

(Details as per following)

The party shall employ latest and all necessary methodology for the execution of job.

List of equipment covered is as following.

#### TURBINE

##### **1. Main casing (top and bottom)**

- Parting planes
- Nozzle boxes
- Curtis chamber groove
- Liner/Diaphragm grooves
- Parting plane bolts/grooves
- Extraction pipes
- Cross over pipes
- Control/ stop valves
- Governing system

##### **2. Rotor**

- Boroscopic hole checking
- Blades
- Blade roots (last two stages)
- Curtis stage collar
- Brgs/ journal

Gland seals collars  
 Oil seal journal  
 Natural frequency test of blades (Last two stages)

### 3. Auxiliaries

Condenser

NOTE: Detailed scope is as per **Annexure –I**

#### 7.3.2 ANNEXURE–I: RESIDUAL LIFE ASSESSMENT/CONDITION ASSESSMENT FOR TURBINE

RLA of all the parts in detail as per mentioned scope through the above mentioned procedures should be done to assess the remaining life span of the equipment. Number of points selected for testing should be as mutually agreed up on and selection of points should be so to assess the condition.

The various inspection procedures at different points is as per following:

SI. No.	Region/component	Recommended Tests	No. of Points (indicative)
1.	<b>Turbine internals</b>		
	Turbine casings	1,3,5,6,	As needed
	Liners	1,3,5,6,	5
	Diaphragms	1,3,5,6,	15
	Gland boxes	1,3,5, 6,7	3
	Liners/Diaphragm grooves	1,3,4	8
	Parting plane studs and capnuts	1,4,6,7	24
	Parting plane fasteners of High temp zone	1,4,5,6,7	
	Nozzle box	1,3,5,6	3
	Extraction lines' joints	1,2, 3,8	6
	Keys and keyways	1,4	6
2.	<b>Rotor</b>		
	Surface	1,3,5,7,10,11	As needed
	Moving blades	1,3,5,12	As needed
	Shrouds	1,3,4	As needed
	Blade roots	1,2,3	As needed
	Rotor bore	1,13	1
	Journal	1,2,4,7	3
	Curties disc	1,3,5,11	4
	Stellited portions	1,4	As needed
	Coupling bolts, sleeves and nuts	1,2,6,7	12
3.	<b>Valves(Stop and control valve)</b>		
	Valve chamber	1,3,4,5,6,	5
	Valve cone	1,2,4	5
	Spindle	1,2,4	5
	Seat	1,2,4	5
	Studs and cap nuts	1,4,6,7	20
4.	<b>Pipelines</b>		

	Cross over pipes	1,2,3,5,6,7,8,	12
	Pipe after valve 215	1,4,5,6,7,8	2
	T joint before C.Vs.	1,4,5,6,7,8	8
	Leak-off steam line	1,4,5,6,7	6
5.	<b>Auxiliaries</b>		
	Journal bearings/Pedestal &Brg. Housings	1,2,4,7	6
	Condenser tubes	9,11	5000
	Condenser shell	1,4,8	10
	Bellows	1	10

1. V.I VISUAL INSPECTION
2. U.T ULTRASONIC TESTING
3. M.P.I. MAGNETIC PARTICLE TESTING
4. L.P. LIQUID PENETRANT TEST
5. I.M. INSITU METALLOGRAPHY
6. H.M. HARDNESS MEASUREMENT
7. D.M. DIMENSIONAL MEASUREMENT
8. T.M. THICKNESS MEASUREMENT
9. E.C.T. EDDY CURRENT TESTING
10. S.A. STRESS ANALYSIS
11. C.A. CHEMICAL ANALYSIS
12. N.F.T. NATURAL FREQUENCY TEST
13. B.I. BOROSCOPIC INSPECTION

### 7.3.3. TEST PROCEDURES:

#### 7.3.5.1. NON DESTRUCTIVE TESTS

This includes all tests like U.T., D.P.T., M.P.I, Metallography, Eddy current test, Hardness, Chemical analysis etc. The selection of tests should be in parts as specified in annexure 1.

#### 7.3.5.2. DESTRUCTIVE TESTS

This includes deposit chemical analysis test of condenser tube.

#### 7.3.5.3. VISUAL INSPECTIONS

This includes physical examination of parts for cracks/ bulges/ breakages/erosion/corrosion/ pitting etc. All /any deposits found during above inspection should be sent for Chemical analysis. All external inspection defects should be supported by photographs clearly indicating the defective area. Boroscopic inspection for Steam line before E.S.V. should be done for detecting internal cracks/deposits.

### 7.3.4. Note:

7.3.4.1. Number of points for INSITU METALLOGRAPHY checking is approx.60 nos. Locations to be mutually agreed upon.

7.3.4.2. All the tests mentioned in ANNEXURE–I are not exhaustive. Any other test needed for successful evaluation of RLA has to be done by the party within the same cost.

