

Notice Inviting Tender (ONLY THROUGH E-TENDERING MODE)

for

Empanelment of Agency for carrying out route alignment, LiDAR & Photogrammetry Survey Of Transmission Lines Using Drones and preparation of Survey Report for Transmission Projects being implemented through Tariff Based Competitive Bidding Process



*REC Power Development and Consultancy Limited
Regd. Office: Core-4, SCOPE Complex, 7, Lodhi Road, New Delhi- 110003.
Corporate Office: D- Block, REC Corporate Headquarter, Plot No. I-4, Sector-29, Gurugram
(Haryana)-122001,*

Tender No. RECPDCL/TBCB/Survey/2026-27/

*Last date for submission of Technical and Financial Bids is
04.07.2026 at 15:00 hrs.
Date for opening of Technical Bids is 04.07.2026 at 15:30 hrs.*

(This document is meant for the exclusive purpose of inviting bids and shall not be transferred, reproduced or otherwise used for purposes other than that for which it is specifically issued)

Date of issue of tender: 19.06.2026

Technical and financial bids are to be submitted online only.

Important Notice

1. *An incomplete and/or ambiguous and/or conditional and/or late response is liable to be ignored/ summarily rejected.*
2. *The submission and opening of bids will be through e-tendering process. Tender document can be downloaded from the GeM Portal or from e-tender link given in RECPDCL/REC Website, viz, <http://www.recpdcl.in>, <http://www.recindia.nic.in>*

Note:

- a) *To participate in the E-Bid submission, it is mandatory for the bidders to have user ID & password of the GeM portal. For this purpose, the bidder has to register itself with RECPDCL through GeM Portal. Please also note that the bidder has to obtain digital signature token for applying in the tender. The vendor may obtain the same from GeM Portal.*

BIDDING DOCUMENT

FOR

Empanelment of Agency for carrying out route alignment, LiDAR & Photogrammetry Survey of Transmission Lines Using Drones and preparation of Survey Report for Transmission Projects being implemented through Tariff Based Competitive Bidding Process



REC Power Development and Consultancy Limited
Regd. Office: Core-4, SCOPE Complex, 7, Lodhi Road, New Delhi- 110003
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Sector-29, Gurugram (Haryana)-122001,

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BID INVITATION

Ref: RECPDCL/TBCB/Survey/2026-27/

Dated: 19.06.2026

Subject: Request for offer for Empanelment of Agency for carrying out route alignment, LiDAR & Photogrammetry Survey of Transmission Lines Using Drones and preparation of Survey Report for Transmission Projects being implemented through Tariff Based Competitive Bidding Process

You are invited to submit technical and financial proposals in respect of Empanelment of Survey Agency. The Bidder can be a firm or a limited company.

- 1.0 The following documents are enclosed for your quotation purpose:
 - i. Bid Proposal Sheets (**Volume- I**)
 - ii. Conditions of Contract (**Volume-II**)
- 2.0 All the documents mentioned above, including this letter to you will form the tender documents. Each of the above documents and also other documents to be submitted by you as per this tender's requirement are to be submitted duly stamped & signed on each page by your accredited representative as a token of your acceptance. The bid is to be submitted in online mode only on GeM portal.
- 3.0 The bids for subject assignment have been invited on open tender basis.
- 4.0 The bidders may please note that the successful bidder shall not be considered later on for main bid for selection of developer for the aforesaid Transmission System as Transmission Service Provider.
- 5.0 **Scope of Services:**

The consultant to be engaged to carry out the survey including route alignment, LiDAR & Photogrammetry Survey of Transmission Lines Using Drones and preparation of Survey Report for Transmission Projects allocated to REC Power Development and Consultancy Limited in the capacity of Bid process Coordinator (BPC) by Ministry of Power, Govt. of India/ any other State Govt./ State Utility for selection of successful bidder through Tariff Based Competitive Bidding in following categories: -

Stage-1: Preliminary survey of the transmission lines and substation

1. Identification of minimum 4 alternate sites for each substation
2. Desk studies, site visits, reconnaissance and walkover survey for route alignment of overhead transmission lines in the following designated areas across India:
 - Plain areas (all areas with altitude up to 2000m above mean sea level (m.s.l.))
 - Hilly areas (all areas with altitude between 2000 to 3000 Meters above m.s.l.)
 - Mountainous terrain in Leh, Ladakh & similar terrain (altitude beyond 3000 Meters above m.s.l.)
3. Identification and demarcation of various features along the route of transmission lines, including but not limited to forest areas, water bodies, railway crossings, national highways, HT/LT crossings, telecom line crossings, habitations, CRZ/eco-sensitive zones etc.

Stage-2: LiDAR & Photogrammetry Survey of the transmission lines and substation

The scope of work inter-alia shall include the following: -

- Aerial LiDAR and Photogrammetry survey using Drones
- Orthophoto generation
- DSM/DTM generation
- Preparation of GIS database

The detailed scope of works shall be as per **Volume-III** to this bid document.

6.0 Preparation of Bid Proposals:

- (i) **Technical Bid is to be submitted online only** on GeM and the relevant documents duly sealed and signed may be uploaded as attachment.
- (ii) The Bidder shall submit Pre-Award Integrity Pact in the format as prescribed, which shall be applicable for and during the bidding process, duly signed on each page by any whole-time Director/ Authorized Signatory, duly witnessed by two persons, and shall be submitted by the Bidder in two (2) originals in a separate envelope, duly superscripted with Pre-Award Integrity Pact. The Bidder shall submit the Pre-Award Integrity Pact on non-judicial **stamp paper of Rs. 100/- each duly purchased from the National Capital Territory of Delhi.**
- (iii) **Technical bid will be opened for those bidders only, who have submitted the Earnest Money Deposit (EMD)/ Bid Security to RECPDCL before the Bid Deadline.**
- (iv) The documents should be complete in all respect and must be free from any ambiguity, cutting, and use of correcting fluid or overwriting.
- (v) **An authorized representative of the firm shall initial and stamp all pages of the bid proposal. Authorization letter for signing the proposal/tender documents should be attached.**
- (vi) **The Financial Bid has to be submitted online only on GeM.**
- (vii) For preparation of Bid Proposals, Bidders are expected to examine the bidding document in detail, and it is Bidder's responsibility to ensure that the information provided is adequate and clearly understood.
- (viii) If the bidder fails to submit the requisite information/clarification, if sought within prescribed time, the bid shall be treated as non-responsive bid and shall be rejected.

7.0 Submission of Bid Proposal:

- (i) The bidders are requested to submit their competitive offer as per requirement along

with all the requisite documents duly signed as a token of acceptance of the Broad Scope of Work, Terms & Conditions and E-bid process.

- (ii) The Bidders need to submit the EMD/ Bid Security of **2,50,000/- (Rupees Two Lakhs Fifty Thousand only)** to RECPDCL before the bid deadline to participate in the bidding process. **Bids without EMD/ Bid Security will be outrightly rejected.**
- (iii) MSEs (Micro, Small Enterprises) registered under NSIC/DIC/Udyog Aadhaar only are exempted from submission of Earnest Money Deposit (EMD).
- (iv) The EMD/ Bid Security can be submitted in any of the following methods:
 - a) Demand Draft or Banker's Cheque of Rs. 2,50,000/- (Rupees Two Lakhs Fifty thousand only) in favour of "REC Power Development and Consultancy Limited "payable at New Delhi. The DD/ Banker's Cheque No. will be required for applying online.
 - b) A Bank Guarantee as per format given at **Annexure-1** by any Scheduled Commercial Bank.
 - c) Bidder may also submit the EMD/ Bid Security **via** electronic transfer to the following Bank Account:

Bank Name, Address & Branch	IDFC First Bank Limited Wholesale Banking Outlet Express Building, 2nd Floor, 9-10 Bahadur Shah Zafar Marg, New Delhi-110002
Bank Account Name	REC Power Development & Consultancy Limited
Bank Account No	10000697415
Bank IFSC Code No	IDFB0020101

- (v) Documentary proof is also to be submitted online.
- (vi) **Financial/Price Bid has to be submitted online only, as per Form attached. The financial bid/price bid should not be submitted in physical form. Any such submission shall be liable for rejection.**
- (vii) Late submission of Bid Proposals, for whatsoever reasons, after the due date and time for submission shall not be considered. **Offers sent by Fax/E-mail etc. will not be considered.**
- (viii) The costs on account of preparation of bids, negotiation, discussion etc. as may be incurred by the bidder(s) in the process of finalization of the contract are on account of Bidder(s) and RECPDCL shall not reimburse either in part or in full the cost so incurred.
- (ix) RECPDCL reserves the right to reject any or all of bids, wholly or partially, without assigning any reasons whatsoever.
- (x) The bidding documents shall remain the exclusive property of RECPDCL without

any right of the bidder to use them for any purpose except bidding and for use by successful bidder with reference to the work.

- (xi) Technical bid shall be opened at the scheduled time and date as mentioned in the bid document in the presence of such bidders or their authorized representative who choose to remain present. A maximum of two representatives for any bidder shall be permitted and authorized to attend the bid opening.
- (xii) Further, if the due date of receipt of bid as aforesaid is declared holiday, bid would be received on schedule time on the next working day.
- (xiii) Alternative Bids shall not be considered.
- (xiv) Financial Bids of the technically qualified bidders shall be opened on other date & shall be duly notified to all the qualified bidders.

8.0 The Technical Bid shall be opened on **04.07.2026 at 15:30 Hrs.** Subsequently, RECPDCL will carry out evaluation of documents submitted in support of meeting the qualifying requirements and decide upon qualification of the bidders on the basis of those documents. Bidders are advised to take utmost care that all necessary documents are submitted.

9.0 **Period of Empanelment**

The qualified Bidders will be empaneled by RECPDCL for an initial period of **Two Year from the date of issue of empanelment order** subject to conditions of Clause 10.0 or "Cancellation of empanelment". RECPDCL, in its discretion can extend the period of empanelment for one more year without any change in terms and conditions of empanelment.

10.0 **Cancellation of Empanelment**

The Empanelment is subject to cancellation due to any of the following reasons (but not limited to) mentioned hereunder, without any liability to RECPDCL:

- If the empaneled agency is found to have submitted false particulars/forged documents for securing empanelment.
- The performance on the job of the empaneled members will be constantly monitored for quality, commitment to delivery period, accuracy of data and timelines mentioned in contract, adherence to the guidelines, Statutory regulations, conduct/discipline etc., while executing assignment. Any deviations from stated conditions mentioned in this document, can lead to appropriate action as deemed fit by RECPDCL including delisting with immediate effect.
- If the Agency refuses to execute the assignment at his agreed scope/rates, after the issue of the letter of Award (LoA) for a specific assignment.

- In case of a non-performance (slippage in timelines & accuracy, scope & quality of work, discipline, resolving conflicts etc. as assessed by RECPDCL) and/or bankruptcy of the empaneled members, the empanelment is liable to be cancelled by RECPDCL.
- Any other reason deemed fit by RECPDCL for cancellation.
- Such empaneled members, whose empanelment is cancelled due to any of the above reasons, will not be considered for subsequent empanelment for a further period of three years.

11.0 **Contract Performance Guarantee (CPG)**

In the event of an award, the agency, within fifteen days of receipt of Letter of Award from RECPDCL, will be required to arrange submission of CPG in the form of a Bank Guarantee (BG) as detailed below:

- 3% of Value of Work Order if the value of work order is up to Rs. 10 lakhs.
- 5% of Value of Work Order if the value of work order is more than Rs. 10 lakhs.

Note: In case of any change/ modification by GoI on guidelines regarding Performance Security, the same shall also be applicable as and when adopted by RECL/ RECPDCL.

The CPG/BG should be as per Performa enclosed as **Annexure-2** and should be kept valid upto nine months from the date of Owner's acceptance of Final Report. The payment to the agency shall be released only after submission of valid CPG. In case of any delay in submission and short-validity of CPG, the CPG amount equivalent to such delay/ short-validity shall be deducted from the amount eligible for payment to the agency.

12.0 **Basis of price offer:** The price offer shall be for the studies as per Form FIN-1 and shall remain firm throughout the period of contract. Quoted prices shall be in Rupees per kilometer of transmission lines or Rupees for identification per substation site in the following categories:

1. Plain areas (all areas with altitude up to 2000m above mean sea level (m.s.l.))
2. Hilly areas (all areas with altitude between 2000 to 3000 Meters above m.s.l.)
3. Mountainous terrain in Leh, Ladakh & similar terrain (altitude beyond 3000 Meters above m.s.l.)
4. Identification of 4 alternate sites for each substation.

The above quoted rates shall be inclusive of all taxes and duties (except GST), all travel, stay, out of pocket expenses, cost of producing documents etc. and RECPDCL will not be required to pay and/or reimburse anything over and above the price quoted. GST at the prevailing rate shall be paid extra. Income tax at source will be deducted by OWNER as per law and Tax Deduction at Source certificate shall be issued to the consultant by OWNER.

13.0 **Time Schedule/Completion period:** The work shall be completed as per the schedule given in the Technical Specification (Volume-III).

14.0 **Terms of Payment:**

The payment terms for project shall be as below:

- i. **20% Payment of contract amount:** Upon the submission and technical acceptance by RECPDCL of the preliminary Desk Studies, Route Alignment, Substation Identification and Ground Walkover Survey Report.
- ii. **20% Payment of contract amount:** Upon submission and acceptance of draft survey report incorporating all the required information / data and assigned technological aspects (**Ground Walkover, Drone-based LiDAR Survey and Photogrammetry Survey**).
- iii. **40% Payment of contract amount:** Upon the submission and acceptance of Final Survey Report, incorporating all the required information / data and assigned technological aspects (**Ground Walkover, Drone-based LiDAR Survey and Photogrammetry Survey**), along with the delivery of all underlying digitized source files (KML/KMZ terrain grids, raw and classified point-clouds, high-resolution orthomosaics, and integrated PLS-CADD profiling data).
- iv. **20% Payment of contract amount:** Upon the successful issuance of the Letter of Intent (LoI) to the successful developer of the project and execution of Transmission Service Agreement (TSA).

15.0 **Basis of Bid-Evaluation and Panel Formation (LCS & Splitting Framework):** The bids will be evaluated on a minimum qualifying score basis against the technical and commercial terms and conditions specified and based on the Qualification Criteria (QC) criteria (as per Annexure I to Bid invitation). The financial proposal of only those bidders, who meet the above criteria after evaluation, will be opened on a suitable date. The same shall be intimated to qualified bidders only. Financial Proposal of those bidders who fail to qualify will not be opened.

15.1 **Technical and Commercial Evaluation**

The bidders are requested to submit the details of past experience in completion of similar survey works and qualified manpower to be deployed for this assignment. This information, if not provided in the desired format and provided elsewhere in the bid, shall not be considered.

- **Domestic Restriction:** Only Indian organizations registered as Class-I or Class-II Local Suppliers under the Public Procurement (Preference to Make in India) Order are eligible to participate. Bids from foreign entities will be treated as non-responsive
- **Evaluation of Composite Work Orders:** Where a bidder submits an experience certificate derived from a composite contract (e.g., an EPC contract containing both survey and construction/civil works), RECPDCL will evaluate only the standalone financial value of the relevant survey works (Route Alignment, LiDAR, and Photometry). The bidder must mandatorily provide a clear financial breakout certified by the client or a Statutory Auditor.

- Financial proposals will be opened only for those bidders who clear this Stage-1 evaluation. Bids that are incomplete, conditional, or do not provide data in the designated formats will be rejected.

The price bids evaluation & allocation of assignment shall be done in following manner:

15.2 Price Discovery via Least Cost Selection (LCS) (Under Clause 8.1)

- ✓ Following technical qualification, the financial bids will be opened on the GeM Portal. In compliance with Clause 8.1 of the REC Procurement Guidelines, Lowest Quoted Bidder under each category shall be discovered from GeM portal on the basis of the quoted price excluding GST under each category. This discovered L1 price will remain firm, fixed, and non-escalating throughout the entire tenure of the empanelment.

15.3 Panel Formation via Splitting of Supplies (Under Clause 18)

- ✓ In view of the critical nature of TBCB transmission projects and to ensure concurrent execution of multiple Route Alignment, LiDAR, and Photometry surveys without schedule overruns, RECPDCL reserves the right to split the total scope of work as per its' procurement guidelines (Splitting of Supplies), and accordingly will create a panel of a maximum of five (5) empaneled agencies matching the discovered L1 rates
- ✓ The lowest quoted and evaluated price of the Bidder for each category shall be offered out of GeM portal to all participating Bidders in order to match the L1 price. Only those Bidders who provide an unconditional, formal acceptance to match the lowest quoted L1 price in its entirety and evaluated price under each category shall be considered for empanelment. Maximum 5 bidders shall be empaneled only.
- ✓ **The bidder quoting highest price (H1) in any particular work schedule / category, shall be rejected from that that respective category and shall not be considered for empanelment in that respective category. The same shall not be applicable, in case the total number of participating bidders are less than 5 in any particular category.**
- ✓ The Price under each category (i.e. lowest quoted and evaluated price) shall remain Firm throughout the period of empanelment and shall not be subject to any variation / adjustment for any reason whatsoever.
- ✓ In compliance with Clause 18 of the REC Guidelines, preference in the distribution of work orders will be given to the agency that discovered the lowest rate (the original L1 bidder). Specific TBCB transmission project assignments will be distributed among the empaneled panel members using a strict, non-discretionary rotation basis approach.

- ✓ The empaneled consultant shall be allocated a specific transmission project based on the RECPDCL's requirements. Sequence of allocation of assignment shall be the sequence of price quoted i.e. starting from L1 bidder in the category of "Transmission lines in plains". For avoidance of doubt in case there are 4 empaneled consultants the allocation shall be done as L1, L2, L3, L4 for all cycle of allotment of projects.

It is also to clarify that in event of two or more bidders quotes same price in the category of "Transmission lines in plains" "the price quoted for subsequent category i.e. "Identification of 4 alternate sites for each substation" shall be deciding factor of sequence of allocation of assignment.

16.0 **Signing of Formal Contract Agreement:**

- a. RECPDCL, after the issue of the Letter of empanelment to the agency, will send one copy of the final agreement to the agency in line with terms & conditions of the tender documents.
- b. The Agreement, unless otherwise agreed to, shall be signed within 15 days of the acceptance of the Letter of empanelment, at the office of RECPDCL on a date and time to be mutually agreed. The agency shall provide for signing of the Contract, appropriate power of attorney and other requisite materials. In case the Contract is to be signed beyond the stipulated time, the Bid Guarantee submitted with the Proposal will have to be extended accordingly.
- c. The Agreement will be signed in three originals and the agency shall be provided with one signed original and the rest will be retained by RECPDCL.

17.0 **Validity of Bid:** The bid submitted by bidders shall be valid up to One Eighty (180) days from the date of opening of technical bids for our acceptance.

18.0 The consultant shall carry out the scope of work as per Volume-III to this document.

19.0 **Deliverables:**

All the deliverables, as mentioned in this clause and Technical Specifications (Volume-III) shall be submitted for the project. Also, the consultant shall submit photographs of S/s site (proposed as well as existing) and other major crossing encountered in the proposed route.

20.0 The empaneled agencies are required to submit the Undertaking related to Environmental, Social and Governance (ESG) as per Undertaking enclosed at **Annexure-3**.

QUALIFYING CRITERIA

The following are the Qualification/ Eligibility criteria. Any Bid not fulfilling any of the pre- qualifications/eligibility criteria shall be summarily rejected. The said criteria as detailed along with documents that need to be submitted in proof of compliance to each of the criterion, is detailed below :

S. No	Particulars	Document(s) to be submitted
1.1	General: Following minimum credentials shall be desirable for acceptance of bid	
a)	Bidder must be a company registered under the companies acts 1956/2013 or LLP	Certificate of Incorporation and PAN card of Company.
b)	Bidder must not have been blacklisted by any Government Department/Regulatory body/CPSU/ PSU Banks/Autonomous Bodies/ Statutory Bodies/ REC/ RECPDCL/ Ministry of Power (GOI) PSU or any entity controlled by them under any Central/ State Govt/ PSU act/ rule or by National/ International financial institutions in India at the time of submission of bid.	Self-declaration by authorized signatory for no blacklisting on appropriate non-judicial stamp paper duly notarized.
c)	Undertaking on Compliance of RfP Terms and Conditions. This will be accompanied by duly signed and stamped original tender document deemed to be acceptance of Tender Specifications & Terms and Conditions.	Attach valid Documentary Evidence including affidavit on Rs 100/- stamp paper issued in Delhi-NCR.
d)	To confirm in Yes or No, whether it falls under the Micro, Small and Medium Enterprises Development Act, 2006.	If yes, a copy of the Registration Certificate must be provided to RECPDCL. Further, keep informed to RECPDCL whether there is any change in the status of the company.
f)	The bidder should be in the business of providing survey services for transmission works since last 5 years before the bid deadline	Enclose self-attested copy of documentary evidence such as copy of Letter of Award, completion certificate etc. in support of this requirement.
h)	Bidder should have a minimum average annual financial turnover for the last three financial years namely, FY 2025-26, 2024-25, and 2023-24, must be at least Rs. 50 Lakhs.	Copy of audited financial statements of account audited balance sheets and profit & loss statements) duly certified by Chartered Accountant along with a certificate stating the turnover and net worth shall be submitted as proof.
i)	Net Worth for the last three financial years namely, FY 2025-26, 2024-25, and 2023-24 should be Positive. Net worth means sum total of the paid up capital and free reserves (excluding reserves created out of revaluation) reduced by aggregate value of accumulated losses (including debit balance in profit and loss account for current year) and intangible assets.	
j)	The Bidder must have successfully completed Drone / UAV (Unmanned Aerial Vehicle) based LiDAR Survey as main Contractor of having a route length of not less than 150 km for Extra High Voltage (EHV) Power Transmission Lines of 110 kV or above voltage levels during the last three (3) years, ending last day of month previous to the one in which / bids are invited.	Attach the proof of work order, signed contract and completion certificate. The contractor must submit the successful completion certificate issued by the client/owner while claiming the experience.

