GOVERNMENT OF BIHAR
Animal & Fish Resources Department
Directorate of Fisheries, Bihar

Notice Inviting Tender

Directorate of Fisheries, Animal & Fish Resources Department, (hereinafter called “OWNER”) invites sealed bids in two bid system (i.e. containing Technical and Financial duly super scribing with “TECHNICAL BID” & “FINANCIAL BID”) from the Bidders fulfilling the Eligibility Criteria specified here under for supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years for 100 nos. of 3HP and 88 nos. of 5 HP DC Submersible Motor pump Set in Bihar.

The bids should be submitted to Directorate of Fisheries, Block ‘A’, 4th Floor, Officers’ Hostel, Bailey Road, Patna, Pin: 800001, Bihar in a sealed envelope (containing both sealed Technical Bid envelope and sealed Financial Bid envelope), duly marked as “Installation of 100 Nos. of 3HP and 88 Nos. of 5HP DC Submersible SPV Water Pumping System for Aquaculture purpose in Bihar State”.

The last date of receiving of RFP in the office of the Director Fisheries, Bihar is 5.03.2019 till 03:00 PM. The Pre-bid meeting will be held on 28.02.2019 at 3:00 PM in the chamber of the Secretary, Animal and Fish Resources Department, Bihar, Patna. The technical bid will be opened on 5.03.2019 at 04:00 PM in the office of the Secretary, Animal and Fish Resources Department, Bihar, Patna before the Technical Committee and the final decision on the proposals will be taken by the Purchase Committee (PC) which will be binding to all. The RFP document can be downloaded from Departmental website- http://www.ahd.bih.nic.in

The details of RFPs offer, terms and conditions may be seen on the Departmental website- http://www.ahd.bih.nic.in.

[Signature]

Director Fisheries,
Bihar, Patna
Request for Proposal (RFP)

For

Installation of 100 Nos. of 3HP and 88 Nos. of 5HP DC Submersible SPV Water Pumping System for Aquaculture purpose in Bihar State

under

Installation of Solar Pump set Scheme

Directorate of Fisheries, Animal & Fish Resources Department, Vikash Bhawan, Bailey Road, Patna: 800001 (Bihar)
Email: directorfisheries-bih@nic.in
Phone: 0612-2535800
0612-2535899 (Fax)
Website: www.ahd.bih.nic.in
Email: directorfisheries-bih@nic.in
Notice Inviting Tender

1. Directorate of Fisheries, Animal & Fish Resources Department, (hereinafter called “OWNER”) invites sealed bids from the Bidders fulfilling the Eligibility Criteria specified hereunder for supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years, for 100 nos. of 3HP and 88 nos. of 5 HP DC Submersible Motor pump Set in Bihar.

A solar photovoltaic (SPV) water pumping system consists of PV array, a DC submersible motor pump set with controller, interconnecting cables and ON/OFF push button switch along with MCB of adequate rating. PV Array is mounted on a suitable structure with a provision of tracking (Manual/Automatic). System should be provided with suitable controls and protections as per latest MNRE technical specification and standard. There must be a provision with remote monitoring mechanism of installed solar water pumps.

2. The Pump shall be implemented in accordance with the Technical Specifications contained in Part II of the Bidding Documents.