### 7.3.5. STANDARDS TO FOLLOW for RLA of Turbine & Boiler also

1. ASME power test code for turbine – PTC 6 S
2. for steam condenser – PTC 12.2
3. ASME PTC 12.1 or heat exchangers
4. ASME – B 31.1 – 1995 POWER PIPING
5. ASNT –SNT-TC-1A Qualification and certification of NDT Personnel
  - ASTM E – 165 Test method for penetrant examinations
  - ASTM E-709 Standard guide for magnetic particle examination
  - ASTM A –275/A-275M Standard for M.P.E of steel forgings
  - ASTM E –114 Standard for pulse echo straight beam ultrasonic exam by contract method
  - ASTM E –587 Standard angle beam ultrasonic test by contract method
  - ASTM A-418 Practices for ultrasonic test for turbine /generator rotor forgings
  - ASTM E-1158 Standard guide for material selection and fabrication of reference blocks for the pulsed longitudinal wave ultrasonic exam of metals and metal alloy production material.
  - ASTM E-804 Calibration of ultrasonic test system by extra flat bottom hole sizes.
  - ASTM E-164 Standard for ultrasonic test of welding
  - ASTM E-7797 Standard for testing thickness by pulse echo method
  - ASTM E-309 Practices for Eddy current exam of steel tubular products using magnetic saturation
  - ASTM E-1030 Standard for radiographic test of metal castings
  - ASTM E-3032 Standard for radiographic test of WELDINGS
  - ASTM E-1351 Standard for production and evaluation of field metallographic replicas
  - ASTM E- 45 Standard practice for determining inclusion contact of steel
  - ASTM E-112 Test method for determining average grain size
  - ASTM E – 139 Practices for conducting creep, creep rupture and stress rupture tests of metallic materials
  - ASTM E- 1444 Standard for magnetic particle examination
  - ASTM A-472 Test methods for head stability of steam turbine shafts and rotor forgings
7. IEC 34 for rotating electrical machine code
8. VDE 0530 for rotating electrical machine code
9. BSS 4999 for rotating electrical machine code
10. BS 2757 for classification of insulating mater
11. IBR Guideline

## 7.4 RLA of Boiler

### 7.5.1 Test on Pressure Parts

Equipment	Areas	VE	UT	DM	DP	MP	UT	MT	HB	MA	VD	DA	MO
Boiler Drum & Drum Internals	Drum Internals	yes		yes	yes	yes	yes	yes				yes	



Equipment	Areas	VE	UT	DM	DPT	MPI	UT	MT	HB	MA	VDI	DA	MO
	Longitudinal and Circumferential welds including stub welds of safety valve discharge pipe, downcomer				yes	yes	yes						
	On random basis on the weld joints (on replica spots)								yes				
Water walls	Tubes	yes	yes	yes									
	On attachment welds (Burner zone, trough seal plate, scalloped bar welds, buck-stay attachment, welds in firing zone, other welds etc)				yes	yes							
	Just above burner areas								yes				
	Above 1 meter from top burner 4 no. of samples from each side											yes	
	Tubes from failure prone zone at least 4 nos									yes			
Economizer Coils	All tubes	yes											
	Tubes		yes	yes			yes						
	Critical attachment welds inside boiler – header				yes	yes							

Equipment	Areas	VE	UT	DM	DP	MP	UT	MT	HB	MA	VD	DA	MO
	stubs, hanger attachment etc												
	02 no of points at feed water inlet point				yes	yes							
Primary Superheater & Secondary Superheater I/L & O/L Panels	All coils	yes											
	Tubes		yes	yes					yes				
	Attachment welds near roof, crown plate welds, other attachment welds and all approachable dissimilar weld joint (DMW)				yes								
	All girding loops for checks of stress cracking						yes						
	At least 2 no. of samples from each superheater where the maximum tube metal temperature									yes			
Hanger Tubes	All Tubes	yes	yes	yes									
	Attachment weld & welds in the pent house				yes								
Radiant roof tubes, 2 <sup>nd</sup> pass roof & sat. screen	All Tubes	yes	yes	yes									
	Attachment weld				yes								
Economizer inlet & outlet	Both headers	yes		yes					yes				

Equipment	Areas	VE	UT	DM	DP T	MP I	UT	MT	HB	MA	VD I	DA	MO
headers link pipes from Eco outlet header to boiler drum Economiz er Recirculat ion line, Eco. Bypass line	All butt weld joints/ circumferential joints/ steam weld joints, attachment welds and stub joints				yes	yes	yes						
Bottom ring header &Downco mer	All Headers	y e s		yes					yes				
	All butt weld joints/ circumferential joints/ steam weld joints, attachment welds and stub joints				yes	yes	yes						
Primary & Secondary Superheat er inlet & outlet headers	All Headers	y e s		yes					yes		yes		
	All butt weld joints/ circumferential joints/ steam weld joints, attachment welds and stub joints				yes	yes	yes	yes					
Desuperh eater/ Attempera tor	All Headers	y e s		yes					yes				
	All butt weld joints/ circumferential joints/ steam weld joints, attachment				yes	yes	yes	yes					