Notes:

The Bidder must be an entity incorporated/registered in India under the Companies Act 1956/2013 or Limited Liability Partnership (LLP) Act. Furthermore, in compliance with the Public Procurement (Preference to Make in India) Order 2017, only 'Class-I and Class-II local suppliers' are eligible to bid. Foreign/Global bidders are strictly prohibited from participating in this tender.

In cases where the bidder submits a composite work order (e.g., an EPC contract encompassing surveying alongside construction, erection, or civil works), only the specific financial value of the 'Similar Works' (i.e., the survey component) shall be considered for evaluation. The bidder must mandatorily submit a certified breakdown from the client/owner or a statutory auditor explicitly validating the exact financial value of the survey portion executed within the composite contract. Bids failing to provide this distinct financial bifurcation will not be considered for experience evaluation.

REC Power Development and Consultancy Limited

Volume – I

Bid Proposal Sheets

TECHNICAL PROPOSAL SUBMISSION FORM

Bidder's Name & Address

To:

The Chief Executive Officer,
REC Power Development and Consultancy Limited
D- Block, REC Corporate Headquarter,
Plot No. I-4, Sector-29, Gurugram (Haryana)-122001,

Dear Sir,

We hereby submit our proposal for Empanelment of Agency for carrying out route alignment, LiDAR & Photogrammetry Survey of Transmission Lines Using Drones and preparation of Survey Report for Transmission Projects being implemented through Tariff Based Competitive Bidding Process as per the following:

1. Organizational set up of the Company/Institute as per **Form Tech-1**
2. Past assignment completed with successful completion certificate to be submitted as per **Form Tech-2**
3. Project Team proposed to be deployed (on permanent basis with the company) by name & experience as per **Form Tech-3**
4. Details of equipment/instruments to be deployed for carrying out the scope of work (as per **Form Tech-4**)
5. Details of ongoing assignments (as per **Form Tech-5**)
6. Vendor Profile form (as per **Form Tech-6**)
7. EMD/ Bid Security as per provisions of RFP

Further, it is to confirm that our offer shall remain valid for acceptance for a period of 180 days from date of opening of bids.

The following details are also submitted along with the offer:

- (i) Approach and Technical Method
- (ii) Monitoring equipment, if any.
- (iii) Level and effort of key and other personnel.
- (iv) Any other relevant information.

Note: Details not provided as per format shall be considered as non-responsive and shall not be considered for bid evaluation.

Date:

Signature

Place:

Name

Designation

Bidder's Organization

[Provide here a brief description of the background and organization of your firm/entity.]

**DETAILS OF ASSIGNMENTS SUCCESSFULLY COMPLETED BY THE
BIDDER**

1. Brief Description of the experience of Bidder

S. No	Name of Project	Name of client	Length of Transmission Line/UG Cable as per Letter of Award*	Date of commencement	Date of Completion	Remarks
1	2	3	4	5	6	7

**The length of transmission line should not be less than the minimum qualifying requirements as set out in Annexure-I to Bid Invitation.*

2. The bidder shall submit the following documents along with the bids (Envelope-II) in support of their qualification for the work:

(i) Projects Details related to Walk over Survey works (Best 05 Projects in last 5 FYs only):

Sl No.	Name of the Projects	Length of the line in KM (400 KV or Above)	Length of the line in KM below 400 KV	Date of award & Date of Completion	Govt Agency / Private Agency (with Name)	Completion Certificate/Remarks
1						
2						
3						
4						
5						
Total						

3. Projects Details related to Detailed Survey works: (Best 05 Projects in last 5 FYs only):

Sl. No.	Name of the Projects	Length of the line in KM (400 KV or Above)	Length of the line in KM below 400 KV	Date of award & Date of Completion	Govt Agency / Private Agency (with Name)	Completion Certificate/Remarks
1						
2						
3						
4						
5						
Total						

Bidder shall give details of assignment as per requirement based on which they propose to get themselves qualified.

Bidder must enclose copy of:

- (i) Completion certificates indicating total line length of transmission lines and year of completion for qualifying work(s).
- (ii) Letter of Award /Contract Agreement placed by the utility on the Bidder in support of the above.

The bidder shall also give details of other on-going assignments in the above format in a separate sheet as annexure for information only.

Note: Bidders not giving the required information/documents at the first instance shall run the risk of rejection.

Date:

Signature

Place:

Name

Designation

Bidders must demonstrate that they have permanent, qualified personnel on their active rolls who possess the specialized technical capabilities required for Drone-based LiDAR, Photometry, and Route Alignment.

TEAM TO BE DEPLOYED (ON PERMANENT ROLL OF THE COMPANY)

S. No.	Name of the Person	Educational and Professional Qualification (Attach Degree/ Diploma Certificates)	Experience		Job assigned in the team	Remarks / Specific Details of Past Projects Handled (110kV or Above)
			No. of years	Area of Specialization		

Verification Mandate: "Bidders must attach detailed resumes / CVs signed by the proposed experts, along with clear photocopies of their educational certificates. RECPDCL reserves the right to verify employment logs or organizational rolls to validate the authenticity of the personnel details provided.

(i) Experience Manpower associated with bidder (i.e. Survey Agency):

Sl No	Name	Designation	Date of joining current Survey Agency	Total Experience	Remarks
1					
2					
3					
4					
5					
6					

Date:

Signature

Place:

Name

Designation

Bidder's Name & Address

To:
The Chief Executive Officer,
REC Power Development and Consultancy Limited
D- Block, REC Corporate Headquarter,
Plot No. I-4, Sector-29, Gurugram (Haryana)-122001,

Dear Sir,

We hereby declare that following equipment/instruments shall be used to carry out the scope of services as contained in the technical specification and Bid Documents for Empanelment of Agency for carrying out route alignment, LiDAR & Photogrammetry Survey of Transmission Lines Using Drones and preparation of Survey Report for Transmission Projects being implemented through Tariff Based Competitive Bidding Processas outlined in your tender documents. We also furnish the area wise deployment as well as the source of such equipment/instruments required to carry out this work.

Further, we confirm that the cost for purchase/installation or any other related cost for the equipment shall be entirely borne by us and is included in our lump sum consultancy fee. REC Power Development and Consultancy Limited shall not have any liability in this regard.

S. No.	Name and Purpose of Equipment/ Instrument	Source of availability of Equipment/ Instrument	Remarks
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Date:

Place:

Signature

Name

Designation

Details of ongoing assignments

[Provide here a brief description of the details of ongoing assignments]

VENDOR PROFILE FORM

1	Name & Legal Status of the Bidder				
2	Organization Registration Details (Incorporation or Commencement of Business/ Other Statutory Registrations etc.)		Date of Incorporation/ Registration:		
3	GST Number:		PAN Number:		
4	Registered/ Corporate office Address of Bidder				
	Address & Contact Details (E-Mail, Ph.Nos. etc.) of Proprietor/ Directors of the Bidders	1)			
		2)			
4	Delhi (NCR) Office Address if any & Contact Details:				
	Names and Designations of the persons authorized for single point interaction with RECL				
	Mobile Numbers of Contact persons:		E-mail of Contact persons:		
5	a) MSME Registration:	(Yes/No)	If Yes, Regd. No.:		
			Date:		
			Category:		
			Range of Supply/ Services:		
	b) GeM (Government e-Marketplace) Registration:	(Yes/No)	If Yes, mention GeM Seller ID:		
			Date:		
			Category:		
			Range of Supply/ Services:		
				<i>If No, then provide the date by which you will be registered on GeM portal:</i>	Dt.:
	c) TReDS (Trade Receivables Discounting System) Registration:	(Yes/No)	If Yes, Regd. No:		
			Date:		
			Category:		
Range of Supply/ Services:					
			<i>If No, then provide the date by which you will be registered on TReDS portal:</i>		
d) Whether SC/ST/OBC Entrepreneur:	(Yes/No)	(If yes, please provide Supporting Documents)			
e) Whether Women Entrepreneur:	(Yes/No)	(If yes, please provide Supporting Documents)			

Note:

- 1) As per latest GoI directives, *w.e.f. 01st Nov., 2020*, all vendors of any CPSE (e.g., RECPDCL Limited) must provide their GeM Seller ID to be indicated compulsorily by the respective CPSEs on their Letter of Awards issued to the successful bidders.
- 2) In case of non-furnishing the required MSME registration details, benefits of MSME will not be allowed presuming the agency a non-MSME Entrepreneur.

FINANCIAL PROPOSAL SUBMISSION FORM

(TO BE SUBMITTED ONLINE AT GEM PORTAL ONLY)

REC POWER DEVELOPMENT AND CONSULTANCY LIMITED

Volume - II

Conditions of Contract

For

***Empanelment of Survey Agency for survey using Modern Survey Techniques
and Preparation of Survey Report of transmission projects being implemented
through Tariff Based Competitive Bidding process.***

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1.0 DEFINITION OF TERMS

- 1.1 Unless defined otherwise, the following terms used in this document shall have the meanings.
- 1.2 A “week” shall mean a continuous period of seven (7) days.
- 1.3 “Consultant” or “Technical Specialist” or “Contractor” shall mean the bidder whose bid has been accepted by the Owner for the award of the work and shall include his legal representatives, successors and permitted assigns.
- 1.4 “Consultancy Assignment” or “Work” or “Study” or “Assessment” or “Services” shall mean the complete study as prescribed in the Specification / Terms of Reference.
- 1.5 “Contract” shall mean the Contract Agreement entered into between the Owner and the Consultant, together with the Contract documents referred to therein; they shall constitute the Contract, and the term “Contract” shall in all such documents be construed accordingly.
- 1.6 “Date of Contract” shall mean the date on which both the parties have signed the Contract Agreement or any other date mentioned in the Contract/Letter of Award, as the effective date of Contract, whichever is earlier.
- 1.7 “Engineer” or “Engineer-in-Charge” or “E.I.C.” shall mean the officer appointed in writing by the owner to act as “Coordinator” from time to time on behalf of Owner in all matters pertaining to this Contract. “Engineer-in-charge” shall be authorized by the client for supervision, inspection, scrutiny and approval of some or all of the services rendered by the Consultant under the Contract.
- 1.8 “Final Report”/ “Final Document” or “Report” will mean the final report or document prepared by the Consultant as per Owner’s Specification.
- 1.9 “Indian Rupees” or “Rs.” shall mean the mean the currency of the Government of India.
- 1.10 “Month” shall mean calendar month. “Day or “Days” unless herein otherwise expressly defined shall mean calendar day or day of 24 hours each. Working days in a month shall be as defined by consultant in its offer.
- 1.11 “Notice of Award of Contract” / Letter of Award” shall mean the official intimation from the Owner notifying the successful bidder that its proposal has been accepted and that the bidder is required to sign the contract Agreement.
- 1.12 “Owner” or “Client” or “Employer” shall mean REC Power Development and Consultancy Limited, New Delhi, India (a wholly owned subsidiary of Rural Electrification Corporation Ltd.) and shall include their legal representatives, successors and permitted assigns.
- 1.13 “Specification” shall mean the Technical Specifications and the Conditions of Contract together with Bid Proposal Sheet forming a part of the bid documents and contract and such other schedules and drawings as may be mutually agreed upon.
- 1.14 “Starting Date” shall mean the date from which the periods specified for various activities are measured and asset forth in the completion schedules. The starting date for each schedule, unless otherwise agreed, shall be as indicated in the respective schedule.

- 1.15 The “Government” shall mean the “Government of India” or an authorized representative/agency/department of the “Government of India”. The words imparting singular shall also include the plural and vice-versa where the context so requires.
- 1.16 The “Site” shall mean and include the land and other places over or into or through which the Thermal Power Project is to be constructed and any adjacent land, path, street, river or a reservoir.
- 1.17 The title or heading shall not alter or affect the intent or scope of the clause or articles of the Documents
- 1.18 The Date of Completion of Contract-Unless otherwise terminated under the provisions of any other relevant clause of the document, Contract shall be deemed to have been completed after issuance of the certification from engineer-in-charge that there is no demand outstanding against the Consultant and all liabilities under the contract have been satisfactorily fulfilled by the Consultant.
- 1.19 The “Final Acceptance of Work” provided by the Consultant under the Scope will be given by Owner as hereinafter defined. Six (6) Months after successful completion of the Consultancy assignment and submission of all documents, reports etc. to REC Power Development and Consultancy Limited and acceptance of the reports by the concerned statutory Authorities, Government of India and upon certification by the Engineer – in – Charge.
- 1.20 Words imparting “Person” shall include firms, companies, corporations and association or bodies of individuals, whether incorporated or not.

2.0 VALIDITY

The proposal shall be on firm price basis and valid for acceptance for at least 180 days from the date of opening of the offers.

3.0 CURRENCY OF BID

All prices quoted in the Schedules of the Bid Proposal Sheets should be in Indian Rupees and all payments shall be made in Indian Rupees.

4.0 THE BID DOCUMENTS

- 4.0 This document is meant for exclusive purpose of submitting the offer by the bidder against the specification and shall not be transferred, reproduced or otherwise used for purposes other than for which it is specifically issued.
- 4.1 REC Power Development and Consultancy Limited does not bind themselves to accept the lowest or any offer or to give reasons for their decision. The Corporation reserves the right to reject any or all offers without assigning any reason.

5.0 EARNEST MONEY DEPOSIT

- 5.1 An EMD/Bid Security has to be submitted as per bid document before the bid deadline of the subject tender.
- 5.2 The Bid Guarantee/EMD shall be made payable without any condition to the Owner and ‘On demand’.

- 5.3** In consideration of the Owner opening and considering the Bid for purpose of award, the Bidder shall keep his Bid valid for a period of 180 days from the date of opening of the Bid, during which period the Bidder agrees not to vary, alter or revoke his bid as a whole or in part. If the Bidder, however, fails to keep his Bid valid for 180 days or varies it during the period, then the Owner shall be entitled forfeit the Bid Guarantee amount without any notice or proof of damages etc.
- 5.4** If the successful Bidder fails to submit a Contract Performance Guarantee as specified in the Contract Document within 15 (fifteen) calendar days after the date of Letter of Award of the Contract, then then the Bid Guarantee amount will be forfeited by the Owner without any notice or proof of damages, etc.
- 5.5** Any Bid not accompanied by a Bid Guarantee in accordance with above said provisions shall be treated as non-responsive and shall be rejected.

6.0 UNDERSTANDING AND CLARIFICATIONS ON DOCUMENTS AND SPECIFICATIONS

The bidder is required to carefully examine the specifications and documents and fully inform himself as to all the conditions and matters which may in any way affect the work or the cost thereof. If any bidder finds discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part, he shall seek clarification from owner at once but in no case later than seven (7) days prior to the deadline for submission of bids prescribed by the Owner. After receiving such interpretations and clarifications, the bidder may submit his offer but within the time and date as specified. All such interpretations and clarifications shall form an integral part of the specifications and documents and accompany the consultant's proposal.

Verbal clarifications and information given by the owner or his employee (s) or his representatives(s) shall not in any way be binding on the Owner.

7.0 DISCREPANCIES AND ADJUSTMENT OF ERRORS

- 7.1** The Bid documents are mutually explanatory of one another. If there are varying or conflicting provisions made in any one of the bid documents, REC Power Development and Consultancy Limited shall be deciding authority with regard to the intention of the document.
- 7.2** Any errors in description, quantity or rate in Schedules or any omission there from shall not vitiate the Contract or release the Consultant from the execution of the whole or any part of the works comprised there in according to drawings and specifications or from any of his obligations under the contract.
- 7.3** If on checking any difference is found between the rates given by the consultant in words and figures or in the total amount worked out by him in the Schedules in the proposal, the same shall be rectified in accordance with the following rules:
- a) In the event of discrepancy between description in words and figures quoted by bidder, the description in words shall prevail.
 - b) In the event of an error occurring as a result of wrong extension of the unit rate and quantity, the unit rate shall be regarded as firm and extension shall be amended on the basis of the rate.
 - c) All errors in totaling in the amount column and in carrying forward totals shall be corrected.

- 7.4** The bidder should ensure that the prices furnished in various price schedules are consistent with each other. In case of any inconsistency in the prices furnished in the specified price schedules (to be identified in Bid Proposal sheets (BPS) for this purpose), the owner shall be entitled to consider the highest price for the purpose of evaluation on to award the contract at the lowest of the price in these schedules.
- 7.5** Prior to detailed evaluation, the Owner will determine whether each bid is for acceptable quality, is generally complete and is substantially responsive to the bidding documents. For purposes of this determination, a substantially responsive bid is one that conforms to all the terms, conditions and specifications of the bidding documents without material deviation, objection, conditionality or reservation is one (i) that affects in any substantial way the scope, quality or performance of the contract; (ii) that limits in any substantial way, inconsistent with the bidding documents, the Owner's rights or the successful bidder's obligations under the contract; or (iii) whose rectification would unfairly affect the competitive position of other bidders who are presenting substantially responsive bids. The Owner's decision in respect of the determination of the responsiveness of a bid will be final and binding on all the bidders.
- 7.6** A bid determined as not substantially responsive will be rejected by the Owner and may not subsequently be made responsive by the bidder's correction of the non-conformity.
- 7.7** The owner may waive any minor informality or non-conformity or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any bidder.
- 8.0 SIGNATURE OF BIDS/OFFERS**
- 8.1** The offer must contain the name, residence and place of business of the person or persons making the offer and must be duly signed and stamped on each page by the bidder with his usual signature.
- 8.2** Offer by a partnership firm must be furnished with full names of all partners and be signed with the partnership name, followed by the signature(s) and designations(s) of the authorized partner(s) or other authorized representative(s).
- 8.3** Offers by Corporation/Company must be signed with the legal name of the Corporation/Company by the President, Managing Director or by the Secretary or other person or persons authorized to furnish offer on behalf of such Corporation, Company in the matter.
- 8.4** An offer by a person who affixes to his signature the word 'President', 'Managing Director' 'Secretary' or other designation without disclosing his principal will be rejected.
- 8.5** The power of attorney in the name of the person signing on behalf of the Consultant/bidder shall be furnished along with the offer.
- 8.6** The Consultant's (Bidder's) name stated on the proposal shall be the exact legal name of the firm.
- 8.7** Erasures or other changes in the offer shall be over the initials of the person signing the bid.
- 8.8** Offers not conforming to the above requirements of signing may be disqualified.

9.0 PROGRESSIVE PAYMENT

All payments against the services shall be paid against production of invoice in quadruplicate by the Consultant. The payment of such fees shall be released as per clause No. 14 (Terms of Payment of Bid Invitation), on stage-wise completion of the services including submission of the Deliverables and subject to acceptance, approval and certification by Owner.

9.1 PROCEDURE OF PAYMENT

All the invoices of payment shall be supported by necessary documents and submitted in quadruplicate for the certification of Engineer-in-Charge of which he will require a maximum time of seven (7) days before the same are submitted for processing the payment within fifteen (15) days of certification of the Engineer-in-Charge of the amount payable for the services. In the event, there is any query in respect of any item of such invoice requiring clarification, the Engineer-in-Charge shall notify the same within 15 days of receipt of such invoice by the Owner that such a query has arisen and both the parties shall endeavor to reach an agreement within a period of thirty (30) days thereafter. If no mutual agreement can be reached within a period of forty five (45) days after receipt of the invoices by the Engineer-in-Charge, the Owner shall make payment against the balance of invoice (original amount less the amount in question) to the consultant within thirty (30) days thereafter i.e. within sixty (60) days from the date of receipt of invoice by the Engineer-in-Charge. The invoice for the balance amount under question shall be separately submitted for future consideration of the Owner.

10.0 LIQUIDATED DAMAGES FOR DELAY IN COMPLETION

For any delays attributable to the Consultant, beyond the Scheduled dates/period of completion of various activities as per the agreed work schedule, a Liquidity Damage (LD) equal to 0.5% of the contract value per week or part thereof subject to maximum of 5% of the contract value may be levied from the bill of the agency.

11.0 LIABILITY OF THE CONSULTANT

Should any defect or inadequacy appear in the study carried out and report submitted by the Consultant prior to the date of final acceptance of the work by the Owner, the Consultant shall perform at its own initiative and free of any cost to REC Power Development and Consultancy Limited, all such services as shall be necessary to remedy the said defect or inadequacy.

The Consultant shall be further liable for the consequence of errors and omissions arising from the gross negligence on its part or on the part of its employees or associates or experts to the extent of the total contract value of this contract.