3. The Bidder should meet the following Eligibility Criteria in order to be eligible for participating in this IFB:

<table>
<thead>
<tr>
<th>S.N</th>
<th>Part-A -- Minimum Eligibility Condition</th>
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<tbody>
<tr>
<td>1</td>
<td>The bidder should be:</td>
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<tr>
<td></td>
<td>A Registered firm with manufacturing facility in India for: -</td>
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<tr>
<td></td>
<td>SPV Modules OR Motor-pump Sets OR Solar Pump Controller</td>
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<td></td>
<td>(Test Certificate for any one of the above components from a MNRE accredited Test lab is mandatory)</td>
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<td>OR</td>
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<td></td>
<td>A PV System Integrator with three years track record in OFF - GRID PV Systems.</td>
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<td></td>
<td>OR</td>
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<td></td>
<td>MNRE empanelled firms to Participate in Solar Pumping Programme through NABARD</td>
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<tr>
<td>2</td>
<td>The bidder should have ISO 9001:2008 certification.</td>
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<tr>
<td>3</td>
<td>At least 10% of the tendered quantity Solar Photovoltaic Water Pumping Systems should have been installed &amp; commissioned by the bidder by the date of submission of technical bid</td>
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<tr>
<td>S.N.</td>
<td>Part – B – Other Eligibility Criteria</td>
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<tr>
<td>1</td>
<td>The bidder should be:</td>
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<td></td>
<td>A Registered firm with manufacturing facility in India for:</td>
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<td></td>
<td>OR</td>
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<tr>
<td></td>
<td>MNRE empanelled firms to Participate in Solar Pumping Programme through NABARD.</td>
</tr>
<tr>
<td>2</td>
<td>Bidder’s cumulative experience in supply and installation/commissioning of total number of Solar Water Pumping Systems:</td>
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<td></td>
<td>&gt;250 nos.</td>
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<td></td>
<td>&gt;500 nos.</td>
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<td></td>
<td>&gt;750 nos.</td>
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<tr>
<td></td>
<td>&gt;1000 nos.</td>
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<td>3</td>
<td>Value of a “Single Order” executed by the Bidder of:</td>
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<tr>
<td></td>
<td>Solar Water Pumping Systems OR Indigenous Motor Pump sets / Solar Motor Pump Controllers/ Inverters</td>
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<td></td>
<td>Valued more than Rs. 2.0 Crore</td>
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<tr>
<td></td>
<td>Valued more than Rs. 5.0 Crores</td>
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<td>4</td>
<td>The bidder has service centers:</td>
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<td>Less than two in the state for which tender is issued</td>
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<td>At least two in the state for which tender is issued</td>
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<td>At least four in the state for which tender is issued</td>
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<td>5</td>
<td>Track Record of the Bidder (in Manufacturing Off-grid PV components): Number of years, bidder is in the Manufacturing of Off-grid PV components (PV modules/ Pumps / controllers), and has not been blacklisted by any Govt. Agency [for not honoring the order after bidding OR not supplying in time OR not providing after sales service].</td>
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<td>If experience Less than three years for which tender is issued</td>
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<td>More than 3 years</td>
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<td>Activity</td>
<td>Duration</td>
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<tr>
<td>1. Online Sale/Download of Tender documents</td>
<td>[<a href="http://www.ahd.bih.nic.in">www.ahd.bih.nic.in</a>]</td>
</tr>
<tr>
<td>2. Cost of Bidding Document (submission of cost of bidding document is mandatory for all bidders, no exemption for SST/NSIC registered agency)</td>
<td>Non-refundable INR 15000.00 to be paid through Demand Draft (DD) of Nationalized/Scheduled Commercial Bank in favor of Director Fisheries, Bihar payable at Patna</td>
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<tr>
<td>3. Pre-bid conference</td>
<td>28.02.19 at 3:00 PM at Animal and Fish Resources Department, Departmental Conference Hall, 2nd floor, Vikash Bhawan, Patna, Bihar</td>
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<tr>
<td>4. Last Date/Time for submission Tender/Bid through Speed Post</td>
<td>05.03.19 at 15:00 Hrs at Director Fisheries, Directorate of Fisheries, Block ‘A’, 4th Floor, Officers’ Hostel, Bailey Road, Patna, Pin: 800001, Bihar</td>
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<tr>
<td>5. Submission of EMD (in form of DD/BG) And Signed tender document with relevant tests report and certificate in Hard Copy/Original</td>
<td>Along with the sealed tender bid.</td>
</tr>
<tr>
<td>6. Date &amp; time for opening of Technical Bid</td>
<td>05.03.19 at 16:00 Hrs at Animal and Fish Resources Department, Departmental Conference Hall, 2nd floor, Vikash Bhawan, Patna, Bihar</td>
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<tr>
<td>7.</td>
<td>Validity of Bid</td>
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<td>8.</td>
<td>Bid Security (EMD) (submission of EMD is mandatory for all bidders, exemption for SSI/NSIC registered agency as per GoI rules and regulation)</td>
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<tr>
<td>9.</td>
<td>Date and place of opening of Financial Bid</td>
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<tr>
<td>10.</td>
<td>Contact Details</td>
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Note: Bidder should also submit the sealed signed tender documents with relevant test reports and certificates in hard copy.