Equipment	Areas	VE	UT	DM	DP T	MP I	UT	MT	HB	MA	VD I	DA	MO
	welds and stub joints												
MS pipe upto turbine stop valve	Entire pipe length	yes		yes					yes				
	All butt weld joints/ circumferential joints/ steam weld joints, attachment welds and stub joints				yes	yes	yes	yes					
Reheater I/L & O/L Panels	All coils	yes											
	Tubes		yes	yes					yes				
	Attachment welds near roof, crown plate welds, other attachment welds and all approachable dissimilar weld joint (DMW)				yes								
	All girding loops for checks of stress cracking						yes						
	At least 2 no. of samples from each superheater where the maximum tube metal temperature									yes			
Reheater I/L & O/L headers	All Headers	yes		yes					yes		yes		
	All butt weld joints/ circumferential joints/ steam				yes	yes	yes	yes					

Equipment	Areas	VE	UTT	DM	DPT	MPI	UT	MT	HB	MA	VDI	DA	MO
	weld joints, attachment welds and stub joints												
Sat. Screen I/L &O/L headers, Sat. Screen side wall I/L &O/L (06 no) headers	All Headers	yes		yes					yes		yes		
	All butt weld joints/ circumferential joints/ steam weld joints, attachment welds and stub joints				yes	yes	yes	yes					
Miscellaneous	Boiler Structures & floor frills	yes		yes	yes								
	Boiler Expansion	yes											
	All drain & vent lines	yes		yes					yes		yes		
	Hanger & Supports, Buckstay	yes											
	Expansion joints	yes											

**IBR approvals are in the scope of the vendors.**

LEGENDS:

VE- VISUAL EXAMINATION

UTT – ULTRASONIC THICKNESS MEASUREMENT

DM- DIMENSIONAL MEASUREMENT

DPT- DYE PENETRATION TEST

MPI- MAGNETIC PARTICLE INSPECTION

UT- ULTRASONIC TESTING

MT- METALLOGRAPHY REPLICA

HB- HARDNESS TEST

MA- METALLURGICAL ANALYSIS

VDI- VIDEOSCOPIIC INSPECTION

DA- DEPOSIT ANALYSIS

---

## MO- OXIDE MEASUREMENT

### 7.5 RLA of Generator& Exciter

#### 7.5.1 RLA of Main Generator ( Westinghouse make , 87.5 MW /13.8KV)

##### 7.5.1.1 PHYSICAL AND VISUAL INSPECTION OF GENERATORS

###### A. Stator winding:-

1. Stator wedges and bar vibration in stator bore:-Presence of any dust, greasy product or fretting product on stator bore and finding the cause of the same.
2. Stator bar insulation:- Video-scopic inspection of stator bar through ventilation ducts (particularly the end packets region) to evaluate the condition of insulation and to detect evidence of

a. Ground wall insulation partial discharge b. Mechanical wears of insulation

c. Any dust or grease buildup including deterioration of varnish quality, peeling and blistering of paint

d. Puffing or bulging of insulation

e. Insulation crack, aberration or migration f. Filler migration

g. Deterioration of stress grading system

3. End winding and connection:-

a. Inspection of end winding, support, ties and support fixing bolts for presence of any fretting product like grease, dust indicating end winding looseness and vibration, damaged spacers or supports.

b. Inspection of bar displacement/ deformation, excessive side clearance, broken ties.

c. Visual and Video-scopic inspection of end winding to evaluate the condition of insulation and to detect evidence of :-

i. Partial discharge

ii. Deterioration of stress grading semi conducting varnish quality.

iii. Puffing or bulging of insulation

iv. Insulation crack, aberration or migration

###### B. Stator Core:

-(To be inspected in bore region including end packets and back of the core)

- a. Visual inspection of core and inspect for presence of any contamination (presence of contamination like paste normally indicates core/bar looseness)
- b. Inspect the core for any mechanical damage of stamping or ventilation spacers
- c. Inspect the core for any overheating or burning mark
- d. Inspect the core for any looseness
- e. Inspect the core for broken or lost stamping/ventilation spacers
- f. Inspect the core for displacement of stamping
- g. Inspect core bars to detect overheating mark on core bar
- h. Inspect core bar and bore ring for looseness and presence of fretting products
- i. Check core fingers, core clamping plate, core bolts

**C. Support system:-**

1. Inspect core bar, bore ring, and support spring, cooler supports for presence of any fretting product indicating looseness and differential movement.
2. Inspect core bar, bore ring, core bolts for overheating mark.
3. Inspect support system for any welding crack
4. Inspect all locks and bolts for looseness, damages, displacement or presence of any fretting products

**D. Stator casing:-**

1. Inspect the stator casing fixing arrangement for mechanical damage, looseness of trunion/foundation bolts.
2. Inspect welding of casing and end shield for defect.
3. Casing earthing.
4. Centering of stator casing and magnetic center checking.