12.0 TAXES, DUTIES AND INSURANCE

All taxes (except GST, as applicable), duties, levies, insurance charges, etc. arising out of the contract shall be payable directly by consultant and shall be included in the lump sum bid price for the entire scope of work. REC Power Development and Consultancy Limited will not bear any expenditure, whatsoever on this account. As regards income tax, surcharge on income tax and other corporate taxes, the Consultant shall be responsible for such payments to the concerned authorities. However, the Owner is entitled to deduct TDS as per the Government policies/tax rules and regulations. The Consultant shall be liable to take/maintain all necessary insurance at its own cost.

13.0 PATENT

- 13.1** The Consultant shall hold harmless and indemnify the client from and against loss, damage and expenses arising from any claim for infringement of patent, copy right, design and other such rights in existence or to be granted on an application published prior to the completion of this Consultancy with respect to or arising out of the sue or supply of design, or any work in accordance with the designs, drawings or specifications furnished, approved or recommended by the consultant.
- 13.2** The Consultant shall promptly notify the client in writing if the Consultant has or has acquired knowledge of any patent under which a claim or suit for infringement could reasonably be brought because of the use by the client of any information, recommendation or specifications, services rendered by the Consultant.
- 13.3** The Consultant, in such case, shall forthwith at its own cost make and furnish to the client alternative designs, drawings, specifications or recommendations to avoid the same and without putting the Client to additional cost.

14.0 SETTLEMENT OF DISPUTE

- 14.1** Except as otherwise specifically provided in the Contract all disputes concerning questions of fact arising under the Contract shall be decided by the Engineer subject to a written appeal by the Consultant to the Engineer, whose decision shall be final to the parties hereto.
- 14.2** Any disputes or difference including those considered as such by only one of the parties arising out of or in connection with the contract shall be to the extent possible settled amicably between the parties.
- 14.3** If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration as provided in **ARBITRATION** clause.

15.0 ARBITRATION

- 15.1** In the event of any question, dispute or difference arising out of or in connection with this consultancy work, whether during the progress of the work or after its completion, abandonment or breach of contract, the same shall be referred for arbitration, for which purpose the Client and the Consultant shall nominate one Arbitrator each. These Arbitrators shall appoint an Umpire not later than one month from the latest date of their respective appointment. The arbitration shall be conducted in accordance with the provisions of Indian Arbitration and Conciliation Act 1996, the rules framed hereunder and any statutory modifications thereof. The costs of reference and arbitration award shall be payable by the parties to the extent and in a manner as may be determined by the Arbitrators or the Umpire.

In case the consultant is an Indian Public Sector Enterprise / Govt. Dept. (But not a State Govt. Undertaking or Joint Sector Undertaking which is not a subsidiary of Central Govt. Undertaking), the dispute arising between the Owner and the Consultant shall be referred for resolution to a Permanent Arbitration Machinery (PAM) of the Department of Public Enterprises, Govt. of India.

15.2 Notwithstanding the existence of any dispute or difference and/or reference for the arbitration, the Consultant shall proceed with and continue without hindrance with the performance of the work under the contract with due diligence and expedition in a professional manner and the payment due to the consultant shall not be withheld by the Client on account of such difference or arbitration proceedings unless such payment is subject matter of the arbitration.

15.3 The arbitrators may from time to time with consent of the parties enlarge the time, for making and publishing the award. The venue of arbitration shall be the registered office of REC Power Development and Consultancy Limited.

16.0 TERMINATION OF DEFAULT:

16.0 The Owner may without prejudice to any other remedy for breach of contract, by written notice of default sent to the consultant, terminate the contract in whole or in part.

- a. If the consultant fails to deliver any or all of the services within time period(s) specified in the contract or any extension thereof granted by the owner in writing.
- b. If the consultant fails to perform any other obligation(s) under the contract or
- c. If the consultant, in either of the above circumstances, does not cure its failure within a period of thirty (30) days after receipt of the default notice from the owner.

16.1 In the event the Owner terminates in whole or in part, pursuant to Para 16.1.0, the owner may get the services done, upon such terms and in such manner as it deems appropriate, similar to those not rendered, and the consultant shall be liable to the Owner for any excess costs for such similar services. However, the consultant shall continue performance of the contract to the extent not terminated.

17.0 TERMINATION FOR CONVENIENCE

17.1 The Owner, may by written notice sent to the consultant, terminate the contact, in whole or in part, at any time for its convenience, The notice of termination shall specify that termination is for owner's convenience, the extent to which performance of work under the contract is terminated and the date upon which such termination become effective.

17.2 The studies/services that are completed and ready for final reporting within thirty (30) days after the consultant's receipt of notice of termination shall be accepted by the Owner at contract terms and prices. For the remaining services, the Owner may elect,

- a) To have any portion completed and delivered at the contract terms and prices and/or.
- b) To cancel the remainder and pay to the Consultant an agreed amount for partially completed services.

18.0 TERMINATION FOR INSOLVENCY

18.1 The owner may at any time terminate the Contract by giving written notice to the Consultant, without compensation to the Consultant, if the Consultant becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Owner.

18.2 Upon termination of the contract at any time for whatever reason by REC Power Development and Consultancy Limited compensation shall be payable to the Consultant for all services performed satisfactorily until the date of termination. In addition, the Consultant will be paid for

such of those items of work, which have been partially completed as per conditions stipulated under relevant clause. The Consultant shall provide available documentary evidences to this effect, acceptable to REC Power Development and Consultancy Limited.

18.3 Following issuance by REC Power Development and Consultancy Limited of a notice of termination and prior to the effective date of such termination, the Consultant shall:

- a. Terminate performance of work in progress under the contract on the date and to the extent specified in the notice of termination.
- b. Incur no further costs for services except as necessary to complete performance of any portion of the work under the contract not terminated by the said notice.
- c. Terminate all outstanding orders, service contracts and sub-contracts to the extent that they relate to the performance of work terminated by the notice;
- d. Transfer title and deliver to REC Power Development and Consultancy Limited in the manner, at the times and to the extent, if any, as directed by REC Power Development and Consultancy Limited, all completed or partially completed reports, designs, data, maps, plans, photographs, specifications, and commutations, etc. which, if the contract had been continued, would have been required to be furnished to REC Power Development and Consultancy Limited

The termination of the contract shall not relieve the Consultant of its duties and liabilities as per the contract for the portion of the services performed prior to the effective date of termination.

19.0 SIGNING OF AGREEMENT

- a. RECPDCL, after the issue of the Letter of empanelment to the agency, will send one copy of the final agreement to the agency in line with terms & conditions of the tender documents.
- b. The Agreement, unless otherwise agreed to, shall be signed within 15 days of the acceptance of the Letter of empanelment, at the office of RECPDCL on a date and time to be mutually agreed. The agency shall provide for signing of the Contract, appropriate power of attorney and other requisite materials. In case the Contract is to be signed beyond the stipulated time, the Bid Guarantee submitted with the Proposal will have to be extended accordingly.
- c. The Agreement will be signed in three originals and the agency shall be provided with one signed original and the rest will be retained by RECPDCL.

20.0 GOVERNING LAWS

This Consultancy work shall be governed by the Indian Laws for the time being in force and the Delhi Courts alone shall have the jurisdiction.

21.0 SUSPENSION OF THE OBLIGATION

21.1 The obligations stipulated in this specification can only be suspended in the case of any particular item or work, in the event of Force Majeure as defined in clause 22.0 or as the result of an agreement between the parties.

21.2 In the event of Force Majeure, neither of the parties may be considered in default of its obligations under the terms of the Specifications.

22.0 FORCE MAJEURE

22.1 Force Majeure is hereby defined as any cause which is beyond the control of the Consultant or REC Power Development and Consultancy Limited as the case may be, which they could not have foreseen and which substantially affect the performance of contract such as:

- a) Natural Phenomena including but not limited to floods, draughts, earthquakes and epidemics.
- b) Acts of any government, domestic or foreign, including but not limited to war, declared or undeclared, priorities, embargoes, etc.

Provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such cause.

23.0 HANDLING OF DOCUMENTS

23.1 All plans, design calculations, studies, data, maps, drawings and specifications prepared by the consultant in connection with the services to be provided by the Consultant shall be the property of the Owner, as when required or upon termination of the Contract, the aforesaid documents, prepared specifically for this Study (including originals), shall be handed over to the Owner before final acceptance or thereafter.

23.2 The consultant shall take all necessary steps to ensure confidential handling of all matters pertaining to plans, designs, drawings, specifications, methods and any other information developed or acquired by him from REC Power Development and Consultancy Limited under terms of the Contract or in performance thereof.

23.3 The consultant shall not prepare articles or photographs for publication or speeches or presentations about the work and /or site and/or plant, contracts and installation in which has an interest without prior written consent of.

23.4 The consultant shall take necessary steps to ensure that all persons employed on any work in connection with this contract have noticed that the Indian Official Secrets Act, 1923 (XIX of 1923) applies to them and shall continue to apply even after the execution of such work(s) under the contract.

24.0 ABANDONMENT OF WORK

24.1 If any work included in the scope of specification to be done by the consultant is abandoned or suspended for any cause or reasons, which cannot be attributed to the consultant, payment, shall be made on a pro-rata basis for the work actually done and as decided by the owner.

25.0 SUB-CONTRACT

The consultant cannot assign or sub-contract any of this work without the prior written consent of REC Power Development and Consultancy Limited.

26.0 LIMITATION OF LIABILITIES

26.1 REC Power Development and Consultancy Limited shall in no way be responsible for any liabilities arising out of the Consultant's contractual obligation with the Consultant's personnel,

experts, engineers, Sub-contractors, licensors, collaborators, vendors, or subsidiaries.

- 26.2** The Consultant and REC Power Development and Consultancy Limited both agree that each shall assume full risk of damages of injury to its own properties, employees and representatives caused by any act or omission to act by their respective employees or representatives, during the performance.

27.0 CHANGES/ADDITIONS/DELETIONS

- 27.1** REC Power Development and Consultancy Limited shall have the right to request in writing additions or changes in the scope of services to be performed by the Consultant. If in the Consultant's opinion, any such additions or changes affect the completion schedule or the fee, REC Power Development and Consultancy Limited will be advised accordingly and the same shall be mutually settled. However, the consultant shall continue to carry out the work pending till final settlement if any.

- 27.2** REC Power Development and Consultancy Limited reserves the right to delete any item/s or part thereof from the scope of services to be performed by the Consultant. For such purposes REC Power Development and Consultancy Limited shall give to the Consultant a notice in writing on receipt of which the Consultant shall take necessary steps as may be directed by REC Power Development and Consultancy Limited and shall stop incurring any expenditure and performing services in connection with the item/s of work so deleted.

- 27.3** The corresponding fee for the deleted item(s) of work will be arrive based on the fee identified in the Contract and shall be deducted from the fee payable to the Consultant under the Contract. The Consultant, however, shall be entitled for the compensation of the amount of work and services already performed in connection with item(s) deleted from the scope, at a mutually acceptable fee.

28.0 NO WAIVERS

If Owner, in any instance, does not insist upon strict performance of any of the terms of the assignment, it shall not be construed as a waiver or relinquishment in the future till the assignment is in force and shall not relieve Consultant of any of its responsibilities under the assignment.

29.0 INSTRUCTIONS AND NOTICES

All notices to be given on behalf of REC Power Development and Consultancy Limited and all other actions to be taken on its behalf may be given or taken by the Engineer-in-Charge or any officer for the time being entrusted with the functions, duties and powers of the Engineer-in-Charge.

All instructions, notices and communications, etc., shall be given in writing and if sent by registered / speed post to the last known place of business of the consultant, shall be deemed to have been served on the dates when in the ordinary course of post these would have been delivered to him.

30.0 BANKRUPTCY

If the Consultant shall become bankrupt or have a receiving order made against him or compound with his creditors or being a corporation commence to be wound up, not being a voluntary winding up for the purpose only amalgamation or reconstruction, or carry on their business under a receiver for the benefit of their creditors or any of them, REC Power Development and Consultancy

Limited shall be at liberty:

1. To terminate the assignment forthwith without any notice in writing to the Consultant or to the liquidator or receiver or to any person in whom the consultant may become vested.
2. To give such liquidator receiver or other person the option of carrying out the consultancy assignment subject to their providing a guarantee for the due and faithful performance of the assignment up to an amount to be determined by REC Power Development and Consultancy Limited.

31.0 PROGRESS REPORT

31.1 The Consultant shall prepare and submit to REC Power Development and Consultancy Limited weekly progress report showing the progress and status of the `Works being performed by him including such materials as charts, networks and photograph (if any) as per the directives of REC Power Development and Consultancy Limited Draft formats of progress reports shall be enclosed by the Consultant with the offer.

31.2 It is understood that submission of such reports and reviews thereof by REC Power Development and Consultancy Limited shall not be deemed to absolve the Consultant of his responsibility of timely completion of the Assignment as per the time schedule indicated herein.

32.0 METHODOLOGY OF EXECUTION OF ASSIGNMENT

32.1 Consultant shall clearly bring out in their bid their organization chart and the methodology they want to follow of successful execution of the assignment. Consultant along with the organization chart shall indicate the names of key persons proposed to be deployed for each activity of the project and their bio data. They shall also indicate separately the works they intent to carryout in their office and estimated Man days. Consultant shall also bring out in his bid number of visits to site of the key personnel they envisage under the assignment.

32.2 Regular review meetings will be held one in fifteen days (15) in REC Power Development and Consultancy Limited Office and progress of work will be reviewed.

33.0 CORRESPONDENCE AND CONTRACT COORDINATION PROCEDURE

33.1 All correspondence during the pre-award stage and during execution of the contract shall be made as per following procedure: -

33.2 On all technical matters pertaining to execution of the contract as per specification in the consultant shall directly interact with the Engineer-in-Charge.

33.3 All Correspondence from Owner to the Consultant shall be made with the full time Coordinator to be identified by the Consultant and the agreed by the Owner.

33.4 Consultants at all times shall use corporate e-mail ID for sending the correspondence/ communications through e-mail. If the same is not available, it should be created by the consultant.

34.0 INSPECTION OF SITE BY CONSULTANT

The Consultant shall inspect and examine the site and its surroundings and shall satisfy himself as to the form and nature of the site, the quantities and nature of work and the equipment / materials

necessary information as to risks, contingencies, and other circumstances, which may influence or affect his tender, before bidding.

35.0 MANPOWER DEPLOYMENT

The Consultant shall deploy task force of well qualified and experienced engineering / science executive and draftsmen for this work. The manpower proposed to be deployed for this task shall be guaranteed by the Consultant in his offer both discipline-wise and category wise (for Engineers / Scientists and draftsmen) required for completion of service included under the scope of the specification. The Consultant shall depute a senior level executive to act as full time overall coordinator and focal point for all interactions with REC Power Development and Consultancy Limited throughout the entire period of consultancy assignment. The bio-data of the Engineering / Scientific personnel proposed to be included in the Task Force Should be enclosed with the offer. The task force so proposed is subject to the approval of the Owner. The owner may ask for suitable substitution of Engineers/Scientists in place of the proposed ones, if it so desires.

36.0 LIST OF EQUIPMENT / INSTRUMENTS

The Bidder shall provide a schedule of instruments / equipment available with it and/or with its collaborators (s)/ laboratories, which are intended to be used for each area of study separately. Further, the Bidder shall indicate in Schedule-4 the list of equipment proposed to be deployed for in completion of similar survey works and qualified.

REC Power Development and Consultancy Limited shall not make any additional payment for any type of equipment / accessories required by the consultant for this package or for any other purpose.

37.0 CO-ORDINATION PROCEDURE

The Consultant shall propose in its offer the detailed co-ordination procedure with the owner for performing the services. The system to be adopted shall provide control and continuity of all functions. Owner's participation in the major decisions shall be essential to the extent desired by the owner. The coordination procedure and schedules of coordination review meeting between the Owner and the Consultant shall be mutually discussed and finalized before award of the contract.

38.0 COLLABORATION

The Consultant will be required to furnish the details its collaboration arrangement with various laboratories, institutions and other organizations along with consent letters from the collaborators categorically agreeing to carry out the assignment till the completion of the study. Such consent letter must contain a declaration that the consent given by the collaborator is irrevocable till successful completion of the assignment. The proposal will also precisely outline the responsibilities and task to be undertaken by the collaborator (s). The consent letters from the collaborators shall be enclosed with the Bid.

39.0 ASSOCIATION OF REC POWER DEVELOPMENT AND CONSULTANCY LIMITED

REC Power Development and Consultancy Limited may depute its Engineer / Representative to be present during the entire course of survey works or any part thereof. The Engineer/authorized representatives will have to be provided necessary information when asked for. He may further monitor the field and laboratory activities, and supervise the finalization of the documents. The engineers will also discuss results of studies and may suggest different cases to be studied. The

Consultant shall provide all facilities for REC Power Development and Consultancy Limited Engineers / Representatives to have fruitful participation in the work. The Consultant will submit all study results draft sections / documents to the EIC for his approval and the final document will be prepared after incorporating changes / modifications / additions / alterations suggested by the EIC.

40.0 LANGUAGE

The offer must be submitted in English language, all documents, specifications, schedules, notices correspondences, operation & maintenance instructions, drawings or any other written material in connection with this work shall be in English language.

41.0 UNITS & INDIAN STANDARDS / CODES / REGULATIONS

Indian Standards, codes and regulations, wherever applicable, shall be adopted and adhered to by the Consultant. In case of such Indian standards / codes / regulations being not available in particular areas, applicable and accepted international standards shall be followed.

42.0 OWNER'S RIGHT

Owner reserves the right for the following:

- a) Rejection of any or all offers without assigning any reason whatsoever.
- b) Rejection of any offer which is incomplete with regard to the required information of scope of work.
- c) Review of the work performed by the Consultant either himself or through another Consultant separately appointed by him and ask for any clarification and changes / modifications to the work performed by the Consultant. Such changes shall be mutually discussed and agreed upon between the Owner and Consultant in his work without any cost and liability to the Owner and without any dilution of the responsibility of the consultant.

43.0 TRAVEL EXPENSES

The travel expenses incurred by the Consultant's personnel for journeys to site or REC Power Development and Consultancy Limited Office or anywhere in connection with the study under Scope of this Specification will be borne by the Consultant and the owner will not take any responsibility whatsoever on this account.

44.0 ACCESS TO CONSULTANT'S OFFICE / WORK SITE

The authorized representative (s) of REC Power Development and Consultancy Limited shall be provided access to the Consultant's and/or its Associates premises or to the work site at any reasonable time during the work for expediting, inspection & checking of the progress of the Consultant's work.

REC POWER DEVELOPMENT AND CONSULTANCY LIMITED

Volume – III

**Technical Specifications for survey
work of Transmission lines/ Sub-
Stations**

Contents

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6	Completion Period for Survey using Modern Survey Techniques and preparation of Survey Report	
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Technical Specifications for Survey Work of Transmission Lines/ Sub-Station
Associated with TBCB Projects

1.0 General Information & Scope of Work

1.1 The technical specification covers survey using modern survey techniques for route alignment of transmission line, identification of suitable substation sites and preparation of report for the transmission schemes allocated to RECPDCL from time to time. RECPDCL is henceforth referred to as employer. The employer would get the survey works done through an identified agency, henceforth referred to as 'Contractor', empaneled through bidding process.

The contractor shall be required to further carry out LiDAR & Photogrammetry using Drones including walkover survey on the route approved by the RECPDCL, collecting ground data through LiDAR using drones in such manner that it integrates seamlessly with applications for tower spotting and profiling viz. PLS-CADD, contouring etc. for the transmission line(s) covered under this specification

The scope of work inter-alia shall include the following: -

- a) Route Alignment in KMZ/KML file on Bhuvan (Indian Geo-Platform of ISRO) / Google imagery and Survey of India topographical maps (both in hard & soft copies) to the extent required, inter-alia including:
 - i) Desk studies, site visits, reconnaissance and Identification of three feasible alternative route alignments & selection of one optimized route alignment while duly considering constructability
 - ii) Walk-over Survey and finalization of the route alignment. The Contractor shall be required to carry out walkover survey along the most-feasible route alternative and propose any changes, if required in the route.

For doing the walkover survey the Contractor shall use latest state-of-the-art techniques like GPS tracking devices to be used while carrying out walk-over survey and GPS tracker report to be provided.

The output (both in hard & soft copies) shall be in the form of final route alignment in KML/KMZ file and pdf/ digitized topographical map (i.e digitized topo sheets of Survey of India) with latest details/features including but not limited to forest, revenue area, protected area, wildlifeinfringement, Animal/Bird sanctuary, infringement of endangered species habitats, Great Indian Bustard (GIB) area, civil and defense Airports, all rivers, sea, coal, mineralareas, mining areas, oil pipe line/underground inflammable pipe lines, railway lines, canals, roads, highways, expressways, defense setup etc. up to 8 kms on both sides of selected route alignment. Due care needs to be taken while spotting the tower in hilly/mountainous terrain. Cross section is to be taken at regular intervals especially in uneven or hilly terrain for determining feasibility of installation along proposed route, proper identification of the routes that are accessible year-round for construction & maintenance.