Bidder’s experience should be in supply/installation/commissioning (contracts executed, completed and handed over) for MNRE supported Schemes/Programmes, (including Projects executed by channel partners availing MNRE support) OR any Government Organization/Agency/SNA/PSU in India.

- The above experience may be anywhere in India and should not be restricted to any particular state only.
- The test report of system should be in the name of bidders only.
- The implementation will be done through company who participated in the tender.
- Dealers and sub-contractors are not allowed for implementation on behalf of participating company.
- The total experience of solar pumping systems should be taken into account irrespective of the experience being in DC Motor pump sets and surface or submersible Pump sets.
- The same make of Solar Panels, pumps, inverter/controller for which the test report is submitted in the bid document should be supplied by the bidder.
- Bidders who are black-listed in any state would not be eligible to bid in other states till they remove the cause of their being black listed.
- The RFP document containing the project profile, invitation for qualification and criteria for evaluation may be obtained from the website: www.ahd.bih.nic.in
- Animal and Fish resources Department will not be responsible, in case of any delay, due to any reason whatsoever, in receipt of Bid Documents by the Bidders.
- The Owner reserves the right to reject any or all Bids or cancel/withdraw the Invitation for Bids (IFB) without assigning any reason whatsoever and in such case, no Bidder/intending Bidder shall have any claim arising out of such action.
- Animal and Fish Resources Department, Bihar intends to undertake a competitive bidding process in order to shortlist and qualify suitable Bidders, who shall be eligible for evaluation of their price bids towards selection of the successful bidder in terms of the RFP for award of the project.

- The successful Bidder, at the end of the bidding process, shall be awarded the contract by Directorate of Fisheries, Animal and Fish resources Department, Bihar, Patna to implement the project on EPC basis. The Contractor (the successful Bidder) shall be responsible for design, engineering, procurement, construction and maintenance of the project in terms of the agreement to be signed between the contractor and Director Fisheries, Bihar, Patna. Further, the contractor shall be responsible for remedying all defects and deficiencies, expected during the defects liability period in terms of the EPC contract.

- The detail of the bidding process and summary of the scope of construction works for the project is included in the RFP document.

- The bidders are required to submit **Envelope I** containing Cost of Bidding document (tender processing fee) and **Envelope II** containing EMD and **Envelope III** containing the signed tender documents with relevant test reports and certificate, all in a fourth envelop i.e. **Envelope IV** which must be received by Directorate of Fisheries at the address and not later than the time and date stated in the Invitation for Bid (IFB). The Envelope IV should be sealed and should be subscribed on the envelop as supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years for 100 nos. of 3HP and 88 nos. of 5HP DC Submersible Motor pump Set in Bihar.

- However each envelops should be duly sealed and respective Envelop number. Document not found in required fashion will not be acceptable.

**Qualifying Criteria:**

i) Validity of bid shall be 180 days from the date of financial opening of tender.

ii) Earnest money in shape of Demand Draft (DD)/BG drawn on Nationalised /scheduled Commercial Banks in favor of Director Fisheries, Bihar, Patna payable at Patna

iii) Bidders can access tender documents on the website: www.ahd.bih.nic.in
INFORMATION :-

i) In the unlikely event of the server for www.ahd.bih.nic.in being down for more than two consecutive hours (in the period from midnight to closing time for receipt of tenders) on the last date of receiving of bid, the last date of the same shall be extended by concerned authority only to the next working day till the last receiving time stipulated in the original NIT.

ii) No claim shall be entertained on account of disruption of internet service being used by bidders. Bidders are advised to download their bid document well in advance to avoid last hour’s technical snags.

iii) In exceptional circumstances, the competent authority, Animal and Fish Resources Department may solicit the Bidder’s consent to an extension of the period of validity.

iv) Bids that are rejected during the bid opening process shall not be considered for further evaluation, irrespective of the circumstances.

v) The bidder shall sign on the supporting statements, documents, certificates, submitted by him/her, owning responsibility for their correctness/authenticity.

vi) Corrigendum/ Addendum, if any, will be published on the website itself.