**E. Bushing:-**

1. Check all the bushings and terminal connectors for any cracks, presence of fretting products or evidence of looseness / vibration or any other defects. Check for electrical tracking
2. Check for any overheating mark on bushing insulator and electrical current carrying parts.
3. Check residual magnetism of bolts and nuts

**F. Rotor:-**

1. Visual and video-scopic inspection of accessible part of the field for coil displacement or deformation, contamination or copper inspections of rotor wedges including

wedges below retaining ring for looseness, overheating marks, mechanical damages or contamination.

2. Inspection of rotor cooling path and ventilation hole for contamination, insulation shifting, blockage.
3. Inspection of all bolts and fasteners, wedge locking grub screws, balancing bolts for their intactness, tightness and proper locking
4. Inspection of balancing weights for their intactness.
5. Check the accessible portion of the field lead by video-scope for overheating, deformation, cracks
6. Inspection of condition of shaft journal

**G. Slip rings and accessories:**

1. Check slip ring surface for groove depth, uniformity of surface wear, overheating and burning, any mechanical damage.
2. Check condition of accessible portion of insulation between slip ring and rotor shaft for deterioration, contamination, cracks, puffing of insulation, arcing or burning marks, mechanical damage.
3. Inspection of CC bolts, connecting strip and mounting base on 'D' lead for overheating, thread damage, damage of connecting strip and proper fixing of CC bolts and connecting strip (as recommended by OEM).

**H. Forging:-**

1. Check forging for crack, overheating, rust, fretting, contamination, mechanical damage
2. Check for evidence of overheating, any soot deposit on rotor body,
3. Check for overheating, burning or arcing marks

**I. Retaining ring and securing nuts:-**

1. Visual inspection of retaining ring to detect cracks, fretting, shifting of shrink fit, etching, burning mark/over heating mark, mechanical damage etc.
2. Visual and Video-scopic inspection of the accessible inner surface of the retaining ring to detect any defect.
3. Inspection of retaining rings, retaining ring nuts for proper positioning, shifts from position or looseness

**J. Fans**



1. Inspect for crack, contamination. Mechanical damage, missing components, defective locks, deformation, displacement/ looseness etc of fan hub and fan blades.

### 7.5.1.2 TESTINGS

#### A. Stator winding

1. IR and PI measurement
2. AC high voltage test if required.(to be applied in step up to 100% of Ph-N voltage)
3. Partial discharge test to detect deterioration of winding insulation and presence of voids and surface discharge
4. Power factor/ Tan delta measurement from 2.0KV at a step of 0.2Un upto Ph-N Voltage and calculating power factor/ tan  $\delta$  tip up
5. Winding resistance measurement
6. Modal analysis of end winding (NFT) to detect resonant frequency and looseness.
7. Wedge tightness/deflection test
8. Polarization and de-polarization current analysis (PDCA)
9. Nonlinear insulation Behaviour analysis (NLIBA)

#### B. Stator core:-

1. ELCID test
2. Core loss test minimum 80% of rated flux and thermal imaging to detect hot spot
3. Checking core looseness and assessment of residual core pressing tightness
4. Checking of RTD and thermocouple (both core and winding)

#### C. Casing, end shield and seal body, ring & bearing:-

Sl. No	Component	VI	DPT	MPI	UT	RPL/HM.
1.	Generator Bearing.	Yes	Yes	No	Yes	No
2	coupling of Generator Rotor	Yes	No	Yes	No	No
3	Retaining rings & rotor Journal area.	Yes	Yes	No	Yes	12 nos of spot
4.	Fan blades & Nut.	Yes	Yes	No	No	No
5.	PMI test	01 rotors				
6.	Thickness Measurements	Headers & coolers.				

**D. Rotor:-**

1. DC resistance of rotor winding in steps
2. AC impedance of rotor winding in steps
3. IR and HV test of rotor winding
4. RSO of rotor winding at stand still conditions. of the machine)
5. Voltage balance test of rotor winding
6. Rotor magnetization
7. Witness of Gas tightness test

**E. Hydrogen Coolers**

1. Hydraulic test witness and recording the values.
2. Condition of coolers tube, expansion joints, deposit, looseness, blockage
3. Sample tube thickness measurement

**F. Bushing**

1. HV and Tan delta test of bushing insulator

**G. Analysis & report preparation:**

Residual Life of Generator parts based on the evaluation of stresses generated by Cyclic Operation, Electro mechanical, Thermo mechanical and Electro static forces shall be furnished. Also the methodology adopted for evaluation of stresses and remaining life period shall be furnished with supporting documents. Finite Element Analysis methodology shall be described with necessary plots/ graphs/ models/ analysis/ calculations. Thermal stress analysis, Root cause failure analysis and detail FEM analysis shall be covered in the analysis.