- iii) Preliminary Logistical survey should be done and made part of the survey report

for hilly terrain. The logistical survey has a bearing on the technical scope of the project such as ICT (Inter-Connecting Transformers)/reactor Rating and transportation thereof. Further refinement may be done at the stage of detailed survey by the Transmission Service provider (TSP)

- iv) Preparation of Survey Report including identification and explanation of route constraints like Forest, revenue area, protected area, wildlife infringement, Animal/Birdsanctuary, infringement of endangered species habitats, GIB area, vicinity to civil and defense Airports, boundary details of army establishments, cantonment areas, NO-GO Areas demarcated by Armed forces, Government, major river/sea crossings & coal, mineral mining areas, oil pipeline/underground inflammable pipelines, railway lines, canals, roads, defense setup, orbital rail corridor, dams, existing/proposed/ mineral and other mining areas, river/water body/dam crossing etc., infrastructure details available enroute, various clearances required in the final route alignment, possible RoW constraint areas etc.
 - v) LiDAR & Photogrammetry survey for a 100 m corridor i.e. approx. 50m on either side of final route alignment after walkover survey.
 - vi) Obtaining necessary clearances/permissions from Director General of Civil Aviation (DGCA), Ministry of Defense, Government of India as per DGCA procedures and guidelines and other agencies as may be required to complete the job of flying and data acquisition over the Area of Interest (AoI).
 - vii) Establish Horizontal and Vertical Control Network along the corridor.
 - viii) Acquire LiDAR point cloud data and aerial images in the stipulated corridor
 - ix) Carry out Quality assurance checks at various stages and re-flying if required for producing deliverables within the stipulated accuracy.
 - x) Classification of point cloud data and feature extraction.
 - xi) Generate Digital Elevation Model (DEM), Digital Terrain Model (DTM) and Digital Surface Mode (DSM).
 - xii) Generated Digital Ortho photo map of the stipulated corridor
 - xiii) Carrying out estimation of tree quantity & type using LIDAR & photogrammetry data along with information captured during walkover survey.
 - xiv) Scheduling of the Right of way corridor for land usage & Ownership type.
- b) Preparation of LiDAR photometry Survey report as per given formats, identification and explanation of route constraints (like Forest, Protected area etc.) infrastructure details available en-route etc.
- i) Preparation of Survey Report incorporating the details as per Annexure-A.
 - ii) The Provisional quantities for the scope of work are indicated in the relevant

Price Schedules of BPS. The final quantities (quantities in “kms” unit) shall be as approved by Site Engineer-in-charge and shall be along the approved route alignment.

- iii) The Contractor shall indemnify the Employer for any loss or damage to properties, trees etc. during the survey work.
- iv) Existing and Proposed infrastructure projects i.e. Multi modal logistics park/National Expressways/National Highways/State Highways/New Economic Corridors/Inland Water Ways (Sagarmala)/orbital rail corridor may also be mentioned in the report.
- v) Initiation to forest department of any forest clearance based on survey of final route alignment, probable RoW constraint areas with the concerned Authorities.
- vi) The Contractor shall indemnify the Employer for any loss or damage to properties, trees etc. during the survey work.
- vii) The Contractor should note that Employer will not furnish topographical maps prepared by Survey of India (SOI) or satellite imageries but will make available assistance that may be required in obtaining these by providing letters of recommendation to the concerned authorities. Further, for use of Drone, LiDAR & Photogrammetry techniques for detailed survey, the Contractor shall be responsible for obtaining necessary clearances/ permissions, as may be required from concerned authorities. The Contractor shall follow all rules and regulations notified by regulatory bodies for the use and flying of drones. The Employer will provide assistance that may be required in obtaining these clearances / permissions by providing letters of recommendation to the concerned authorities.
- viii) The work shall be carried out by the Contractor using modern surveying techniques. The Contractor or his associates shall provide the detailed description of the procedure to be deployed including the details of the equipment & facilities including software for image processing, computer aided tower spotting etc.
- ix) The Contractor during walkover survey shall also estimate in the non forest area the tree quantity along with its type and average girth in the RoW corridor width. These details shall recorded section wise during walkover survey and shall be reconfirmed with the output of algorithm of tree count based on LiDAR data captured through Drones. These details shall be incorporated in the final tower schedule.
- x) Village Identification and Boundary Demarcation: Accurately identify all villages falling within the Transmission Line corridor and delineate their boundaries along the transmission line corridor.
- xi) Land Parcel and Ownership Identification: For government lands, specify the Name of agency/ authority/ utility like Revenue, Railway, Forest, Defence, PSUs, Companies etc

1.0 LiDAR & Photogrammetry Survey using Drones.

1.1 Equipment & Software

1.1.1 Drone

1.1.1.1 Type and Endurance: The Drone shall be capable of carrying the LiDAR scanner and camera payload. It shall have sufficient endurance to fly with payload the required line segments with minimum 40 minutes flight endurance time. The Contractor shall use multiple Drones and /or batteries to complete the scope of work within the time schedule.

1.1.1.2 Stability and Payload Capacity: The Drone shall provide a stable flight platform with minimal vibration of the sensors. It must support the weight and power requirements of the LiDAR scanner, GNSS, IMU and camera. The payload capacity shall exceed the combined weight of all sensors and mounting assemblies. Vibration damping mounts or gimbals shall be used as appropriate to ensure data quality.

1.1.1.3 Regulatory Compliance & Permissions: The Drone and its operation shall comply with DGCA regulations for unmanned aircraft. The Drone should have a valid DGCA UIN (Unique Identification Number). All necessary flight permissions, if required, in line with the relevant regulations stipulated must be obtained prior to survey. In forest or wildlife areas, necessary permissions if required from concerned authorities should also be obtained.

1.1.1.4 Calibration & Safety: The Drone shall be calibrated (IMU, Compass/Magnetometer, GNSS) as per manufacturer recommendations before flights. A pre-flight checklist shall be rigorously followed, including verification of sensor functionality, battery health, and radio link quality. All operations should prioritize safety of personnel and infrastructure. The Drone during its flight shall not come within an unsafe distance of energized transmission line conductors or approach closer than necessary to any inhabitation.

1.1.2 LiDAR Sensor

1.1.2.1 Type and Capabilities: The LiDAR sensor shall be a high-resolution airborne laser scanner suitable for Drone integration. It must be with multiple-return capability. The sensor shall be capable of minimum returns per pulse as specified in Standard technical particulars so that it can detect ground through vegetation and also capture intermediate canopy structure. The Drone should have sufficient pulse repetition rate to achieve stipulated ground point density at the flown flight speed & height.

1.1.2.2 Range and Accuracy: The LiDAR scanner must have adequate laser range to measure ground elevation in all terrain within the flight altitude. It shall reliably detect returns from low-reflectivity targets (like dark foliage or soil) at the planned altitude. Overall system accuracy (after GNSS/IMU integration) shall enable achieving survey-grade results with vertical and horizontal accuracy within the stipulated limits specified in the Standard Technical Particulars.

1.1.2.3 Point Density Requirements: The LiDAR sensor and flight parameters shall be chosen to achieve a high point cloud density across the area of interest. The minimum nominal point density for plain terrain and mountainous/vegetated terrain should be as specified

in the Standard Technical Particulars. The LiDAR shall support multiple returns and last-return information to aid in classification. The LiDAR data shall include sufficient returns from the ground under forest canopy and the flight planning parameters adjusted (slower speed, higher overlap, or lower altitude) in dense foliage areas to meet the point density requirement.

The LiDAR beam divergence and footprint size shall be small enough so as to ensure that features like transmission line conductors /earthwire can be detected. The scanner shall be set to an appropriate scan pattern and frequency (e.g oscillating mirror or rotating prism scanning at sufficient Hz) to provide even point distribution without clustering or gaps.

- 1.1.2.4 Sensor Calibration: The LiDAR system must be properly calibrated. During the initial flights, if required, calibration maneuvers or cross-line flights shall be performed to address any minor misalignment between the LiDAR, IMU, and camera frames. The system shall maintain calibration such that there are minimal systematic errors between flight lines

The Contractor must provide calibration certificate of sensor issued by the manufacturer. In addition, the Contractor must submit evidence that the total LiDAR system was calibrated prior to current project initiation, for the purposes of identifying and correcting systematic errors.

1.1.3 GNSS and IMU (Position & Orientation System)

- 1.1.3.1 GNSS Receiver: GNSS receiver shall be used on the Drone to log raw positioning data for post-processing (PPK) or should be RTK enabled for real time corrections. The GNSS shall track multiple satellite constellations. If a Real-Time Kinematic (RTK) link is used during flight, the raw data must also be logged for carrying out PPK if required. A base GNSS receiver (reference station) shall be set up on a known point for differential processing at a suitable distance for obtaining the required accuracy stipulated in this specification.

- 1.1.3.2 IMU Specifications: GNSS and IMU shall be integrated to produce a smooth trajectory. The POS (Position and Orientation System) solution shall output the Drone position (X, Y, Z) and orientation (roll, pitch, yaw).

- 1.1.3.3 Integration and Time Sync: The GNSS/IMU system must be properly integrated with the LiDAR sensor such that each LiDAR pulse shall be assigned precise position and orientation and time stamp.

- 1.1.3.4 Base Station and Ground Control: As part of the GNSS setup, the Contractor shall establish Ground Control Points (GCPs) including base stations or use existing reference points for georeferencing and accuracy purposes. Base Station Control points shall be established at an interval of maximum 10km and Ground Control Points (GCPs) shall be established at an interval of maximum 1km. GCPs shall be surveyed through Differential GPS (DGPS) or Total Station to obtain accurate coordinates. These may also be standard SOI benchmarks whose coordinates have been established by tying into the national geodetic network, Alternatively Continuously operating reference stations (CORS) data also can be used. The elevation of the base station must be derived from SOI geoid model so that the final heights are accurate to MSL. If no SOI benchmarks exist near the project, the Contractor shall carry out differential leveling from the nearest

known benchmark to transfer height to a base point within the site. The control points shall be used to perform any datum adjustments. All control point observations and adjustments shall be documented by the Contractor in the survey report.

1.1.4 Aerial Imaging System (Camera)

1.1.4.1 Camera Type and Resolution: A high-resolution digital camera shall be mounted on the Drone to capture aerial photographs. The camera shall have a minimum effective resolution as specified in the Technical particulars. The camera shall be mounted in a nadir (vertical) orientation.

1.1.4.2 Ground Sampling Distance (GSD): The flight altitude and camera parameters shall be designed to achieve planimetric accuracy as specified in the Technical particulars. The imagery should complement LiDAR by adding color and texture information.

1.1.4.3 Image Overlap: Sufficient image overlap is to be maintained to enable production of a distortion-free Orthomosaic and to aid in LiDAR validation. The overlaps shall be planned such that every point on the ground is visible in at least two or more images, allowing for stereo viewing and precise orthorectification.

1.1.4.4 Photographic Quality: The camera shall be configured for optimal exposure and focus for the terrain. The Contractor must ensure images are free of significant blurring, haze, or cloud cover obstructions. If any images are found suboptimal, the Drone shall re-fly that segment. The camera calibration shall be known – either from manufacturer or a self-calibration process – to allow accurate orthorectification. The images shall have good color balance and contrast. All images shall be geo-tagged to speed up the photogrammetric processing.

1.1.5 Ancillary Equipment and Software

1.1.5.1 Ground Support Equipment: The Contractor shall have all necessary ground equipment including GNSS base station receiver & tripod etc., weather monitoring tools and communication devices. Sufficient batteries and spares for the Drone and sensors shall be available to ensure uninterrupted operations. Safety gear for crew and signage to keep people away from take-off/landing zone shall be in place. Reflective targets or markers may be placed as check points on the ground as LiDAR intensity targets or photo control, if needed for calibration/accuracy checks – any such targets must be surveyed accurately if used.

1.1.5.2 Processing Software: For LiDAR point cloud processing and classification, specialized software such as TerraScan/TerraSolid, LP360, or similar shall be used. The software must support the LAS file format (v1.4) and advanced classification routines (including algorithms to classify wires, poles, trees etc.). Orthophoto processing shall be done using suitable photogrammetric software (e.g., Pix4D, Agisoft Metashape, Trimble Inpho or similar) capable of producing high-quality orthorectified mosaics. The software shall be able to integrate LiDAR and imagery. Quality control tools (for checking accuracy, overlap, density) shall be part of the workflow – for example, tools to compute RMSE against check points, or to compute point density over the area.

1.1.6 Flight Planning and Data Acquisition

1.1.6.1 Flight Path Design: The flight plan shall be designed to fully cover the 150 m corridor

width (AOI) with LiDAR data and photogrammetry imagery. In hilly /vegetated/ forest areas, multiple passes from different angles may be carried out to minimize shadows. Overlaps between adjacent swaths shall be done to improve data density and relative accuracy. The Drone flight path shall be segmented into manageable mission legs (sorties) of appropriate length given the Drone 's range. Each mission leg shall start and end at a defined waypoint with overlap with the next leg to ensure continuous coverage and allow data stitching..

1.1.6.2 Terrain Following: The Drone's altitude above Ground Level (AGL) shall be kept for maintaining uniform LiDAR point density and image GSD. For undulating terrain, the mission planning software's terrain-follow mode shall be utilized so that the Drone automatically adjusts its elevation. In steep terrain where rapid altitude changes are required, the flight speed or length of flight segment may need to be reduced to allow the Drone to respond smoothly. In extreme terrain (e.g., deep valleys), multiple passes at different elevation levels may be done. Take-off and landing spots shall be chosen at reasonably high elevations so that the Drone can cover nearby high ground without exceeding its altitude or signal range limits.

1.1.6.3 Special Maneuvers: In order to ensure data accuracy, cross-strip flights approximately every 20–30 km or other maneuvers may be carried out. These maneuvers shall be documented in the flight plan.

1.1.6.4 No-Fly Zones and Obstacles: The flight plan must account for any no-fly zones (near airports, defense installations, densely populated areas). Such sections may require alternate data capture methods or special clearance/permissions. Obstacles such as existing transmission towers, wind turbines, or tall structures along the route shall be marked in the plan and safe distance maintained.

1.1.7 Flight Operations and Conditions

1.1.7.1 Weather Constraints: Data acquisition shall be conducted under favorable weather conditions. No flying shall be carried out in rain, fog, or heavy dust conditions. The wind speed at flying altitude must be within safe limits. The survey shall avoid times of extreme heat which shall cause strong updrafts in hilly terrain. For areas prone to sudden weather changes (mountainous regions), the Contractor must continuously monitor conditions and be ready to abort and land if rain or unsafe winds come in. All weather conditions (wind, visibility, temperature) during flights shall be logged.

1.1.7.2 Flight Speed and Altitude: The Drone shall fly at a ground speed appropriate to achieve the required LiDAR data density and image sharpness.

1.1.7.3 The Contractor must document mission date, time, flight altitude, airspeed, scan angle, scan rate, laser pulse rates, and other information deemed pertinent.

1.1.7.4 Ground Control Deployment: Prior to or during the flights, Ground Control Points shall be established as outlined in preceding clauses. The base station's position (latitude, longitude, height) must be accurately known and tied to a permanent benchmark in the desired coordinate system before processing the captured data. It should be ensured that the base station is logging during the entire Drone flight window. Photo identifiable targets for independent checks like large painted crosses or reflective markers shall be placed and surveyed before the Drone flight. These shall be noted so that they can be found in the imagery and LiDAR point cloud data later for accuracy checks.

- 1.1.7.5 Data Collection Procedure: During the flight, the LiDAR, camera, and GNSS/IMU shall operate simultaneously. The operator shall ensure the sensors are started (recording) before the Drone reaches the area of interest and remain on until after leaving the area, to account for acceleration/deceleration at turns. If the Drone has to turn around and come back on a parallel line, it's advisable (for LiDAR) to keep scanning during the turn so that the lines shall be connected. The overlap between flight lines is to be ensured by flight planning, but the operator shall also visually monitor real-time flight track vs planned lines and make any necessary adjustments to ensure no gaps. For each sortie, after landing, the data (LiDAR raw files, images, GNSS) shall be backed up suitably to prevent loss.
- 1.1.7.6 Field QA Checks: It is essential to perform field quality checks after each flight. For LiDAR, preview of the point cloud coverage and density shall be done to confirm that the corridor was captured and there are no large gaps. If a significant gap or data dropout is noticed, the segment shall be re-flight. For imagery, at minimum, few images shall be spot checked from each flight for clarity (proper exposure, no blur) and check that the overlap looks sufficient by comparing sequential photos. If any issues are detected e.g., blurry images, those flights shall be repeated with corrected settings. By performing these field checks, the Contractor shall address problems immediately rather than discovering them after demobilizing, thereby adhering to quality requirements.

1.1.8 Coordinate System and Datum

- 1.1.8.1 Horizontal Datum: All survey data shall be referenced to a consistent horizontal coordinate system. The default system to be used is WGS-84 datum, UTM projection (Zone no. as appropriate for the project location), in metric units.
- 1.1.8.2 Vertical Datum: Elevations (Z values) of the LiDAR data and all derived models shall be referenced to Mean Sea Level (MSL) based on the Survey of India datum. Thus, all LiDAR point cloud heights, DTM, DEM & DSM and contour outputs shall be in MSL elevation. The vertical unit shall be in meter.
- 1.1.8.3 Datum Validation: After processing, the Contractor shall validate that the coordinate referencing is correct by comparing known reference points.

1.1.9 Safety and Logistics

- 1.1.9.1 Crew and Training: The flight crew must consist of experienced Drone pilots and sensor operators who are familiar with LiDAR surveying. They shall have sufficient experience for handling the specific Drone model and payload. Preferably two crew members shall be present for each flight – one to act as primary pilot and one as observer/payload operator. Safety briefings shall be conducted daily, and emergency procedures (loss of GPS, battery failure, etc.) reviewed.
- 1.1.9.2 Operations Near Power Lines: Since this project involves transmission corridors, special care must be taken when flying near live power lines or electrical infrastructure. While surveying an existing line (if the new route parallels or crosses existing lines), the Drone shall maintain a safe distance.
- 1.1.9.3 Permissions and Notifications: The Contractor shall have in possession all required permissions from DGCA/MoCA/MoD as applicable for conducting aerial survey in the

project area. If the corridor passes through a restricted airspace (near airports, military areas), special clearances and coordination with ATC may be required. Local authorities and communities shall be informed of the survey schedule to avoid any concerns. In forest areas, permissions from the Forest Department for Drone operations over reserved forests, if required, must be obtained. The Drone shall not be flown over any populated areas, not necessary for the corridor; where the corridor approaches villages or towns, flights shall be planned for minimal overflight of houses and done at higher altitude if needed to mitigate noise and privacy concerns. A record of all such regulatory compliance documents shall be maintained.

- 1.1.9.4 Contingencies: The flight team shall be prepared with contingency plans. Extra batteries and backup Drone (if possible) shall be available to avoid downtime in case of equipment failure. If the weather turns poor unexpectedly, readiness to abort mission and resumption later should be there. The data up to the abortion point shall be safely stored and backed up. The survey schedule shall include some buffer days for re-flying any sections that did not meet quality standards. The Contractor is responsible for re-mobilizing and re-flying at their own cost if data gaps or quality shortfalls are identified in post-processing. Proper logistics planning (transportation to remote tower locations for takeoff, power supply for laptops in field etc.) must be in place so operations run smoothly each day.

1.1.10 Data Processing and Accuracy

- 1.1.10.1 GNSS/IMU Data Processing
- 1.1.10.2 Trajectory Computation (PPK): In case PPK is used, after each flight, the raw GNSS data from the Drone and base station shall be processed in a Post-Processed Kinematic (PPK) workflow to yield the precise trajectory of the Drone.
- 1.1.10.3 Quality Checks on Trajectory: The GNSS/IMU processing output must be checked for consistency and accuracy. The final trajectory in the mapping frame (UTM/MSL) shall be used for georeferencing the LiDAR points, so it shall be validated against known ground points if possible (for instance, if the Drone flew directly over a surveyed point, compare trajectory altitude with it).

1.1.11 LiDAR Point Cloud Generation

- 1.1.11.1 Georeferencing LiDAR Data: The LiDAR raw ranging data recorded onboard shall be merged with the post-processed trajectory to compute the 3D coordinates of each LiDAR return. This process yields a georeferenced point cloud in the mapping frame (UTM coordinates, MSL elevation). The processing software shall use the precise position and orientation of the sensor for each pulse time, apply the range and angle measurements, and output (X, Y, Z) for each point. It shall also assign attributes like intensity, return number, scan angle, GPS time, etc., to each point in the LAS files. The Contractor must ensure that the correct lever-arm offset (the vector from the IMU/GNSS antenna to the LiDAR sensor origin) is applied in the processing so that there is no bias in elevation or horizontal positioning. After initial georeferencing, offset adjustment may be performed to yield a combined point cloud from all flight lines, aligned in one common coordinate system.
- 1.1.11.2 Coordinate System Application: The output from the georeferencing step shall initially be in the coordinate system used in processing. This, if required, must be transformed

to the required deliverable coordinate system (UTM projection and MSL datum as outlined in preceding clauses) through processing software. A quality check shall be done by comparing a few point coordinates against ground truth to ensure the transformation was correctly applied. For vertical datum conversion, if the trajectory was processed in ellipsoidal heights, the geoid model shall be applied either during the LiDAR processing or afterwards to adjust the Z values.

1.1.11.3 Point Cloud Density & Coverage Check: Once the point cloud is generated, a density analysis must be performed to ensure the specification requirement is met. If any area is found with insufficient density or small gaps, additional flight or data interpolation is to be carried out. However, given proper flight planning, there shall be no gaps or holidays in the LiDAR coverage.

1.1.11.4 Initial Filtering: An initial filtering shall remove obvious outliers: e.g. isolated points far above or below the surface. Points with unusually low intensity or improbable scan angles might also be noise. The Contractor shall run noise filtering algorithms to clean the dataset. Care must be taken not to remove actual valid points for instance, real objects like wires. Once filtering is done, the cleaned point cloud shall serve as input to classification and further product generation.

1.1.12 Accuracy Requirements and Assessment

1.1.12.1 Vertical Accuracy: The LiDAR-derived ground elevations must achieve a high absolute accuracy. The requirement is Vertical RMSE ≤ 10 cm in non-vegetated open terrain and Vertical RMSE ≤ 15 cm in vegetated terrain. The Contractor must use ground truth/check points (at least 5–10 test points in open terrain and similar in other landcovers to calculate the actual RMSEz achieved).

1.1.12.2 Horizontal Accuracy: The horizontal (planimetric) accuracy requirement for LiDAR and orthophoto data is within ± 5 cm. It shall be validated by independent checkpoints for example, the planimetric coordinates of a road intersection or a corner of a structure visible in the ortho and also surveyed on ground).

1.1.12.3 Validation Survey: To independently validate accuracy of captured & processed data, the Employer reserves the right to conduct a validation field survey. This could involve checking a sample of 10-20 locations along the corridor with high-precision DGPS or total station to get “truth” coordinates and comparing to LiDAR data/orthophoto. The Contractor shall facilitate this validation process. All accuracy computations (vertical/horizontal) shall follow standard statistical methodology as per ASPRS Positional Accuracy Standards or equivalent. If the achieved accuracy falls short of requirements, the Contractor shall investigate the cause and reprocess or re-fly portions if required. All cost towards this validation survey and corrections shall be borne by the Contractor.

1.1.13 LiDAR Data Classification

1.1.13.1 Ground Classification: Deriving the ground/bare-earth class is a crucial step as it underpins DTM and contour generation critical for tower spotting. The Contractor shall use suitable filtering algorithms to classify ground points appropriate for the terrain. In vegetated and forested areas, multiple returns and the penetration capability of LiDAR shall yield ground hits, but algorithms must carefully remove non-ground points (like low vegetation, undergrowth, etc.) without discarding true ground. The parameters of ground filtering shall be tuned for different terrain types. After automatic classification,

manual editing is to be carried out required and inspect cross-sections and hill shades of the ground surface to ensure that no significant objects remain in ground class. Ground class accuracy is vital for Tower spotting, so thorough QA on ground classification is to be carried out.

- 1.1.13.2 Classification Scheme: The LiDAR point cloud shall be classified into relevant feature classes to facilitate analysis. The classification shall follow the ASPRS LAS 1.4 standard, broadly, the classes to be used are: Ground (Class 2) – all points on bare earth terrain; Vegetation (shall be split into low (Class 3)/medium (Class 4) /high (Class 5); Buildings/Structures (Class 6) for man-made structures; Water (Class 9) for points on water bodies (rivers, ponds) ; (Class 10): Rail ; (Class 11): Road Surface ;(Class 13): Wire-Guard (if shield wires are present) (Class 14): Wire-Conductor, (Class 15): Transmission Tower, and Unclassified (Class 1) for points that don't fall into other categories or are not assigned yet.

The Contractor shall extract coordinates from all topographical features, above ground obstacles, and features which would impact the design or analysis of transmission lines.

(i) Existing Overhead Wire:

All existing shield wires and overhead transmission, distribution, and communication conductors are to be surveyed. All wires survey should also include mid-span (low-point) of conductors.

All distribution crossings are also to be surveyed along the survey corridor

(ii) Existing Terrain:

The existing terrain shall be surveyed such that a representative ground profile can be determined. In addition, the Contractor shall differentiate between ground and farm fields, roadways, sidewalks, water bodies, streams, drainage ditches, culverts, top of slope, and toe of slope features.

(iii) Existing Obstructions and Features:

All ground obstructions shall be captured. This includes, but is not limited to the following:

- Hill slope on both side of the corridor
- Guy Wires
- Anchors
- Equipment
- Buildings – Residential, Commercial, Storage, etc.
- Roof Peaks - nearest survey centerline
- Fences
- Streetlights
- Pools
- Playgrounds
- Wells
- Irrigation Systems
- Bridges
- Railroad Tracks
- Roads
- Dams
- Rivers

- Railroad Appurtenances (e.g. x-ing arms, connection points, lights, etc.)
- LP and Fuel Tanks
- Silos, Grain Bins, Farm Equipment etc.
- Forests
- Power lines
- Wind Mills
- Solar Parks
- Any other additional miscellaneous clearance obstructions

1.1.13.3 Classification Accuracy: The Contractor shall ensure the classification is done to to achieve maximum accuracy. Manual intervention, if required by carrying out survey on ground shall also be done for an accurate classification. Vegetation and buildings separation shall correctly tag most of obvious features.

1.1.14 Digital Terrain Model (DTM) and Other Raster Products

1.1.14.1 DTM Generation: Using the classified ground points, a Digital Terrain Model (DTM) shall be generated for the corridor. This DTM represents the bare-earth surface (no buildings, no vegetation). The DTM may be produced as a regular grid (raster) with a suitable posting – e.g., 0.5 m grid spacing. The gridding shall use interpolation that honors the nearest points (often triangulation and then rasterization). Care must be taken at the edges of the corridor – since data slightly beyond 150 m might taper off, it should be ensured that the DTM is clipped to the reliable extent. The DTM shall preserve sudden breaks in terrain if any (like cliffs or retaining walls) – in such cases, break lines might be introduced to enforce the slope break in the model. If water bodies are present and need flattening (for cartographic DTM), break lines along water edges shall ensure the water surface is flat.

1.1.14.2 DSM and Canopy Model: In addition to the DTM, a Digital Surface Model (DSM) shall be generated. The DSM includes the top surface of all features (trees, buildings, ground). This shall be created by gridding the highest point in each cell. A DSM would illustrate the terrain plus vegetation heights and structure/obstruction heights.

1.1.15 Data Quality Assurance and Quality Control

1.1.15.1 Ground Control Verification: The processed data shall be compared against ground check points

1.1.15.2 LiDAR Data Quality Metrics: Key quality metrics of the LiDAR data shall be computed and reported : (a) Nominal point density achieved. (b) Accuracy – RMSEz and RMSEr as measured by check points. (c) Relative accuracy – elevation differences at overlaps (report average and RMS). (d) Completeness – ensure 100% of intended corridor is covered. Also any anomalies should be mentioned e.g., “some LiDAR returns lost due to water absorption in a river section, resulting in a small gap – which was interpolated in DTM” or any such notes. The QA process shall document that the classification was visually inspected (visual screenshots may be added in the report).

1.1.15.3 Orthophoto Quality Checks: For the orthophotos, check that there are no gaps or misalignments between adjacent images in the mosaic. Also verify that the ortho is properly georeferenced by overlaying the vector data or known points. The color consistency shall be reasonable (no abrupt tone changes between tiles). If any moving objects (e.g., vehicles) were present and caused ghosts in the mosaic, the same to be

edited out . The spatial resolution and clarity shall be checked by zooming to see if fine details like say a small structure or individual tree are discernible as expected for 10 cm GSD.

- 1.1.15.4 Deliverable Verification: All deliverables should be complete, correctly formatted, and consistent. This includes verifying all LAS files have proper classification codes, all GeoTIFFs are readable and have correct geo-referencing metadata, all contour or CAD files are valid. The coordinate system and units shall be double-checked in each file. The Contractor shall simulate the end-user loading the data e.g., load LAS and orthophoto into a GIS or LiDAR software to see if they overlay perfectly. Quality control also entails preparing a survey report that clearly states the achieved accuracies and any deviations. Only after passing all these QA/QC steps shall the data be submitted to Employer for acceptance.

1.1.16 Deliverables and Documentation

1.1.16.1 LiDAR Data Deliverables

- 1.1.16.2 Classified Point Cloud: The primary deliverable is the classified LiDAR point cloud covering the entire area of Interest. This shall be delivered in latest LAS format. The point cloud shall include all points collected, with classification as specified. Each point record shall contain at least: X, Y, Z coordinates (in UTM/MSL), intensity, return number (and total returns), classification code, GPS time, and point index. The LAS files shall be organized in logical tiles or sections (for example, one LAS file per 5 km section of line, or per flight). The tiling scheme shall ensure file sizes are manageable. The naming convention for LAS files shall be clearly described in consultation with Engineer in charge. Along with LAS, if there were any break lines or surface constraints applied in DTM generation, those shall be delivered in a separate file (e.g., as shapefile) for reference.

- 1.1.16.3 Digital Terrain Model (DTM): The bare-earth terrain model shall be provided as a raster grid (GeoTIFF). The GeoTIFF shall be georeferenced to the project coordinate system. If the corridor is long, the DTM shall be split into tiles or strip-wise files.

- 1.1.16.4 Digital Surface Model (DSM): A DSM representing the first-surface including treetops, structures shall be delivered similarly as a GeoTIFF. The resolution of the DSM would be same as DTM.

1.1.17 Elevation grid at Tower Locations.

1.1.17.1 Orthophoto and Image Deliverables

- 1.1.17.2 Orthophoto Mosaic: A geo-referenced orthophoto (Ortho rectified image) mosaic of the transmission line corridor shall be delivered. The orthophoto shall be in GeoTIFF format, with each pixel valued with 3-band color (RGB). The horizontal accuracy of the orthophoto shall be as specified in the Technical particulars. The mosaic shall be delivered as one continuous image if size is manageable, or in tiles (e.g., splitting the corridor into segment/tiles). If tiled, tile index (a shapefile showing each tile footprint and name) shall also be provided.

- 1.1.17.3 Raw Imagery: The original raw images from the Drone camera shall be provided. This would include all individual photos (JPEG or TIFF) with their original resolution, along with the photo geotags. These shall be organized flight-wise in folders and listed in a

metadata file.

1.1.18 Standard Technical Particulars

The Standard Technical parameters/particulars/requirements for LiDAR & Photogrammetry survey of transmission lines is enclosed at Annexure-II.

1.1.19 Telecommunication Line Crossings

1.1.19.1 The angle of crossing shall be as near to 90 degree possible. However, deviation to the extent of 30 degree may be permitted under exceptionally difficult situations.

1.1.19.2 Also, in the crossing span, power line support will be as near the telecommunication line as possible, to obtain increased vertical clearance between the wires.

1.1.20 Oil Pipe-Line Crossings

1.1.20.1 No tower footing or structure of an overhead line shall be closer than twenty five metre from the edge of the right of way of a Petroleum or Natural Gas pipeline. The Agency shall coordinate with utility for details about Right of way of Petroleum or

1.1.20.2 Natural Gas pipeline. Wherever overhead line intending to cross the right of way of a Petroleum or Natural Gas pipeline, the angle of crossing of the overhead line with respect to the pipelines shall preferably be at right angles and, in any case, the crossing angle shall not be less than seventy-five degrees.

1.1.21 Details En-route

1.1.21.1 The topographical details, permanent features, such as trees, building , borewells, pumphouse etc. within following RoW shall be detailed on the profile plan: -

S.N.	Line	Right of Way (Mtr) for Lattice Tower
1	1200 kV Single Circuit	89 m
2	765 kV Double Circuit	67 m
3	765kV Single Circuit Delta	64 m
4	765kV Single Circuit Horizontal	85 m
5	+800 kV HVDC	69 m
6	400kV Single Circuit	52 m
7	400kV Double Circuit	46 m
8	+500 kV HVDC	52 m
9	220 kV	35 m
10	132 kV	27 m

1.1.22 Tower Schedule

The Planned TL route locations of the towers together with Tower schedule of quantities indicating angle of deviation, crossing details, tree quantity, type etc. shall be submitted by the Contractor for review & approval by Employer's.

1.1.23 Survey Methodology & Precision

1.1.23.1 All elevations shall be referenced to benchmarks established by the Survey of India.

Survey operations shall begin and end at benchmarks approved by the Employer.

- 1.1.23.2 All-important objects and features along the transmission line centerline (railways, highways, roads, canals, rivers, transmission lines, distribution lines, telephone lines etc.) shall be surveyed and located with a positional accuracy of 1:2000 between points of known horizontal position.

1.1.24 Survey Report

- 1.1.24.1 Complete BOQ of the transmission lines as per format enclosed with this technical specification at Annexure- V shall be furnished in the survey report.
- 1.1.24.2 Information w.r.t infrastructure details available en-route, identification and explanation of route constraints, etc. shall also be furnished in the Survey report.
- 1.1.24.3 The contractor shall also intimate the Employer, his assessment about the likely number and type of trees for each section. Further the contractor shall also provide the details of the prevalent crops, vegetables being cultivated by farmers, and any orchards, cash crops etc. along the enroute of line.
- 1.1.24.4 All observations which the Contractor thinks would be useful to the construction of the transmission lines mentioned under scope of work are to be reported.
- 1.1.24.5 The georeferenced cadastral map with the transmission line corridor marked on it for the complete route in soft copy.
- 1.1.24.6 Land Schedule Statement: Provide a detailed land schedule statement in physical and Excel format encompassing all information specified in section of Scheduling for land usage and ownership type
- 1.1.24.7 Copies of Jamabandi of all Khasra nos. or equivalent document falling in the Transmission line corridor obtained through Revenue or Official Portal viz. Bhunaksha etc to be provided.
- 1.1.24.8 Soft copy of survey report shall be furnished by the Contractor to the Employer.

Check List for identification of features for selection of Transmission Line Route

Name of Line:

Sl. No.	Feature	Feature Involved		Details to be considered for route alignment
		Yes/No	Existing/Proposed	
1	Airport /Aerodrome/Airstrip			To be identified within 20 Km radius of the proposed route
a	Civil Aviation			Route to be aligned at least 10kms away from the airstrip (ARP). In case of constraint, following to be considered keeping maximum possible distance from Air strip: - i) No tower permissible within 2 kms from Radar (ASR/ARSR /MSSR). ii) Permissible Heights within 4km radius (i.e. IHS): 45 m from reference datum of aerodrome elevation. iii) Additional Permissible Heights over ii) above from 4 to 6.1 km radius: 5 Mtr for every 100 m
b	Defence Aviation & Other Facility viz Training			
c	Emergency Landing Airstrips			
d	Rifle ranges/ Air to Ground Firing Ranges			Location of rifle ranges and their boundary limits should be got ascertained to ensure adequate lateral clearance to rifle ranges.
e	Helipads			Route to be aligned so as to avoid obstruction and provide clear approach to helipad. Allowable tower height 80 Mtr per 1 KM distance from helipad.
f	Radar stations			Radar centers, very high frequency direction finding stations, satellite tracking stations, sector operation centers, wireless receiving stations, ground-controlled interception stations etc. require certain minimum lateral clearances, which is to be checked up from the concerned authorities.
g	Water Aerodromes			
2	Forest Area & Protected Area			

Sl. No.	Feature	Feature Involved		Details to be considered for route alignment
		Yes/No	Existing/Proposed	
a	Reserved/ Protected/ Notified Forest Area			To be avoided to the extent possible/ minimized
b	Revenue/ Social/ Deemed, etc. Area			To be avoided to the extent possible/ minimized
c	Oran land in Rajasthan			To be avoided to the extent possible/ minimized and identified from Notifications of State/ Revenue Records/ State Forest Deptt.
d	Protected Area i.e. National Park/Wildlife Sanctuary/ Biosphere Reserve/ Tiger Reserve/Tiger Corridor/Any Other Conservation Reserve			To be identified from Gazette notification and avoided to the extent possible/ minimized
e	Elephant Corridor/Reserve			
f	Eco-Sensitive Areas			To be avoided to the extent possible/ minimized and identified from Gazette notification.
g	Coastal Regulatory Zone			Category along with the overlapping area to be mentioned.
h	GIB (Priority/Potential Area)/ Any other endangered species			To be avoided in GIB Priority Area. For Potential Area, new line to be aligned as close as possible to the existing line.
i	Avifauna Area/Bird Sanctuary			
j	Schedule-V/VI/Autonomous Region			
3	Army cantonment/No Go areas/Ammunition Depot			To be avoided
4	Dam/Water Reservoir/ Catchment Area			Route to be kept away from the Dam
5	Major River Crossing details (Bank to Bank Distance>600M)			
a	Navigable			Navigability to be checked from National Waterways Act, 2016 and latest amendment thereof.
b	Non-Navigable			
6	Roads			

Sl. No.	Feature	Feature Involved		Details to be considered for route alignment
		Yes/No	Existing/Proposed	
a	NH/Expressway			
b	SH			
c	MDR			
7	Any Permanent structure within line corridor			To be avoided/to be kept out of RoW as far as possible
8	Railway Crossings			Effect the crossing preferably. a. Outside station limit. (to be confirmed from Railway Authority) b. Authority) c. Outside railway boundaries. d. Where the track is in cutting. e. Avoiding structures, posts, masts, stays etc.within 10 Meter from the outer conductor of transmission line. f. No overhead line crossing shall be located over a booster transformer, traction switching station, traction sub-station or a track cabin location in an electrified area.
9	Powerline crossings			
i	400 kV and Above			
ii	110kV Up to 400kV			
iii	66 KV			
10	Wind Mill Area			to be routed by maintaining distance of hub height plus half of rotor diameter, plus five meters from Conductor
11	Solar Park			To be avoided
12	Natural Gas/Crude Oil/Petroleum Pipe line			
13	Mines			
a	Major Mines			To be avoided as far as possible
b	Minor Mines/Quarry Sites			
c	Coal Blocks			
d	Underground Mines			
14	Master Development Plan for Major City/Towns			Route to avoid urban area and upcoming utility / residential/Commercial area

Sl. No.	Feature	Feature Involved		Details to be considered for route alignment
		Yes/No	Existing/Proposed	
15	Economic Corridor			Area to be avoided
16	Industrial Area/Corridor			Area to be avoided
17	Land Slide Potential Zone			To be avoided
18	Avalanche Prone Area			To be avoided
19	Orchards/Plantations/Tea Garden			To be avoided to the extent possible
20	RoW constraint area requiring special structures like monopoles			
21	Coastal Area			60 kms from Coastline
22	Wind Zone			Buffer of 50kms. to be kept considering higher of two wind zone.
23	Creak Area/ Marshy Area/ Water-logged area			
24	Snow Zone			
25	Hilly/Undulated Terrain			

Note-

1. The details of above features are to be verified through various sources like PM Gatishakti, Topo Map, Bhuvan/Google Earth, State GIS Portals, Gazzette notifications published by Concerned Department etc.
2. The stretch of the route may also be got confirmed from the concerned Authority in case of Airport /Aerodrome/Airstrip/Forest/Major Mines/Coal Blocks/Master Development Plan/Dam/Land slide/Avalanche prone area etc.
3. In case of crossings, route alignment shall be carried out as per the relevant TSD provisions / Technical Specification
4. Angle schedule to be enclosed along with the Route alignment on topo map

CHECK FORMAT FOR ROUTE ALIGNMENT

S.N.	Points	Remarks
a)	Line is approachable. Difficult and unsafe approaches are avoided.	Yes/No
b)	Route is short and as straight as possible	Yes/No
c)	Number of likely angle towers are minimum and within these, the number of heavier angle towers are as small as possible	Yes/No
d)	Plantation areas, uneven terrains, religious places, civil and defence installations, industries, aerodromes and their approach and take-off funnels, public and private premises, ponds, tanks, lakes, orchards and dense tree region are avoided as far as practicable.	Yes/No
e)	Whenever line is passing through major undulated/hilly terrain, provision of required tension tower has been considered in the route	Yes/No
f)	In case of crossing with railway lines, highways, powerlines, natural gas/petroleum pipelines, etc. the tower and crossing angle has been considered as per respective regulations.	Yes/No
g)	Wherever line is passing through dense habitat area, check whether alternative route corridor it available in nearby to take care of future developments without major modifications	Yes/No
h)	Line is away from the buildings containing explosives, bulk storage oil tanks, oil or mining area.	Yes/No
i)	Forest area and other relevant environmental issues are negotiated on principal of avoidance, minimization & mitigation.	Yes/No
j)	Schedule of angle points and various type of towers are prepared in given format	Yes/No
k)	Route alignment maps on specified scale are prepared	Yes/No
l)	Possibility to locate Transposition tower at a point where 'C' type tower with 00 has been used as cut point (section tower) is explored.	Yes/No
m)	As far as possible, tower spotting in marshy, water-logged areas, low lying areas, rocky locations etc. are avoided.	Yes/No
n)	Wherever Length of section is more than 5 Kms., provision of section tower has been considered.	Yes/No
o)	For Cyclonic/coastal area, wherever length of section is more than 3 Kms., provision of section tower has been considered.	Yes/No