**7.5.2 RLA of Main Exciter and Reduction Gear: ( Westinghouse make )**

The DC Excitation system is made by Westinghouse Electric Corporation of USA and Type is "WMA mag –a – stat `` system.

D.C. Shunt generator,

KW Rating: 300

Volt Rating: 250 V

Amp Rating: 1200 Amps

RPM: 897

Temp: 40 Deg. Centigrade

**7.5.2.1 PHYSICAL AND VISUAL INSPECTION OF Exciter:** Scope of work Similar to Section 7.6.1.1

**7.5.2.2 Other Testing :**

**-A. . Stator winding**

1. IR and PI measurement
2. AC high voltage test if required.(to be applied in step up to 100% of Ph-N voltage)
3. Partial discharge test to detect deterioration of winding insulation and presence of voids and surface discharge
4. Power factor/ Tan delta measurement from 2.0KV at a step of 0.2Un uptoPh-N Voltage and calculating power factor/ tan  $\delta$  tip up
5. Winding resistance measurement
6. Modal analysis of end winding (NFT) to detect resonant frequency and looseness.
7. Wedge tightness/deflection test
8. Polarization and de-polarization current analysis (PDCA)
9. Nonlinear insulation Behaviour analysis (NLIBA)

**B. Stator core:-**

1. ELCID test
2. Core loss test minimum 80% of rated flux and thermal imaging to detect hot spot
3. Checking core looseness and assessment of residual core pressing tightness
4. Checking of RTD and thermocouple (both core and winding)

**C. Rotor:-**

1. DC resistance of rotor winding in steps
2. AC impedance of rotor winding in steps
3. IR and HV test of rotor winding
4. RSO of rotor winding at stand still conditions of the machine
5. Voltage balance test of rotor winding
6. Rotor magnetization

**D. Analysis & report preparation:**

Residual Life of Generator parts based on the evaluation of stresses generated by Cyclic Operation, Electro mechanical, Thermo mechanical and Electro static forces shall be furnished. Also the methodology adopted for evaluation of stresses and remaining life period shall be furnished with supporting documents. Finite Element Analysis methodology shall be described with necessary plots/ graphs/ models/ analysis/ calculations. Thermal stress analysis, Root cause failure analysis and detail FEM analysis shall be covered in the analysis.

**7.5.2.3. Exciter reduction Gear:**

Visual inspection of Exciter Gear box to be carried out.

**7.6 Test of Valves & Dampers**

Visual Inspection of dampers, valves including Boiler Stop Valves, Safety Valves, Attenuation Valves, Flue Gas Dampers, etc and their fittings and accessories.

**For Study under Cl. 2.1.3**

Scope of work as mentioned below is indicative one. Consultant may include some other tests which they will think require for deriving Renovation & Modernization solution with due concurrence of WBPDCCL without any extra charge

#### **7.7 Performance Test of Boiler, Turbine, Condenser, Electrical System, etc**

Determination of all the losses in boiler cycle and evaluation of boiler efficiency by indirect method

Turbine pressure survey

Performance of Turbine Gland Sealing System

Evaluation of Turbine heat rate and efficiency, Cylinder Efficiency, etc

Performance of Regeneration Feed Heating System

Condenser performance study

Input power consumption analysis of major equipment in B-T-G, AHP, Cooling System to identify energy conservation opportunities.

#### **7.8 Test for Mill & PA Fan**

BTPS U-1 is having 3 nos. EL-76, medium speed (90 rpm) spring loaded pulverizer of 19.5 T/Hr. Motor of each pulverizer is 200 HP.

ID Fan -2 nos., Type PE- 20316- 1070- 9056 HD. Constant speed Damper control. Motor of each fan is 700 HP.

FD Fan – 2 nos., Type PE- 20316- 1050- 4054 D. Constant speed Vane control. Motor of each fan is 300 HP.

Primary Air Fan,- 3 nos., Type PE- 7035- 1- 2166-2A. Radial Vane control. Motor of each fan is 250 HP.

Agency shall carryout Mill Capacity Test and Fans performance test.

The Mill performance/ capacity test shall be carried out at the maximum achievable/ agreed loads (to be finalized before testing) on all 3 mills of the unit. The test shall be carried out on the mill with max. wear of grinding parts. The test shall clearly establish the max. capacity of mills while pulverised coal fineness of 70% through 200 mesh. This test shall also record data on hot air condition (flow, pressure, temperature). Temperature and coal/ air ratio at classifier outlet under test conditions.

Fans performance test shall be conducted on each ID, FD & PA Fan to establish capacity margins available & head at various points including maximum rating. Input power of Fans will also be measured.

**7.9 Air preheater Performance Test** – The test shall include measurement of flow and temperature of air and flue gas at inlet & outlet of air-preheater. The test shall also establish air-in-leakage in the air-preheater. This test shall be carried out during running condition of the unit after overhauling.