TECHNICAL PARTICULARS FOR LIDAR & PHOTOGRAMMETRY SURVEY OF TRANSMISSION LINES USING DRONES

Sl. No.	Description	Unit	Minimum
1	Geodetic datum & projection		WGS-84, UTM
2	LiDAR Sensor		
2.1	Returns per pulse	Nos.	4
2.2	GNSS Positioning Mode		RTK or PPK
3	GNSS Base station		
3.1	Minimum operating time (base-station)	hrs	3.5
3.2	Minimum satellites for RTK/PPK fix	Nos.	9
3.3	Maximum spacing between Base stations	km	10
3.4	Maximum spacing between ground-control points (GCPs)	km	1
3.5	Required GCP vertical accuracy (1 σ)	cm	2
4	On-board RGB camera		
4.1	Sensor resolution	Megapixel	20
4.2	Planimetric accuracy (camera)	cm	5
5	UAV/Drone		
5.2	UIN Available		Yes
5.3	Endurance	Min	40
6	LiDAR Deliverables		
6.1	Point-density requirement		
6.1.1	Plain Terrain	points per sqm	100
6.1.2	Hilly/Mountainous/Vegetated Terrain	points per sqm	150
6.2	Accuracy requirement		
6.2.1	Non-vegetated Vertical accuracy RMSEz	cm	10
6.2.2	Vegetated Vertical accuracy RMSEz	cm	15
6.2.3	Planimetric accuracy	cm	5
6.3	Swath Overlap		
6.3.1	Plain Terrain	%	60
6.3.2	Forests	%	70
6.3.3	Hilly /Mountainous	%	70

Annexure
GENERAL FEATURE CODE LIST

Row	Feature Code	Feature Description
1	100	Angle Point
2	101	Ground Level
3	200	Hut
4	201	Government Building
5	202	Pump House
6	203	Building
7	204	Residential Area
8	205	Industry
9	206	Village
10	207	School
11	208	Industry Area
12	209	Temple
13	210	Masjid / Mosque
14	211	Church
15	212	Graveyard
16	213	GSM Towers
17	214	Wind Mill
66	263	Solar Park
18	215	Water Tank
19	300	Railway boundry
20	301	Railway Track
21	302	LT Line
22	303	11kV OH Line
23	304	33kV OH Line
24	305	66kV OH Line
25	306	132kV OH Line
26	307	220kV OH Line
27	308	400kV OH Line
28	309	500kV OH HVDC Line
29	310	765kV OH Line
30	311	800kV OH HVDC Line
31	312	1200kV OH Line
32	313	U/G Cable
33	314	Telephone Line / Pole
34	315	Transformer
35	316	Water Pipe Line
36	317	Gas Pipe Line
37	318	Oil Pipe Line
38	319	Other Pipe Lines
39	320	Water Course
40	321	Nala
41	322	Canal
42	323	River
43	324	Lake
44	325	Drain/Ditch

Row	Feature Code	Feature Description
45	326	Pond
46	327	Bund
47	328	Open Well
48	329	Bore Well
49	330	Tar Road
50	331	Walkway
51	332	Unmetalled Road
52	333	Metalled Road
53	334	State Highway
54	335	National Highway
55	336	Concrete Road
56	400	Garden
57	401	Orchard
58	402	Field/Farm
59	403	Forest
60	404	Plantation
61	500	Light Pole
62	501	Rocky
63	502	Fence
64	503	Bridge
65	504	Culvert
67	505	Spotting Prohibited Zones

General Description of the Tower

Sr. No.	Type of Tower	Deviation Limit	Typical Use
1	A/DA/QA*	0 - 2 deg.	To be used as Tangent tower.
2	B1/DB1/QB1*	0 deg.	To be used as Section Tower.
		0 - 7 deg.	a) Angle towers with tension Insulator string.
			b) Also to be used for uplift force resulting from an uplift span up to 200m under broken wire conditions.
c) Also to be used for Anti Cascading Condition.			
3	B2/DB2/QB2*	0 deg.	To be used as Section Tower.
		7 - 15 deg.	a) Angle towers with tension Insulator string.
			b) Also to be used for uplift force resulting from an uplift span up to 200m under broken wire conditions.
c) Also to be used for Anti Cascading Condition.			
4	C1/DC1/QC1*	0 deg.	To be used as Section Tower.
		15 - 22deg.	a) Angle tower with tension insulator string.
			b) Also to be used for uplift forces resulting from an uplift span up to 200m under broken wire condition.
c) Also to be used for anti-cascading condition.			
5	C2/DC2/QC2*	0 deg.	To be used as Section Tower.
		22-30 deg.	a) Angle tower with tension insulator string.
			b) Also to be used for uplift forces resulting from an uplift span up to 200m under broken wire condition.
c) Also to be used for anti-cascading condition.			
6	D45/DD45/ QD45*	30 - 45 deg.	a) Angle tower with tension insulator string.
			b) Also to be used for uplift forces resulting from an uplift span up to 300m under broken wire condition.
7	D60/DD60/	45 - 60 deg.	a) Angle tower with tension insulator string.

Sr. No.	Type of Tower	Deviation Limit	Typical Use
	QD60*		b) Also to be used for uplift forces resulting from an uplift span up to 300m under broken wire condition.
			Dead end with 0 deg to 15 deg deviation both
		0 deg.	a) Complete Dead end
			b) For river crossing anchoring with longer wind span

Transposition tower for Lines

Transposition is to be done generally for all transmission lines whose length is greater than 100 km.

**Required numbers of transposition towers and respective places are to be planned by the Survey Agency.

4.0 Sub Stations

- 4.1** The contractor shall estimate and verify the requirement of land for the present & future scope of the substations mentioned at clause 1.1, including provision of staff quarters and for this purpose. The contractor shall prepare a Single Line Diagram/indicative General arrangement (GA) Drawing for the Sub-station in order to assess the requirement of land in consultation with the Employer. The contractor shall identify a minimum of three sites of adequate size for sub-station. The optimum location of sub-stations shall be finalized in consultation with the Employer. The Contractor shall estimate the cost of the proposed site keeping in view the area required (including provision of staff quarters) and the prevalent rate/acre(m²) for various types of land, which shall also be separately indicated. The details as per Annexure-A shall be furnished for each of the proposed alternative sites of the sub-station. Contractor shall provide details of elevations above mean sea level of the all three alternative sites of the Substation. GPS co-ordinates of the corners of the substation sites shall also be included in the report.
- 4.2** Proper due diligence on proposed substation land should be carried out before releasing it as a part of survey report. Surveyors shall also consult appropriate authority viz. Revenue Department of State about availability of suitable land.
- 4.3 Selection of Substation site criteria:**
- 4.3.1** Preferably fairly levelled land and nearness to National Highway (NH)/State Highway (SH).
- 4.3.2** Away from the vicinity of rivers, sea coast, creeks, marshy lands and area of subsidence.
- 4.3.3** HFL of the nearest river or FRL of the nearest dam/reservoir to be provided and distance from such water body to be indicated.
- 4.3.4** Avoiding forest land, scheduled areas, vicinity to airports, any land belonging to authorities like railways, highways, mining, oil, defense, educational institutions, religious institutions, hospital, Government housing plans etc.
- 4.3.5** Area subjected to flooding and higher water accumulation should be avoided.
- 4.3.6** Indicative level (Altitude above mean sea level MSL) of the site and nearest NH/SH motorable road to be indicated.
- 4.3.7** Size of the land for the proposed site shall preferably be rectangular, suitable for accommodating present and future scope of work and shall preferably have at least three side open for line corridors.
- 4.3.8** Area with religious structures such as graveyard, temple, mosque etc. should be avoided
- 4.3.9** Approach road to the site shall be suitable for transportation of the heaviest equipment of the sub-station i.e. Transformer, Reactor etc. Requirement of strengthening of bridges/culverts, if required, needs to be indicated in the Report.
- 4.3.10** Availability of more number of sites within the radius prescribed by MoP in case of Greenfield Generation Pooling Station/ Load Serving Station/ Intermediate Substation.

5.0 **Statutory Regulations and Standards**

5.1 **Statutory Regulations**

The Contractor is required to follow local statutory regulations stipulated in Electricity Act 2003, CEA (Measures relating to Safety and Electricity Supply) Regulations 2023, CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022 and its amendments, Railway Regulations, Defense /Civil aviation guidelines, MoEF guidelines, Inland Water Authority of India/CWC Regulations etc. as amended from time to time and other applicable local rules and regulations.

6.0 **Completion Period for Survey using Modern Survey Techniques and preparation of survey report**

6.1 Submission of alternate route alignments for transmission line, finalization of optimized route alignments of Transmission Line in consultation with the Employer including UG cable survey using modern survey equipments as per project need, walk over survey of optimized route, identification of three alternatives for sub- station land and selection of one optimized site, submission of draft report, Final report (duly incorporating comments/suggestions of Employer within 7 days, after receiving comments, suggestions) etc. shall be completed within 2 months from the date of LOA. The major milestone activities for the packages shall be as under:

Submission of draft Report to RECPDCL	Within 45 Days from date of LOA.
Comments/suggestions by RECPDCL on draft report	Within 8 days of submission of draft Report
Submission of Final Report along with all deliverables	Within 7 days (Total completion period of 2 months)

6.2 The Contractor's scope of work shall also include assisting Employer in initiating the process of acquisition of Land (if applicable) and forest clearance (if optimized route is passing through forest land) with concerned authorities.

All the above activities shall be carried out by the contractor till issuance of LoI and signing of all agreements with the Transmission Service Provider (TSP). The report along with all the relevant documents associated with the project shall be handed over to the TSP on as-is-where-is basis, so that TSP may take further action to obtain consents, clearances and permits.

6.3 The Contractor shall be required to attend the meetings/conference with the prospective TSP or any other agency as intimated by Employer to clarify the issues relating to Survey during the Bidding Process of the transmission scheme.

7.0 **Deliverables:**

All the deliverables, as mentioned in this clause and Technical Specifications shall be submitted.

7.1 The Contractor will submit progress report for all the works/ studies/ survey, every fortnight as per the format mutually agreed upon.

- 7.2** The Contractor will submit three (3) copies of the draft report with requisite plans & drawings in English language. The Contractor is also required to submit geotagged detailing of photographs of each Angle point (AP). The tower schedule shall include details of all the towers along with the transmission route.
- 7.3** The Contractor will submit fifteen (15) copies of Final Report (high quality printout) with requisite plans & drawings in English language. The Final Report should be submitted within 7 days after comments of Employer on draft Report. The final report and drawings (both hard copy as well as soft copy i.e. KML/KMZ file and pdf / digitized topographical map) shall also include the GPS coordinates of selected points of the final route as per specifications.
- 7.4** Soft copy shall also be submitted for the Report along with drawings.
- 7.5** All raw data for all the studies/ reports/ surveys shall also be submitted.
- 7.6** All reports shall be submitted in A4 size sheets with font size 12, properly bound and printed using good quality paper & material. Map/sketch shall be provided in appropriate size sheets.
- 7.7** Any other deliverable as per scope of work defined in technical specifications.

SAMPLE SURVEY REPORT

(to be Supplemented by Project Specific Route Alignment, Walkover, LiDAR and Photogrammetry Survey Report to be submitted by the Survey Agency)

TABLE OF CONTENTS	
Sr. No.	Section 1: Description
1.	Scope of Work
2.	Approach and Methodology
3.	Geographical Information
SECTION: 2	
2.0	Establishment of ---MVA (Voltage Ratio) Sub-Station Near ---
2.1	Co-ordinates of Proposed Substation
2.2	Information of Proposed Substation
SECTION: 3	
3.0	Name of Transmission Line
3.1	Coordinates of Both Ends
3.2	Index Map of Survey of India (SOI) Toposheet
3.3	Coordinates of Proposed Route
3.4	Summary of Proposed Route
3.5	Wind Zone Map
3.6	Results and Conclusions
3.7	Route Alignment Map on Digitized Toposheet
Disclaimer	

Section:1

1. Scope of Work

Transmission Scheme for ---- in --- (-- MW), State:

Sl. No.	Details of Transmission Elements
1	Establishment of --Substation at ---
2	Name of Transmission line

2. Approach & Methodology

(i) Land requirement of Substation:

The land requirement for proposed --- substation is approximately – Acres/m².

(ii) Identification of land for --- kV (voltage ratio)----- (No. of transformers X MVA) Substation at --.

The land sighting and land selection ---

(iii) Benefits from the selected land:

- i.
- ii.

3. Geographical

Details of geography of the area selected for substation.

Geography

Details of geography of the area

Soil

Details of soil at the area selected.

Climate

Details of climate of the area

4. Tentative implementation timeline:

SECTION: 2

**Co-ordinates of proposed substation (voltage ratio) -----(No. of transformers X MVA)
near ---**

Village: ---, Tehsil: --, District: ..., State: (latitude and longitude)

S. No	Easting	Northing	Latitude	Longitude	Altitude
Corner No. 1					
Corner No. 2					
CornerNo. 3					
Corner No. 4					
Corner No. 5					
Corner No. 6					
Corner No. 7					
Corner No. 8					
....					
Corner n					

**Information of Proposed Substation of --- kV (voltage ratio)----- (No. of
transformers X MVA) Substation near ---**

S. No.	Criterion	Proposed Substation
1.0	Land Co-ordinates	
a)	Corner 1	
b)	Corner 2	
c)	Corner 3	
d)	Corner 4	
e)	Corner 5	
f)	Corner 6	

S. No.	Criterion	Proposed Substation
g)	Corner	
h)	Corner n	
1.1	Size (Acre) (mtr x mtr,)	
1.2	Govt. /Private/Forest land	
1.3	Forest details	
1.4	Agriculture/Waste land	
1.5	Development	
1.6	Approximate cost	
	a. Circle rate per acre	
	b. Market rate per acre	
	c. Approx. cost of the land	
1.7	Terrain	
1.8	Type of soil	
1.9	No. of Owners	
1.10	Environment/Pollution in the vicinity	
1.11	Location with reference to nearest town	
1.12	Highest Flood Level (HFL) Data	
1.13	Diversion of Nallah/Canal required	
1.14	Slope	
1.15	Approximate Extent of leveling required (in meter)	
1.16	Land acquisition feasibility	
1.17	Rate of Govt. Land	
1.18	No. of Owners	
1.19	Extent of approach	
1.20	Planned/unplanned development	
1.21	Size of sites (m x m)	
1.22	No. of families to be displaced	
1.23	Level of site with reference to road level	
	a. Level of road	
	b. Level of site	
1.24	Distance from seashore	
1.25	Approach	
1.26	Logistics Survey	
2.0	Obstacles in reaching site	
2.1	Nearby main road	
2.2	Length of approach road to be constructed	
2.3	Name of nearest airport (name)/ Distance from main road	
2.4	Name of nearest Rail head	
2.5	Upcoming Aviation/Airport zone/Airforce Station/Airstrips	
2.6	Availability of ground water	

S. No.	Criterion	Proposed Substation
2.7	Availability of transmission corridor (entry of line and exit of lines) (Three /four sides)	
2.8	Existence of structures/dwelling units in the land of the proposed site	
2.9	Availability of disposal of rain/storm water	
2.10	Crops grown and types (multi-crop/single crop)	
2.11	Nearest railway station (BG/MG)	
2.12	Unloading facility at railway station	
2.13	No. of Culverts required for approach	
2.14	Nearest EHV line/Nearest sub-station	
2.15	Length of line between this site and nearest substation for construction power at 33/11 kV	
2.16	Frontage for line take off	
2.17	Telephone/Telegraph line	
3.0	Community Facilities	
3.1	Drinking Water	
3.2	Drainage	
3.3	Distance from a. Post Office b. Telephone line c. School d. Market	
3.4	Security arrangement	
3.5	Availability of construction water	
3.6	Availability of drinking water	
4.0	Seismic zones	
5.0	Army cantonment / Mining/ No Go areas	

Conclusion and Recommendations

.....

SECTION: 3

COORDINATES OF SUBSTATION

Substation Detail

Substation Name	Coordinate	
	UTM	Lat-Long
Proposed <u>--- kV (voltage ratio)</u> ----- (No. of transformers X MVA) Village: Tehsil: District: State:		
---kV Sub-Station --- Village: Tehsil: District: State:		

INDEX MAP SOI TOPOSHEETS

Railway Line Crossing

Sl. No.	Name of the Railway Line	Type of Gauge Broad / Meter / Narrow	Single/Double/Triple Line	Stone No.	Electrified / Non-Electrified	Remarks (Crossing in Between Location)
1						
2						

Power Line crossings (110 kv and Above)

Sl No.	Circuit Details	Voltage Rating in kV / Crossing	Name of Owner (SEBs/DOT)	Remarks (Crossing in Between Location No.)
1	Single Circuit			
2	Single Circuit			
3	Single Circuit			
4	Single Circuit			
5	Double Circuit			
6	Double Circuit			

Forest Details

Sl.No.	Section AP to AP	Name of the Forest	Type of Forest (Reserved / Protected / Social /Revenue)	Forest Stretches (m)	Affected Forest Area(sqm)

Wildlife/Elephant Corridor/Bird Sanctuary/GIB Details

Sl.No.	Section AP to AP	Name of the Wildlife	Type of Wildlife (Reserved / Protected / Social)	Wildlife Stretches (m)	Affected Wildlife Area(sqm)

NH and SH Crossings

Sl.No.	Name of the Road	Type of Road National Highway / State Highway	Nearest City / Town From Crossin g	Approximate Both Side KMS. Stone of Crossing	Remarks (Crossing Between Location No.)
1					
2					

SUMMARY OF PROPOSED ROUTE

Name of transmission Line		
Summary of the Proposed Route		
Sl. No.	Description	Proposed Route
1	Bee Line Length	
	Line Length	
	a) Plain	
	b) Undulated terrain	
2	Terrain	
3	Snow bound Route (in meters)	
4	Length of line in heavy rainfall area which may affect working season (in meters)	
5	Angle Point	
6	Forest (Approx.)	
	a) Reserved Forest	
	b) Protected Forest	
	Open Scrub	
7	Wildlife infringement	
8	Animal/Bird sanctuary	
9	Infringement of endangered species habitat	
10	National Park	
11	Great Indian Bustard (GIB) area (Priority/GIB Potential Zone)	
12	Creek, Marshy and low-lying area	
13	No. of Piles/Special Foundations required	
14	Transportation facilities	

	Maintenance Facilities	
15	Power Line crossings (110 kV and above)	
16	Telecom Line Crossing	
17	Railway Crossing	
	a) Existing	
	b) Proposed	
18	Airport / Air Strip	
19	Upcoming Airports/ Aviation zone/ Airforce Station	
20	Army cantonment/Mining/No go areas/ Air Strips	
21	River	
	a) Major	
	b) Minor	
22	National Expressway Crossing	
	a) Existing	
	b) Proposed	
23	NH Crossing	
	a) Existing	
	b) Proposed	
24	SH Crossing	
	a) Existing	
	b) Proposed	
25	Circle rate of land (Rs per Acre)	
26	Land Availability (if required for acquisition)	
	i) Extent of land available	
	ii) Land use pattern (agricultural, barren, forest etc.)	
	iii) Land ownership (Govt. Private, tribal, non- tribal etc.)	
27	Approaches for construction	
28	Wind Zone to be considered inclusive of Overlapping Zone	
29	State	
30	District	
31	Coastal Zone	
32	Elephant Corridor/Reserve	

Results and Conclusions

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CHAPTER-2.7

**ROUTE ALIGNMENT MAP ON
DIGITIZED TOPOSHEET**

DISCLAIMER

Bidders may please note that the Bid Process Coordinator (BPC) has carried out a survey of the Transmission System associated with the Project. While every possible care has been taken in identifying the involvement of forest area / animal and bird sanctuary/ mines in the proposed routes. However, Bidders in their own interest should carry out required surveys and field investigation for submission of their Bid. For the purpose of carrying out required survey, the address and co-ordinate of each location of sub-station has been provided by the BPC. The coordinate of location of the sub-station is only for the purpose of facilitating Bidders to locate the sub-station and the same should not be considered as the point of termination of transmission line. For exact point of termination of transmission line, the Bidder shall have to coordinate with the agency responsible for construction of sub-station / switchyard who shall provide the inter- connection facility. Bidders in their own interest should visit the project site to confirm the location of sub- stations and any apprehension in this regard should be brought to the notice of the BPC.

Failure to verify the location of sub-station, investigate the route of the Transmission Lines associated with the Project and to examine, inspect site or subsurface conditions fully shall not be grounds for a Bidder to alter its Bid after the Bid Deadline nor shall it relieve a Bidder from any responsibility for appropriately eliminating the difficulty or costs of successfully completing the Project.

The BPC, its authorized representative, any of the Long Term Transmission Customer(s), nor their directors, employees or advisors/consultants make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions made in the Survey Report, or the accuracy, completeness or reliability of information contained therein, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of such survey report, even if any loss or damage is caused to the Bidders by any act or omission on their part.

Annexure – A
Content of Work for Report

Description
<p>1. Project Highlight</p> <p>2. Brief Background</p> <p>3. Scope of Work</p> <p>4. Complete project profile of the project giving technical parameters of the Transmission System & equipment.</p> <p>5. Metrological data like temperature, humidity, rainfall, type of terrain, max. altitude, snowzone, wind zone, & pressure.</p> <p>6. DETAILS RELATED TO TRANSMISSION LINE</p> <p>Survey Report covering the scope of work detailed in the specification with all maps & otherenclosures including details of the following enroute the transmission line</p> <p>a) Places of Archaeological importance, river (navigable or non-navigable), lakes, reservoir,canal, large waterbody, streams, Estuary, sea, hills/ mountains, coal, mineral mining areas, shooting ranges/firing range, coastal regulation zones, oil pipeline/underground inflammablepipelines etc.</p> <p>b) Places of Historical, Cultural, Religious or Tourist importance</p> <p>c) Defense installation/ vicinity to civil and Airports/Seaports/ shooting ranges/ firing ranges</p> <p>d) Railway /Highway Crossings</p> <p>e) Power Line / Telecom Line Crossings</p> <p>f) Land Availability (if required for acquisition)</p> <p>i. Extent of land available</p> <p>ii. Land use pattern (agricultural, barren, forest etc.)</p> <p>iii. Land ownership (Govt. Pvt., tribal, non-tribal etc.)</p> <p>g) Environmental and social aspects</p> <p>i. Forest Involvement (revenue, protected etc.) / Clearance</p> <p>ii. Social Issue / R&R Measure</p> <p>iii. wildlife infringement</p> <p>iv. Animal/Bird sanctuary</p>

v. infringement of endangered species habitat

vi. national park

vii. GIB area (Priority/Potential area)

h) Creeks, Marshy and low-lying areas

i) No. of pile/special foundations

j) Angle point location with angle of deviation, GPS coordinates, section length, cumulative length, crossing details, elevation above MSL, wind zone, snow zone

k) Circle rate of land, cost of Crop & Tree compensation

l) Pollution level, section wise as per available pollution map

m) Any other details relevant to the route.

1. Information Required for Substation Sites

Sl. No.	Criterion	Site-I	Site-II	Site-III	Remarks
1.0	Land Co-ordinates				
a)	Corner 1				
b)	Corner 2				
c)	Corner 3				
d)	Corner 4				
e)	-----				
1.1	Size (Acre) (Mtr x Mtr)				
1.2	Govt. /Private/Forest land				
1.3	Agriculture/Waste land				
1.4	Development				
1.5	Approximate cost				
	a. Circle rate per acre				
	b. Market rate per acre				
	c. Approx. cost of the land				
1.6	Type of soil				
1.7	No. of Owners				
1.8	Environment/Pollution in the vicinity				
1.9	Location with reference to nearest town				
1.10	H.F.L. Data				
1.11	Diversion of Nallah/Canal required				
1.12	Slope				
1.13	Approximate Extent of leveling required (inmeter)				

Sl. No.	Criterion	Site-I	Site-II	Site-III	Remarks
1.14	Land acquisition feasibility				
1.15	Rate of Govt. Land				
1.16	No. of Owners				
1.17	Extent of approach				
1.18	Planned/unplanned development				
1.19	Size of sites (m x m)				
1.20	No. of families to be displaced				
1.21	Level of site with reference to road level				
	a. Level of road				
	b. Level of site				
1.22	Distance from seashore				
1.23	Approach				
2.0	Obstacles in reaching site				
2.1	Nearby main road				
2.2	Length of approach road to be constructed				
2.3	Name of nearest airport				
2.4	Name of nearest Rail head				
2.5	Availability of ground water				
2.6	Availability of transmission corridor(Three /four sides)				
Sl. No.	Criterion	Site-I	Site-II	Site-III	Remarks
2.7	Existence of structures/dwelling units in the land of the proposed site				
2.8	Availability of disposal of rain/storm water				

2.9	Crops grown and types(multi-crop/single crop)				
2.10	Distance from main road				
2.11	Nearest railway station (BG/MG)				
2.12	Unloading facility at railway station				
2.13	No. of Culverts required for approach				
2.14	Nearest EHV line				
2.15	Length of line between this site & nearest substation for construction power at 33/11kV				
2.16	Frontage for line take off				
2.17	Telephone/Telegraph line				
3.0	Community Facilities				
3.1	Drinking Water				
3.2	Drainage				
3.3	Distance from a. Post Office b. Telephone c. School d. Market				
3.4	Security				
3.5	Availability of construction water				
3.6	Availability of drinking water				
4.0	Seismic zones				
5.0	Others				
6.0	Recommended Site				

PROFORMA BANK GURANTEE (EARNEST MONEY)

This deed of Guarantee made this _____ day of _____ 20____ by _____ (Name of the Bank) having one of its branches at _____ acting through its Manager (hereinafter called the “Bank”) which expression shall wherever the context so requires includes its successors and permitted assigns in favour of REC Power Development and Consultancy Limited (A Govt. of India Enterprise) registered under the Companies Act, 1956, having its office at _____ (Here in after called “RECPDCL”) which expression shall include its successors and assigns. WHEREAS RECPDCL has invited tender vide their Tender Notice No. _____ Dated _____ to be opened on _____ AND WHEREAS _____ M/s _____ (Name of Tenderer) having its office at _____ (hereinafter called the “Tenderer”), has/have in response to aforesaid tender notice offered to supply/ do the job _____ as contained in the tender. AND WHEREAS the Tenderer is required to furnish to RECPDCL a Bank Guarantee for a sum of Rs. _____ (Rupees _____ Only) as Earnest Money for participation in the Tender aforesaid. AND WHEREAS, we _____ (Name of the Bank) have at the request of the tenderer agree to give RECPDCL this as hereinafter contained. NOW, THEREFORE, in consideration of the promises we, the undersigned, hereby covenant that, the aforesaid Tender shall remain open for acceptance by RECPDCL during the period of validity as mentioned in the Tender or any extension thereof as RECPDCL and the Tenderer may subsequently agree and if the Tenderer for any reason back out, whether expressly or impliedly, from his said Tender during the period of its validity or any extension thereof as aforesaid or fail to furnish Bank Guarantee for performance as per terms of the aforesaid Tender, we hereby undertake to pay RECPDCL, New Delhi on demand without demur to the extent of Rs. _____ (Rupees _____ Only).

We further agree as follows: -

01. That RECPDCL may without affecting this guarantee extend the period of validity of the said Tender or grant other indulgence to or negotiate further with the Tenderer in regard to the conditions contained in the said tender or thereby modify these conditions or add thereto any further conditions as may be mutually agreed to in between RECPDCL and the Tenderer AND

the said Bank shall not be released from its liability under these presents by an exercise by RECPDCL of its liberty with reference to the matters aforesaid or by reason of time being given to the Tenderer or any other forbearance, act or omission on the part of the RECPDCL or any indulgence by RECPDCL to the said Tenderer or any other matter or thing whatsoever.

02. The Bank hereby waive all rights at any time in consistent with the terms of this Guarantee and the obligations of the Bank in terms thereof shall not be otherwise affected or suspended by reason of any dispute or dispute having been raised by the Tenderer (whether or not pending before any arbitrator, tribunal or court) or any denial of liability by the Tenderer stopping or preventing or purporting to stop or prevent any payment by the Bank to RECPDCL in terms thereof.

03. We the said Bank, lastly undertake not to revoke this Guarantee during its currency except with the previous consent of RECPDCL in writing and agree that any change in the constitution, winding up, dissolution or insolvency of the Tenderer, the said Bank shall not be discharged from their liability.

NOTWITHSTANDING anything contained above, the liability of the Bank in respect of this Guarantee is restricted to the said sum of Rs. _____ (Rupees _____ Only) and this Guarantee shall remain in force till _____ unless a claim under this guarantee is filed with the bank within 210 (Two Hundred and Ten) days from this date or the extended date, as the case may be i.e. up to _____ all rights under this Guarantee shall lapse and the Bank be discharged from all liabilities hereunder. In witness whereof the Bank has subscribed and set its name and seal here under. _____

Authorized Signature

Seal of Bank

Form of Contract Performance Guarantee

**Performa of Contract Performance Guarantee
(With due stamp duty if applicable)**

Ref. No. _____

Dated: _____

Bank Guarantee No. _____

To,

The Chief Executive Officer,
REC Power Development and Consultancy Limited
D- Block, REC Corporate Headquarter,
Plot No. I-4, Sector-29, Gurugram (Haryana)-122001,

OUR LETTER OF GUARANTEE No.:

In consideration of REC Power Development and Consultancy Limited (RECPDCL), having its office at _____ (hereinafter referred to as "RECPDCL" which expression shall unless repugnant to the content or meaning thereof include all its successors, administrators and executors) and having entered into an agreement dated _____/Issued Notification of Award/ Purchase Order No. _____ dated _____ with/on M/s _____ (hereinafter referred to as "The Supplier/Consultant" which expression unless repugnant to the content or meaning thereof, shall include all the successors, administrators, and executors).

This Bank Guarantee issued by _____ Bank, on behalf of the contractor in favor of RECL is in respect of the Contract/agreement dated _____.

WHEREAS the Supplier/Consultant having unequivocally accepted to render the services as per terms and conditions given in the Agreement dated _____/Notification of Award/ Purchase Order No. _____ dated _____ and RECPDCL having agreed that the Supplier/Consultant shall furnish to RECPDCL a Contract Performance Security for the faithful performance of the entire contract, to the extent of **3% (three percent)** (or the percentage as per the individual case) of the value of the Purchase Order i.e. for Rs. _____.

We, _____ ("The Bank") which shall include Our successors, administrators and executors herewith establish an irrevocable Letter of Guarantee No. _____ in your favour for account of _____ (The Supplier/Consultant) in cover of Contract Performance Security in accordance with the terms and conditions of the Agreement/Notification of Award/ Purchase Order.

Hereby, we undertake to pay up to but not exceeding Rs. _____ (Say _____ only) upon receipt by us of your first written demand accompanied by your declaration stating that the amount claimed is due by reason of the Supplier/Consultant having failed to perform the Agreement and despite any contestation on the part of above-named supplier/consultant without any demure, reservation, contest, recourse or protest and/or without any

reference to the supplier/consultant.

Any such demand made by the RECPDCL on the Bank shall be conclusive and binding notwithstanding any difference between the RECPDCL and Supplier/Consultant or any dispute pending before any court, tribunal or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of RECPDCL and further agrees that the guarantee herein contained shall continue to be enforceable till the RECPDCL discharges this guarantee.

The RECPDCL shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee from time to time to extend the time for performance of the contract by Supplier/Consultant. The RECPDCL shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Supplier/Consultant, and to exercise the same at any point in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the RECPDCL and the Supplier/Consultant or any other course of or remedy or security available to the RECPDCL. The Bank shall not be released of its obligations under these presents by any exercise by the RECPDCL of its liberty with reference to the matters aforesaid or any of them or by reason of any other acts of omission or commission on the part of the RECPDCL or any other indulgence shown by the RECPDCL or by any other matters or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank.

The Bank also agrees that the RECPDCL at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Supplier/Consultant and notwithstanding any security or other guarantee that RECPDCL may have in relation to the Supplier's/Consultant's liabilities.

This Letter of Guarantee will expire on _____ plus 180 days of claim period, and any claims made hereunder must be received by us on or before expiry date/claim period after which date this Letter of Guarantee will become of no effect whatsoever whether returned to us or not.

Notwithstanding anything contained hereinabove:

- a) Our liability under this Bank Guarantee shall not exceed and is restricted to Rs. _____(Rupees_____only)
- b) This Guarantee shall remain in force up to and including _____(including claim period of three months) Unless the demand/claim under this guarantee is served upon us in writing before within 180 days all the rights of RECPDCL under this guarantee shall stand automatically forfeited and we shall be relieved and discharged from all liabilities mentioned hereinabove.
- c) BG confirmation can also be sought by sending email to _____(Bank Official email id)

Authorized Signatory
Seal of Bank

(On letter Head of the Company/Agency)

Undertaking related to ESG

1. Name of the Agency:

2. Address of Agency:

We herewith declare that -

1. We adheres to fair labour practices, ensuring a safe working environment, fair wages, and compliance with applicable labour laws.
2. We upholds ethical business conduct, including anti-corruption measures.
3. We provide products that are environmentally sustainable, have consciously minimised carbon footprints in the production or sourcing process and invariably incorporate a minimum percentage of recycled materials wherever applicable.
4. We encourage diversity and inclusion within its organization and supply chains and complies with health and safety regulations, ensuring the well-being of their employees

It is certified that the information furnished above is true and correct.

(Signature of Authorized Signatory)

(With Official Seal)

Date :-

Place :-

PRE-CONTRACT INTEGRITY PACT

GENERAL

This pre-bid contract Agreement (herein after called the Integrity Pact) is made on.....day of the month of ____20..., between, on one hand, the REC Power Development and Consultancy Limited (RECPDCL). Acting through Shri _____, (hereinafter called the "RECPDCL", which expression shall mean and include, unless the context otherwise requires, his successors in the office and assigns) of the First Part and M/s _____ represented by Shri _____ (hereinafter called the "BIDDER/SELLER/CONSULTANT", which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the RECPDCL propose to procure (Items and Services as per the Scope of Work Mentioned in The Tender Document (hereinafter called the "Items and Services", which expression shall mean and include, unless the context otherwise requires, any additions & deletions in the said "Items and Services") and the BIDDER/ Seller/ Consultant is willing to offer/has offered the said "Items and Services".

WHEREAS the BIDDER/ Consultant is a Private Company/Public Company/Government Undertaking/ Partnership/registered export agency, constituted in accordance with the relevant law in the matter and the RECPDCL is a Ministry/ Department of the Government of India/PSU performing its function on behalf of the President of India.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the Contract to be entered into with a view to:-

Enabling the RECPDCL to obtain the desired "Items and Services" at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDER/ CONSULTANT to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other practices and the RECPDCL will commit to prevent corruption, in any form, by its official by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the RECPDCL

1.

1.1. The RECPDCL undertakes that no official of the RECPDCL, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER/CONSULTANT, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

1.2. The RECPDCL will, during the pre-contract stage, treat all BIDDER/CONSULTANT alike, and

will provide to all BIDDER/CONSULTANT the same information and will not provide any such information to any particular BIDDER/CONSULTANT which could afford an advantage to that particular BIDDER/CONSULTANT in comparison to the other BIDDER(S)/CONSULTANT(S).

- 1.3. All the officials of the RECPDCL will report the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER/CONSULTANT to the RECPDCL with the full and verifiable facts and the same is prima facie found to be correct by the RECPDCL, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the RECPDCL and such a person shall be debarred from further dealings related to the contract process. In such a case, while an enquiry is being conducted by the RECPDCL, the proceedings under the contract would not be stalled.

Commitments of BIDDERS / CONSULTANTS

3. The BIDDER/CONSULTANT commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:-
 - 3.1. The will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the RECPDCL, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
 - 3.2. The BIDDER/CONSULTANT further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage, or inducement to any official of the RECPDCL or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contractor any other contract with the Government.
 - 3.3. The BIDDER/CONSULTANT shall disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.
 - 3.4. The BIDDER/CONSULTANT shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.
 - 3.5. The BIDDER/CONSULTANT further confirms and declares to the RECPDCL that he BIDDER/CONSULTANT is the original manufacturer/Integrator/authorized government sponsored export entity of the defence stores and has not engage any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the RECPDCL or any of its functionaries, whether officially or unofficially to the award of the contract to the

BIDDER/CONSULTANT, nor has any amount been paid. Promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.

- 3.6. The BIDDER/CONSULTANT, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payment he has made, is committed to or intends to make to officials of the RECPDCL or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.7. The BIDDER/CONSULTANT will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8. The BIDDER/CONSULTANT will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9. The BIDDER/CONSULTANT shall not use improperly, for purpose of competition or personal gain, or pass on to others, any information provided by the RECPDCL as part of the business relationship, regarding plans, technical proposal and business details, including information contained in any electronic data carrier. The BIDDER/CONSULTANT also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10. The BIDDER/CONSULTANT commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11. The BIDDER/CONSULTANT shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12. If the BIDDER/CONSULTANT or any employee of the BIDDER/CONSULTANT or any person acting on behalf of the BIDDER/CONSULTANT, either directly or indirectly, is a relative of any of the officers of the RECPDCL, or alternatively, if any relatives of an officer of the RECPDCL had financial interest/stake in the BIDDER's/CONSULTANT's firm, the same shall be disclosed by the BIDDER/CONSULTANT at the time of filling of tender. The term 'relative' for this purpose would be as defined in Section 6 of the Companies Act 1956.
- 3.13. The BIDDER/CONSULTANT shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the RECPDCL.

4. Previous Transgression

- 4.1. The BIDDER/CONSULTANT declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's/CONSULTANT's exclusion from the tender process.

4.2. The BIDDER/CONSULTANT agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Earnest Money (Security Deposit)

5.1. While submitting commercial bid, the BIDDER/CONSULTANT deposit an amount _____ (as specified in TENDER) as Earnest Money/Security, Deposit, with the RECPDCL through any of the following instruments:

5.1.1. Bank Draft or a Pay Order in favour of 'REC Power Development and Consultancy Ltd.' payable at New Delhi.

5.1.2. A confirmed guarantee by an Indian Nationalized Bank, promising payment of the guaranteed sum to the RECPDCL on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the RECPDCL shall be treated as conclusive proof of payment.

5.1.3. Any other mode or through any other instrument (to be specified in the TENDER).

5.2. The Earnest Money/ Security Deposit shall be valid as per terms of TENDER.

5.3. In the case of successful BIDDER/CONSULTANT, a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of Sanctions for violation shall be applicable for forfeiture of Performance Bond in case of a decision by the RECPDCL to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.4. No interest shall be payable by the RECPDCL to the BIDDER/CONSULTANT on Earnest Money/Security Deposit for the period of its currency.

6. Sanctions for Violations

6.1. Any breach of the aforesaid provisions by the BIDDER/CONSULTANT or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER/SELLER/CONSULTANT) shall entitle the RECPDCL to take all or any one of the following actions, wherever required:-

6.1.1. To immediately call off the pre contract negotiations without assigning any reason or giving any compensation to the BIDDER/CONSULTANT. However, the proceedings with the other BIDDER(s) would continue.

6.1.2. The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the RECPDCL and the RECPDCL shall not be required to assign any reason therefore.

- 6.1.3. To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- 6.1.4. To recover all sums already paid by the RECPDCL, and in case of the Indian BIDDER/CONSULTANT with interest thereon at 2% higher than the prevailing Prime Lending Rate of State of India, while in case of a BIDDER/CONSULTANT from a country other than India with Interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the RECPDCL in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
- 6.1.5. To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER/CONSULTANT, in order to recover the payments, already made by the RECPDCL, along with interest.
- 6.1.6. To cancel all or any other contracts with the BIDDER/CONSULTANT. The BIDDER shall be liable to pay compensation for any loss or damage to the RECPDCL resulting from such cancellation/rescission and the RECPDCL/PRINCIPAL shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER/CONSULTANT.
- 6.1.7. To debar the BIDDER/CONSULTANT from participating in future bidding processes of the Government of India RECPDCL/PRINCIPAL for a minimum period of five years, which may be further extended at the discretion of the RECPDCL.
- 6.1.8. To recover all sums paid in violation of this Pact by BIDDER/CONSULTANT (s) to any middlemen or agent or broken with a view to securing the contract.
- 6.1.9. In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the RECPDCL with the BIDDER/CONSULTANT, the same shall not be opened.
- 6.1.10. Forfeiture of performance Bond in case of a decision by the RECPDCL to forfeit the same without assigning any reason for imposing for sanction for violation of this pact.
- 6.2. The RECPDCL will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the BIDDER/CONSULTANT or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER/CONSULTANT), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.
- 6.3. The decision of the RECPDCL to the effect that a breach of the provisions of this pact has been committed by the BIDDER/CONSULTANT shall be final and conclusive on the BIDDER/CONSULTANT. However, the BIDDER/CONSULTANT can approach the Independent Monitor(s) appointed for the purposes of this Pact.

7. Independent Monitors

- 7.1. The RECPDCL has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission (Names and Addresses of the Monitors

shall be published subsequently by RECPDCL).

- 7.2. The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.
- 7.3. The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.
- 7.4. Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.
- 7.5. As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the RECPDCL.
- 7.6. The BIDDER/CONSULTANT(s) accepts that the Monitors has the right to access without restriction to all project documentation of the RECPDCL including that provided by the BIDDER/CONSULTANT. The BIDDER/CONSULTANT will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/CONSULTANT/Subcontractors(s) with confidentiality.
- 7.7. The BUYER will provide to the Monitors sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the monitor the option to participate in such meetings.
- 7.8. The Monitor will submit a written report to the designated Authority of RECPDCL/Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the RECPDCL/BIDDER/CONSULTANT and, should the occasion arise, submit proposals for correcting problematic situations.

8. Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the RECPDCL or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER/CONSULTANT and the BIDDER/CONSULTANT shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

9. Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the RECPDCL.

10. Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that

may follow in accordance with the provisions of the any extent law in forcerelating to any civil or criminal proceedings.

11. Validity

11.1. The validity of this Integrity Pact shall be from the date of its signing and extend up to 5 years or the complete execution of the contract to the satisfaction of both the RECPDCL and the BIDDER/SELLER/CONSULTANT, including warranty period, whichever is later. In case BIDDER/SELLER/CONSULTANT is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

11.2. Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

12. The parties hereby sign this Integrity Pact at _____ on _____

RECPDCL:

BIDDER/ CONSULTANT:

Name of the Officer _____

Designation _____

Witness:

Witness:

1. _____

1. _____

2. _____

2. _____

DRAFT CONTRACT AGREEMENT

Draft Contract Agreement

This CONTRACT (hereinafter, together with all Appendices attached hereto and forming an integral part hereof, called the “Contract”) is made the _____ day of the month of _____ 2018, between, on the one hand _____ (hereinafter called the “Owner”) and, on the other hand, _____ (here in after called the “Consultants”).