#### **7.10 ESP Performance Test –**

Performance test on all passes of ESP of the unit covering measurement of inlet and outlet dust burden, gas volume/ flow rates, inlet gas temperature, pressure drop across ESP including the flow distribution at the inlet of ESP (GD test) for all the passes of the unit.

Flue gas composition at inlet and outlet of the air pre-heaters (CO<sub>2</sub>, O<sub>2</sub>) and CO at inlet.  
Sampling and analysis of coal and ash (Proximate, ultimate and ash composition including sodium content) and particle size distribution of ash at ESP inlet.  
Preparation and submission of performance test report including the recommendation on performance enhancement of Electrostatic Precipitators to limit the outlet emission to 100 mg/Nm<sup>3</sup>.  
Input power of ESP shall be measured.

#### **7.11 Performance Test of Pumps –**

Performance evaluation of Boiler feed pumps  
Performance evaluation of Condensate extraction pumps  
Performance evaluation of RCW and CW pumps

#### **7.12 Control & Instrumentation**

The study for C&I systems/ equipments should include the following systems as a minimum-

1. C&I of Boiler and its auxiliaries including requirement of comprehensive boiler protection and operation.
2. C&I of Turbine, Generator and their auxiliaries including requirement of comprehensive turbine-generator protection and operation
3. Station C&I Systems - Closed Loop and Open Loop Control along with final control elements, Alarm Annunciation system, UPS, Control Desk, Local Instrument enclosure/ Rack, Measuring Instrument, Actuators, Field devices (Transmitter, switch, temperature elements, etc). Consultant should study present system and furnish specific recommendation for inclusion or otherwise in R&M scope.

### **8.0 Report**

#### **Preliminary Report of equipment in running and shut down condition during conducting RLA study**

Preliminary Observation/ Finding shall be submitted to BTPS site [in One Hard Copy and one Soft Copy in CD] within 7 days after carrying out study of the machine to get requisite readings and access conditions.

Thickness survey report of Boiler Pressure Part, etc shall be handed over immediately for taking measure during shut down.

#### **Report for Part A , B, C study as mentioned in Cl.3**

Based on previous reports, Consultant has to prepare a final report in three parts. Report should consist the explanation on the basis of -

##### Report for Part A

Report shall include study conducted by Consultant, if any.

This report shall state in detail about techno-commercial feasible solution for BTPS Stage I units from environment norms and commercial perspective.

Report for Part B

Report shall include RLA Test result of equipments.

Recommendation of Run/ RUN/ REPAIR / REPLACE of equipments of the unit. Report of all tests in original.

Report for Part C

Report shall include Performance Test result of equipments.

Highlight the areas/ limitations being faced by unit in order to achieve rated capacity on sustainable basis.

Recommendation for Renovation & Modernization/ Life Extension work based on various feasible engineering solution (from cost perspective also) along with alternative option of installing a new plant of similar capacity.

Techno commercial analysis based on IRR Calculation, Payback period study shall be done to show viability of the entire proposal.

Draft report of each part shall be submitted in Two Hard Copies and one Soft Copy in CD and Final Report shall be submitted in Four Hard Copies and two Soft Copies in CD.

**9. Review Committee to monitor EE R&M Works**

WBPDCCL would organize a committee comprising of the following personnel, which would be responsible for regular monitoring of the-EE R&M works. The Consultant would assist this committee in its mandate and would report directly to this committee. The committee shall comprise of:

- i. Director (O&M), WBPDCCL.
- ii. Executive Director (OS), WBPDCCL.
- iii. GM (M&C), Corporate Office, WBPDCCL
- iv. DGM (Engineering), Corporate Office, WBPDCCL.

The Review Committee will also review all the reports from Consultant-

**10. List of key professional positions whose Curriculum Vitae and Experience would be evaluated**

It is expected that the selected consultancy firm would have adequate manpower strength and expertise, as required, to appropriately support all the above tasks.

The tentative list of key professional shall be in line with the requirements specified below:

Sl. No,	Position	Minimum Qualification	Minimum General Requirement	Specific Experience	Expected involvement from Key Role
1	Engineer for NDT in Boiler / Turbine Area	Degree in Mechanical Engineering	At least having 5years experience in NDT Level-3 of Boiler & Turbine Area as mentioned in ToR. He should be physically fit to execute Site oversight duties	Experience in RLA Turbine, Boiler of at least 5no of coal fired thermal power unit having Reheat circuit.	He must be engaged at Boiler & Turbine Area RLA study at site. At Home Office for Analysis of test Report and preparation of Final Report.
2	Engineer for NDT in Boiler / Turbine Area	Degree in Mechanical Engineering	At least having 5 years experience in NDT Level-3 of Boiler & Turbine Area as mentioned in ToR. He should be physically fit to execute Site oversight duties	Experience in RLA Turbine, Boiler of at least 5 no of coal fired thermal power unit having Reheat circuit.	He must be engaged at Boiler & Turbine Area RLA study at site. At Home Office for Analysis of test Report and preparation of Final Report.
3	Engineer for Test of Hanger & Piping	Degree in Mechanical Engineering	At least having 5 years experience in RLA, CA, Stress Analysis of Hanger & piping. Conversant with usage of Finite element software.	Experience in Test of Hanger & Critical Piping of at least 5no of coal fired thermal power unit having Reheat circuit.	He must be engaged at Test of Hanger & Critical Piping study at site. At Home Office for Analysis of test Report and preparation of Final Report.
4	Engineer for Test of Generator & Exciter	Degree in Electrical Engineering	At least having 5 years experience of Testing Generator as mentioned in ToR. Conversant with usage of	Experience in Test of Generator as mentioned in ToR at least 5 no of capacity of 82.5 MW or	He must be engaged at Test of Generator & Exciter study at site. At Home Office for Analysis of test Report and preparation of