WHEREAS

- (A) The Owner intends to hire Consultant for survey using Modern Survey Techniques and Preparation of Survey Report of transmission project being implemented through Tariff Based Competitive Bidding process.
- (B) The Owner has requested the Consultants to provide certain consultancy services required for the Project as defined hereinafter (hereinafter called the “Services”).
- (C) The Consultants, having represented to the Owner that they have required professional skills, personnel and technical resources, agreed to provide the Services on the terms and conditions set forth in this Contract;

NOW THEREFORE the parties hereto hereby agree as follows:

1. GENERAL PROVISIONS

1.1 Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

- (a) “Applicable Law” means the laws and any other instruments having the force of law in the Owner’s country, as they may be issued and in force from time to time.
- (b) “Contract” means this Contract together with all Appendices/ Attachments and including all modifications made in accordance with the provisions of Clause 2.5 hereof between the Owner and the Consultants.
- (c) “Effective Date” means the date on which this Contract comes into force and effect pursuant to Clause-2.1 hereof.
- (d) “Personnel” means persons hired by the Consultants as employees and assigned to the performance of the Services or any part thereof’.
- (e) “Party” means the Owner or the Consultants, as the case may be.
- (g) “Services” means the work to be performed by the Consultants pursuant to this Contract for the purposes of the Project, as described in Appendix-A hereto.
- (h) “Starting Date” means the date referred to in Clause-2.2 hereof.

- (i) "Third Party" means any person or entity other than the Owner, the Consultants or a Consultant.

1.2 Relation between the Parties

Nothing contained herein shall be construed as establishing a relation of master and servant or of agent and principal as between the Owner and the Consultants. The Consultants, subject to this Contract, have complete charge of personnel performing the Services and shall be fully responsible for the Services performed by them or on their behalf hereunder.

1.3 Law Governing Contract

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law of India.

1.4 Language

This Contract has been executed in the English language, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this contract.

1.5 Headings

The headings shall not limit, alter or affect the meaning of this Contract.

1.6 Notices

- 1.6.1 Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, telegram or facsimile to such Party at the following address:

For the Owner:

Attention: _____

Facsimile: _____

For the Consultants:

Attention: _____

Facsimile _____

- 1.6.2 Notice will be deemed to be effective as follows

- (a) In the case of personal delivery or registered mail, on delivery.
- (b) In case of telegrams, ninety-six (96) hours following confirmed transmission; and
- (c) In the case of facsimiles, seventy-two (72) hours following confirmed transmission.

- 1.6.3 A Party may change its address for notice hereunder by giving the other Party notice of such change pursuant to this Clause.

1.7 Location

The Services shall be performed at Delhi or at such location required / approved by Owner.

1.8 Authority of Consultants

The Consultants hereby authorize _____ to act on their behalf in exercising the entire Consultants' rights and obligations towards the Owner under this Contract, including without limitation the receiving of instructions and payments from the Owner.

1.9 Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed under this Contract, may be taken or executed:

- (a) On behalf of the Owner by _____ or his designated representative.
- (b) On behalf of the Consultants, by _____ or his designated representative.

1.10 Taxes and Duties

The consultants and the personnel shall pay the taxes including duties, fees, levies and other impositions levied under the existing, amended or enacted laws during life of this contract (excluding GST) and the Owner shall perform such duties in regard to the deduction of such tax as may be lawfully imposed.

2.0 COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF CONTRACT

2.1 Effectiveness of Contract

This Agreement will become effective upon signing by both the parties.

2.2 Commencement of Services

The Consultants shall begin carrying out the Services immediately viz. from the date of issue of LOI/Letter of Award (the "Starting Date"), or on such date as the Parties may agree in writing.

2.3 Expiration of Contract

Unless terminated earlier pursuant to Clause-2.8 hereof, this Contract shall terminate when, pursuant to the provisions hereof, the Services have been completed, and the payments of remuneration and reimbursable expenditures have been made.

2.4 Entire Agreement.

This Contract contains all covenants, stipulations and provisions agreed by the parties. No agent or representative of either Party has authority to make, and the parties shall not be bound by or be liable for any statement, representation, promise or agreement not set forth herein.

2.5 Modification

Modification of the terms and conditions of this Contract, including any modification of the scope of the Services, may only be made by written agreement between the parties and shall not be effective until the consent of the parties has been obtained. Pursuant to Clause-7.2 hereof, however, each Party shall give due consideration to any proposals for modification made by the other Party.

2.6 Force Majeure

2.6.1 Definition

In the event of either party being rendered unable by Force Majeure to perform any obligation required to be performed by them under the CONTRACT, the relative obligation of the party affected by such Force Majeure shall be suspended for the period during which such cause lasts.

The term "Force Majeure" as employed herein shall mean acts of God, War, Civil Riots, Fire directly affecting the performance of the CONTRACT, Flood and Acts and Regulations of respective government of the two parties, namely RECPDCL and the Consultant.

Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing, the beginning of the cause amounting to Force Majeure as also the ending of the said clause by giving notice to the other party within 72 hours of the ending of the cause respectively. If the deliveries are suspended by Force Majeure conditions lasting for more than 2 (two) months, REC shall have the option of canceling this CONTRACT in whole or part at his discretion without any liability at his part.

Time for performance of the relative obligation suspended by Force Majeure shall then stand extended by the period for which such cause lasts.

2.6.2 No Breach of Contract

The failure of a party to fulfill any of its obligations hereunder shall not be considered to be a breach of or default under, this Contract in so far as such inability arises from an event of Force Majeure, provided that the party affected by such an event has taken all reasonable precautions, due care and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Contract.

2.6.3 Measures to be taken

- (a) A Party affected by an event of Force Majeure shall take all reasonable measures to remove such Party's inability to fulfill its obligations hereunder with a minimum of delay.
- (b) A Party affected by an event of Force Majeure shall notify the other Party of such event as soon as possible, and in any event not later than fourteen (14) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give notice of the restoration of normal conditions as soon as possible.

- (c) The parties shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

2.6.4 Extension of Time

Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

2.6.5 Consultation

Not later than thirty (30) days after the Consultants, as the result of an event of Force Majeure, have become unable to perform a material portion of the Services, the parties shall consult with each other with a view to agreeing on appropriate measures to be taken in the circumstances.

2.7 Suspension

The Owner may, by written notice of suspension to the Consultants, suspend all payments to the Consultants hereunder if the Consultants fail to perform any of their obligations under this contract, including the carrying out of services, provided that such notice of suspension (i) shall specify the nature of the failure, and (ii) shall request the Consultants to remedy such failure within a period not exceeding thirty (30) days after receipt by the Consultants of such notice of suspension and shall invoke contract performance guarantee.

2.8 Termination

2.8.1 By the Owner

The Owner may by not less than thirty (30) days' written notice of termination to the Consultants (except in the event listed in paragraph (f) below, for which there shall be a written notice of not less than sixty (60) days) such notice to be given after the occurrence of any of the events specified in paragraphs (a) to (f) of this Clause-2.8.1, terminate this Contract:

- (a) If the Consultants fail to remedy a failure in the performance of their obligations here under, as specified in a notice of suspension pursuant to Clause-2.7 here-in-above, within thirty (30) days of receipt of such notice of suspension or within such further period as the Owner may have subsequently approved in writing.
- (b) If the Consultants become insolvent or bankrupt or enter into an agreement with their creditors for relief of debt or take advantage of any law for the benefit or debtors or go into liquidation receivership whether compulsory or voluntary.
- (c) If the Consultants fail to comply with any final decision reached as a result of arbitration proceedings pursuant to Clause-10 hereof.
- (d) If the Consultants submit to the Owner a statement which has a material effect on the rights, obligations or interests of the Owner and which the Consultants know to be false.

- (e) If, as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- (g) If the Consultant and/or Consortium Partner/sub-consultant (if applicable) has engaged in corrupt or fraudulent practices or is found to have misrepresented the facts or has provided false information/documentation.
- (f) If the Owner, in its sole discretion and for any reason whatsoever, decides to terminate this Contract.

2.8.2 Cessation of Rights and Obligations

Upon termination of this Contract pursuant to Clauses- 2.8.1 hereof or upon expiration of this Contract pursuant to Clause-2.3 hereof, all rights and obligations of the parties hereunder shall cease, except:

- (a) Such rights and obligations as may have accrued on the date of termination or expiration,
- (b) The obligation of confidentiality set forth in Clause-3.2.4 hereof,
- (c) Any right which a Party may have under the Applicable Law.

2.8.3 Cessation of Services

Upon termination of this Contract by notice to pursuant to clauses-2.8.1 hereof, the Consultants shall, immediately upon dispatch or receipt of such notice, take all- necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum.

2.8.4 Payment upon Termination

Upon termination of this Contract pursuant to Clause-2.8.1 hereof the Owner shall make the following payments to the Consultants:

- (a) Remuneration pursuant to Clause-6 hereof for Services satisfactorily performed prior to the effective date of termination.
- (b) Reimbursable expenditures pursuant to Clause-6 hereof for expenditures actually incurred prior to the effective date of termination, and
- (c) Except in the case of termination pursuant to paragraphs (a) to (d) of Clause-2.8.1 hereof reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract including the cost of the return travel of the Consultants' personnel and their eligible dependents.

3.0 OBLIGATIONS OF THE CONSULTANTS

3.1 General

3.1.1 Standard of Performance

The Consultants shall perform the Services and carry out their obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted techniques and practices used with professional engineering and consulting standards recognized by professional bodies, and shall observe sound management, and technical and engineering practices, and employ appropriate advanced technology and safe and effective equipment, machinery, materials and methods. The Consultants shall always act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Owner, and shall at all times support and safeguard the Owner's legitimate interest in any dealings with Third parties.

3.1.2 Law Governing Services

The Consultants shall perform the Services in accordance with the Applicable Law and shall take all practicable steps to ensure that the Personnel and agents of the Consultants comply with the Applicable Law.

3.1.3 Conflict of Interest

The consultant shall hold the Owner's interest paramount, without any consideration for future work, and strictly avoid conflict with other assignments or their corporate interests.

3.2.1 Consultants Not to Benefit from Commissions, Discounts etc.

The payment of the Consultant shall constitute the Consultant's only payment in connection with this Contract or the Services, and the Consultant shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations under the Contract, and the Consultant shall use their best efforts to ensure that the Personnel , and agents of either of them similarly shall not receive any such additional payment.

3.2.2 Consultants and Affiliates not to be otherwise interested in Project

The Consultant agrees that, during the term of this Contract and after its termination, the Consultant and their affiliates shall be disqualified from providing goods, works or services (other than consulting services) resulting from or directly related to the Consultant's Services for the preparation or implementation of the project.

3.2.3 Prohibition of Conflicting Activities

The consultant and their affiliates shall not engage, either directly or indirectly, in any business or professional activities which would conflict with the activities assigned to them under this Contract.

The consultant and their affiliates hired to provide services for the proposed assignment will be disqualified from services related to the initial assignment for the same project subsequently.

In case of rating the proposed project, for which this consultancy services are being provided, then the Consultant and their affiliates will not rate this project nor in any way be associated in rating of this project.

3.2.4 Confidentiality

The Consultants and the Personnel of either of them shall not, either during the term or within two (2) years after the expiration of this Contract, disclose any proprietary or confidential information relating to the Project, the Services, this Contract or the Owner's business or operations without the prior written consent of the Owner.

3.3 Insurance to be taken out by the Consultant

The Consultant shall take out and maintain at their own cost, appropriate insurance against all the risks, and for all the coverage, like workers compensation, employment liability insurance for all the staff on the assignment comprehensive general liability insurance, including contractual liability coverage adequate to cover the indemnity of obligation against all damages, costs, and charges and expenses for injury to any person or damage to any property arising out of, or in connection with, the services which result from the fault of the Consultant or their staff on the assignment

3.4 Liability of the Consultants

The Consultants shall be liable to the Owner for the performance of the Services in accordance with the provisions of this Contract [Note: If the Consultants consist of more than one entity, this should be changed to read -"The Consultants and each of their Members shall be jointly and severally liable to the Owner-for the performance of the Services] and for any loss suffered by the Owner as a result of a default of the Consultants in such performance, subject to the following limitations:

- (a) The Consultants shall not be liable for any damage or injury caused by or arising out of the act, neglect, default or omission of any persons other than the Consultants or the Personnel of either of them; and
- (b) The Consultants shall not be liable for any loss or damage caused by or arising out of circumstances over which the Consultants had no control.

3.5 Indemnification of the Owner by the Consultants -

The Consultants shall keep the Owner, both during and after the term of this Contract, fully and effectively indemnified against all losses, damage, injuries, deaths, expenses, actions, proceedings, demands, costs and claims, including, but not limited to, legal fees and expenses, suffered by the Owner or any Third Party, where such loss, damage, injury or death is the result of a wrongful action, negligence or breach of Contract of the Consultants, or the Personnel or agents of either of them including the use or violation of any copyright work or literary property or patented invention, article or appliance.

3.6 Consultants' Actions Requiring Owner's Prior Approval

The consultant shall not enter into a subcontract for the performance of any part of the Services. However, the consultant can hire the services of Personnel to carry out any part of the services, for which, Consultants shall obtain the Owner's prior approval in writing before appointing Personnel to carry out any part of the Services, including the terms and conditions of such appointment. The Consultants shall remain fully liable for the performance of the service by its personnel pursuant to this contract.

3.7 Reporting Obligations

The Consultants shall submit to the Owner the reports and documents specified in **Appendix-B** hereto, in the form, in the numbers and within the time periods set forth in the said Appendix, including any supporting data required by the Owner.

3.8 Documents prepared by the Consultants to be the Property of the Owner:

All plans, drawings, specifications, designs, reports and other documents prepared by the Consultants for performing the Services shall become and remain the property of the Owner, and the Consultants shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Owner, together with a detailed inventory thereof. The Consultants may retain a copy of such documents shall not use them for purposes unrelated to this Contract without the prior written approval of the Owner.

4.0 CONSULTANTS' PERSONNEL

4.1 General

The Consultants shall employ and provide such qualified and experienced Personnel as are required to carry out the Services.

4.2 Description of Personnel

- (a) The titles, agreed job descriptions, minimum qualifications and estimated periods of engagement in carrying out of the Services of each of the Consultants' Personnel are described in **Appendix-C**.
- (b) If required to comply with the provisions of Clause 3.1.1 of this Contract, adjustments with respect to the estimated periods of engagement of Personnel set forth in **Appendix-C** may be made by the Consultants by written notice to the Owner, provided:
 - (1) That such adjustments shall not alter the originally estimated period of engagement of any individual by more than 10% or one week, whichever is larger, and
 - (2) That the aggregate of such adjustments shall not cause payments under this Contract to exceed the ceilings set forth in Clause-6.2 of this Contract. Any other such adjustments shall only be made with the Owner's written approval.

- (c) If additional work is required beyond the scope of the Services specified in **Appendix-A**, the estimated periods of engagement of Personnel set forth in **Appendix-C** may be increased by agreement in writing between the Owner and the Consultants provided that any such increase shall not, except as otherwise agreed, cause payments under this Contract to exceed the ceilings set forth in Clause-6 of this Contract.

4.3 Agreed Personnel

The Consultant hereby agrees to engage the personnel listed by title as well as by name in **Appendix-C** in order to fulfill his contractual obligations under this contract.

4.4 Removal and/or Replacement of Personnel

- (a) Except as the Owner may otherwise agree, no changes shall be made in the Personnel. If, for any reason beyond the reasonable control of the Consultants, it becomes necessary to replace any of the Personnel, the Consultants shall forthwith provide as a replacement a person of equivalent or better qualifications, which shall be approved by the Owner.
- (b) If the Owner:
 - (1) Finds that any of the Personnel has committed serious misconduct or has been charged with having committed a criminal action, or
 - (2) Has reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Consultants shall at the Owner's written request specifying the grounds, therefore, forthwith provide as a replacement a person with qualifications and experience acceptable to the Owner.
- (c) Any of the Personnel provided as a replacement under Clauses (a) and (b) above, the rate of remuneration applicable to such person as well as any reimbursable expenditures (including expenditures due to the number of eligible dependents) the Consultants may wish to claim as a result of such replacement, shall be subject to the prior written approval by the Owner. Except as the Owner may otherwise agree,
 - (1) The Consultants shall bear all additional travel and other costs arising out of or incidental to any removal and/or replacement, and

5.0 OBLIGATIONS OF THE OWNER

5.1 Payment

In consideration of the Services performed by the Consultants under this Contract the owner shall make to the Consultants such payments and in such manner as is provided by Clause-6 of this Contract.

5.2 Services and Facilities

The Owner shall make available free of charge to the Consultant the Services and Facilities listed under **Appendix-E**.

6.0 PAYMENTS TO THE CONSULTANTS

6.1 An all-inclusive cost of services and contract value payable in Indian Rupees is set forth in **Appendix-E**.

6.2 Terms of Payment: Payment will be made by the owner to the Consultant as follows:

S. No.	Milestone	Payment
1.	After submission and acceptance of Draft Project Report	40% of Contract Value specified for project
2.	After submission & acceptance of the Final Report.	40% of Contract Value specified for project
3.	After the LOI has been issued for Transmission System under bidding to the successful developer for the Transmission System and the SPV has been handed over to the selected bidder	20% of Contract Value specified for project

6.3 The Consultant shall submit the bills to the Owner of firm's printed bill forms indicating the work done by him during the period for which payment is sought.

6.4 The Owner shall cause the payment of the Consultants as per above given in schedule of payment above within thirty (30) days after the receipt by the Owner of bills with supporting documents. But if the progress is not satisfactory and according to agreed work program/schedule the payment may be withheld.

6.5 The final payment under this Clause shall be made only after satisfactory completion of the activities mentioned in the ToR is completed.

7.0 LIQUIDATED DEMAGES FOR DELAY IN COMPLETION

For any delays attributable to the Consultant, beyond the Scheduled dates/period of completion of various activities as per the agreed work schedule, a Liquidity Damage (LD) equal to 0.5% of the contract value per week or part thereof subject to maximum of 5% of the contract value may be levied from the bill of the agency.

8 FAIRNESS AND GOOD FAITH

8.1 Good Faith:

The parties undertake to act in good faith respect to each other's rights under this Contract and to adopt all reasonable measures to ensure the realization of the objectives of this Contract.

8.2 OPERATION OF THE CONTRACT:

The parties recognize that it is impractical in this Contract to provide for every contingency which may arise during the life of this contract, and the parties hereby agree that it is their intention that this Contract shall operate fairly as between them and without detriment to the interest of either of them and that, if during the tenure of this Contract either Party believes that this Contract is operating unfairly, the parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but no-failure to agree on any action pursuant to this Clause shall give rise to a dispute subject to arbitration in accordance with Clause-9 hereof.

9.0 JURISDICTION AND APPLICABLE LAW:

This agreement including all matter connected with this Agreement, shall be governed by the laws of India (both substantive and procedural) for the time being in force and shall be subject to exclusive jurisdiction of the Indian Courts at Delhi.

10 SETTLEMENT OF DISPUTES:

10.1 Amicable Settlement

Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, in connection with construction, meaning, operation, effect, interpretation of the contract or breach thereof which parties are unable to settle mutually, the same shall be referred to Arbitration as provided hereunder:

1. A party wishing to commence arbitration proceeding shall invoke Arbitration Clause by giving 60 days' notice to the other party.
2. The party invoking arbitration shall specify all the points of disputes with details of the amount claimed to be referred to arbitration at the time of invocation of arbitration and not thereafter.
3. RECPDCL shall appoint a Sole Arbitrator with the approval of Chairman & Managing Director.
4. It is agreed that there will be no objection that the Arbitrator appointed holds equity shares of RECPDCL or is a retired employee of RECPDCL.
5. If any of the Arbitrators, so appointed, dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings, it shall be lawful for the party concerned to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with reference from the stage where his predecessor has left if both parties consent for the same; otherwise, he shall proceed de novo.
6. It is a term of the Contract that neither party shall be entitled for any pre-reference or pendent-lite interest on its claims. Parties agree that any claim for such interest made by ay party shall be void.
7. The arbitrator(s) shall give reasoned and speaking award and it shall be final and binding on the parties.
8. The parties to the arbitration will bear the fees and expenses to be determined by the arbitrators.
9. The venue of arbitration will be New Delhi.
10. Subject to aforesaid, provisions of the Arbitration and Conciliation Act, 1996 and any

Statutory modifications or re-enactment thereof shall apply to the arbitration proceeding under this clause.

10.2 The courts of New Delhi alone shall have exclusive jurisdiction on any dispute arising out of this contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

FOR AND ON BEHALF OF [OWNER]

By _____

Authorized Representative

FOR AND ON BEHALF OF [CONSULTANTS]

By _____

Authorized Representative

Place;

Date:

Encl: Copy of Letter of Award No. _____ dated _____

DESCRIPTION OF THE SCOPE OF WORK/TERMS OF REFERENCE (ToR)

[Give detailed descriptions of the Services to be provided; dates for completion of various tasks, place of performance for different tasks; specific tasks to be approved by Owner etc.]

REPORTING REQUIREMENTS

CONSULTANTS' AND THEIR KEY PERSONNEL

[Give titles (and names, if already available), detailed job descriptions and minimum qualifications of key Personnel to be assigned to work and man-days for each]

DUTIES OF THE OWNER

The Consultants shall have to make their own arrangements for completing the assignments and Owner shall have no duty/responsibility in this regard.

Owner shall make payments as per terms of payment specified in the bidding documents.

(COST OF SERVICES)