Sl. No,	Position	Minimum Qualification	Minimum General Requirement	Specific Experience	Expected involvement from Key Role
			relevant software.	more	Final Report.
5	Engineer for Test of Civil & Structure	Degree in Civil Engineering	At least having 5 years experience of Health assessment of Civil & Structure.	Experience in Test of Old thermal Power Station running for minimum 15 years in operation.	He must be engaged at Health assessment of Civil & Structure at site. At Home Office for Analysis of test Report and preparation of Final Report.

After award of the contact the client expects all the proposed key personnel to be available during implementation of the contract as per the agreed staffing schedule at the time of negotiation. WBPDCCL expects that Consultant will keep experts same throughout the contract period. If any replacement is required, the Consultant should ensure that there is a reasonable overlap between the staff to be replaced and replacement wherever feasible/possible. Remuneration of replaced staff will be determined through negotiation in case the Consultant appeals for replacement of Key personnel. The resume of the Key Personnel should be self attested using blue ink.

11. **Controlling Officer** : The General Manager, BTPS or his authorized representative.
12. **Paying authority** : The Dy. General Manager (F&A), Corporate Office, WBPDCCL or his authorized representative.



## Section 6. Standard Forms of Contract and Annexure

### CONTRACT FOR *[insert name of the assignment]*

THIS CONTRACT (“Contract”) is entered into this *[insert starting date of assignment]*, by and between *[insert Client’s name]* (“the Client”) having its principal place of business at *[insert Client’s address]*, and *[insert Consultant’s name]* (“the Consultant”) having its principal office located at *[insert Consultant’s address]*.

WHEREAS, the Client has received a credit from the International Development Association towards the cost of the Services and intends to apply a portion of the proceeds of this credit to eligible payments under this Contract,

WHEREAS, the Client wishes to have the Consultant perform the services hereinafter referred to, and

WHEREAS, the Consultant is willing to perform these services,

NOW THEREFORE THE PARTIES hereby agree as follows:

1. **Services**
  - (i) The Consultant shall perform the services specified in Annex A, “Terms of Reference and Scope of Services,” which is made an integral part of this Contract (“the Services”).
  - (ii) The Consultant shall provide the personnel listed in Annex B, “Consultant’s Personnel,” to perform the Services.
  - (iii) The Consultant shall submit to the Client the reports in the form and within the time periods specified in Annex C, “Consultant’s Reporting Obligations.”
2. **Term**

The Consultant shall perform the Services during the period commencing *[insert starting date]* and continuing through *[insert completion date]*, or any other period as may be subsequently agreed by the parties in writing.
3. **Payment**
  - A. Ceiling

For Services rendered pursuant to Annex A, the Client shall pay the Consultant an amount not to exceed *[insert amount]*. This amount has been established based on the understanding that it includes all of the Consultant’s costs and profits as well as any tax obligation that may be imposed on the Consultant.
  - B. Schedule of Payments

The schedule of payments is specified below:<sup>1</sup>

<sup>1</sup> Modify, in order to reflect the output required, as described in Annex C.

*[insert amount and currency]* upon the Client's receipt of a copy of this Contract signed by the Consultant;

**Payment Schedule**

- (I) **Mobilization Advance against BG of 10% of Contract Value:**  
 .....10% of Total  
 Lump-sum Fee
- (II) **Payment after submission of Draft Report of Part A Study as mentioned in Cl.3 – Scope of Work (Action 2 of Cl.No.5 of Time Schedule):**  
 .....20% of Total  
 Lump-sum Fee
- (III) **Payment after submission of Draft Report of Part B Study as mentioned in Cl.3 – Scope of Work (Action 8 of Cl.No.5 of Time Schedule):**  
 .....40% of Total  
 Lump-sum Fee
- (IV) **Payment after submission of Draft Final Report (Encompassing study of Part A, B & C of Cl. 3 of Terms of Reference):**  
 .....20% of  
 Total Lump-sum Fee
- (V) **Payment after submission of Final Report (Encompassing study of Part A, B & C of Cl. 3 of Terms of Reference):**  
 .....10% of  
 Total Lump-sum Fee  
 BG will be released along with Last Payment. (Advance BG format enclosed as per Annexure- A)

C. **Payment Conditions**

Payment shall be made in *Indian Rupee*. The payment as mentioned in B : Schedule of Payments (in sub schedule (I – IV) will be made within 45 days on following submission by the Consultant of invoices along with relevant papers in duplicate to the Coordinator designated in paragraph 4. Last Milestone payment will be released within 60 days after receipt of Invoice. Payment will be made through Bank transfer or Bank draft.

- 
- 4. Project Administration**
- A. Coordinator.  
The Client designates General Manager (BTPS) as Client's Coordinator; the Coordinator will be responsible for the coordination of activities under this Contract, for acceptance and approval of the reports and of other deliverables by the Client and for receiving and approving invoices for the payment.
- B. Reports.  
The reports listed in Annex C, "Consultant's Reporting Obligations," shall be submitted in the course of the assignment, and will constitute the basis for the payments to be made under paragraph 3.
- 5. Performance Standards** The Consultant undertakes to perform the Services with the highest standards of professional and ethical competence and integrity. The Consultant shall promptly replace any employees assigned under this Contract that the Client considers unsatisfactory.
- 6. Confidentiality** The Consultants shall not, during the term of this Contract and within two years after its expiration, disclose any proprietary or confidential information relating to the Services, this Contract or the Client's business or operations without the prior written consent of the Client.
- 7. Ownership of Material** Any studies reports or other material, graphic, software or otherwise, prepared by the Consultant for the Client under the Contract shall belong to and remain the property of the Client. The Consultant may retain a copy of such documents and software.<sup>2</sup>
- 8. Consultant Not to be Engaged in Certain Activities** The Consultant agrees that, during the term of this Contract and after its termination, the Consultant and any entity affiliated with the Consultant, shall be disqualified from providing goods, works or services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services.
- 9. Insurance** The Consultant will be responsible for taking out any appropriate insurance coverage.
- 10. Assignment** The Consultant shall not assign this Contract or sub-contract any portion of it without the Client's prior written consent.
- 11. Law Governing Contract and Language** The Contract shall be governed by the laws of India, and the language of the Contract shall be English.

---

<sup>2</sup> Restrictions about the future use of these documents and software, if any, shall be specified at the end of paragraph 7.

- 
- 12. Dispute Resolution<sup>4</sup>** Any dispute arising out of the Contract, which cannot be amicably settled between the parties, shall be referred to adjudication/arbitration in accordance with the laws of the Client's country.

FOR THE CLIENT

FOR THE CONSULTANT

Signed by \_\_\_\_\_

Signed by \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

---

<sup>4</sup> In the case of a Contract entered into with a foreign Consultant, the following provision may be substituted for paragraph 12: "Any dispute, controversy or claim arising out of or relating to this Contract or the breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force."

**LIST OF ANNEXES**

Annex A: Terms of Reference and Scope of Services

Annex B: Consultant's Personnel - mentioned in Cl.10 of Terms of Reference in Section 5 (to be finalized before contract)

Annex C: Consultant's Reporting Obligations – mentioned in Cl.8 of Terms of Reference in Section 5 (to be finalized before contract)

## Bank Guarantee format for Advance Payment

\_\_\_\_\_ [Bank's Name, and Address of Issuing Branch or Office]

**Beneficiary:** \_\_\_\_\_ [Name and Address of Client]

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

**ADVANCE PAYMENT GUARANTEE No.:** \_\_\_\_\_

We have been informed that \_\_\_\_\_ [name of Consulting Firm] (hereinafter called "the Consultants") has entered into Contract No. \_\_\_\_\_ [reference number of the contract] dated \_\_\_\_\_ with you, for the provision of \_\_\_\_\_ [brief description of Services] (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of \_\_\_\_\_ [amount in figures] (\_\_\_\_\_) [amount in words] is to be made against an advance payment guarantee.

At the request of the Consultants, we \_\_\_\_\_ [name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of \_\_\_\_\_ [amount in figures] (\_\_\_\_\_) [amount in words]<sup>1</sup> upon receipt by us of your first demand in writing accompanied by a written statement stating that the Consultants are in breach of their obligation under the Contract because the Consultants have used the advance payment for purposes other than toward providing the Services under the Contract.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Consultants on their account number \_\_\_\_\_ at \_\_\_\_\_ [name and address of Bank].

This guarantee shall expire, at the latest, upon our receipt of the monthly payment certificate indicating that the Consultants have made full repayment of the amount of the advance payment, or on the \_\_ day of \_\_\_\_\_, 2\_\_\_,<sup>2</sup> whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

<sup>1</sup> The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Client.

<sup>2</sup> Insert the expected expiration date. In the event of an extension of the time for completion of the Contract, the Client would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Client might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Client's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

---

*[signature(s)]*

*Note: All italicized text is for indicative purposes only to assist in preparing this form and shall be deleted from the final product.*