Director Fisheries,
Bihar, Patna.
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<td></td>
<td>Formats for Submitting RFP and Checklist</td>
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SECTION - 1
INSTRUCTIONS TO BIDDERS

1.1 Examination and Understanding of Bidding Documents

Directorate of Fisheries under Animal and Fish Resources Department of Bihar Government (hereinafter “OWNER”) invites Sealed Tender/Bids from the Bidders fulfilling the Eligibility Criteria specified hereunder for supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years of 100 Nos. of 3HP and 88 Nos. of 5Hp DC Submersible Motor pump Set in Bihar.

1.1.1 The Bidder is advised to read carefully all instructions and conditions appearing in the Bidding Documents and understand them fully. All information required as per the Bidding Documents must be furnished. Failure to provide the information as required may render the Bids non-responsive to the Bidding Documents.

1.1.2 The Bidder shall be deemed to have examined the Bidding Documents, to have obtained its own information in all matters whatsoever that might affect the carrying out of the works and to have satisfied himself to the sufficiency of its Bid. The Bidder shall be deemed to know the scope, nature and magnitude of the works and requirement of materials, equipment, tools and labor involved, wage structures and as to what all works it has to complete in accordance with the Bidding Documents irrespective of any defects, omissions or errors that may be found in the Bidding Documents.

1.2 Scope of Work

Supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years of 100 Nos. of 3HP and 88 Nos. of 5Hp DC Submersible Pumping System in Bihar.

1.2.1.0 Comprehensive Maintenance Contract including Regular Operation and Maintenance (O&M) of the plant:

i. All the expenditure to be incurred for the operation and maintenance of the plant including remote monitoring cost for the period of five years from the date of commissioning shall be borne by the developer.

ii. The O&M of the plant for the period shall cover the tools and tackles, spare parts, any consumables, and any comprehensive maintenance contract required to be entered for any of the accessories or systems such as modules, motor Pump set, Structure, Remote Data Monitoring device etc.

iii. The complete Solar PV Water pumping Plant must be guaranteed against any manufacturing/design/installation defects for a minimum period of 5 years.

iv. PV modules used in Solar PV Water Pumping Plant must be guaranteed for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

v. During the CMC period, Animal and Fish Resources Department/users will have all the rights to cross check the performance of the Solar PV Water Pumping Plant. Directorate of Fisheries may carry out the frequent inspections of the Solar PV Water Pumping Plant installed and randomly pick up its components to get them tested at Govt. / MNRE approved test center. For this all cost will be borne by developer. If during
such tests any part is not found as per the specified technical parameters, Directorate of Fisheries, Animal and Fish Resources Department will take the necessary action. The decision of Directorate of Fisheries, Animal and Fish Resources Department in this regard will be final and binding on the bidder.

vi. Bidder shall have to provide remote monitoring facility for the solar water pump at Directorate of Fisheries office.

Provision for remote monitoring of the installed pumps must be made in the controllers through an integral arrangement or through an externally fitted arrangement. It should be possible to ascertain the daily water output, the power generated by the PV array, the UP TIME of the pump during the year, Number of days the pump was unused or under breakdown /repairs.

1.2.2 Solar PV Water Pumping Plant shall consist of equipment/ components namely, Solar PV modules comprising required number of Poly-crystalline PV modules, DC Submersible Motor pump Set, Mounting structures, civil structures, earthing and lightning protections, IR/UV protected PVC pipes, cables, MC4 connectors, junction boxes, Push button ON-OFF Switch along with MCB of suitable rating, remote monitoring system and other accessories. PV Array is mounted on Suitable Structure with a provision of tracking (Manual/Automatic). The solar water pump shall be implemented in accordance with the Technical Specifications contained in Part II of the Bidding Documents.

1.2.3 If required Directorate of Fisheries, Animal and Fish Resources Department may ask agency to generate enquiry about Solar Water pump and create awareness program also. No money for the same shall be given by Directorate of Fisheries, Animal and Fish Resources Department.

1.3 Cost of Bidding

1.3.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Owner shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.

1.4 Clarifications and Amendments

1.4.1 The Bidder requiring any clarification of the Bidding Documents shall make a request to the Owner in writing the scheduled “pre bid meeting”. The Owner may or may not respond to such request for clarification, which if required shall be uploaded and displayed on the departmental website including a description of the query but without identifying its source.

1.4.2 At any time prior to the deadline for submission of Bids, the Owner may amend the Bidding Document by issuing amendment/addendum. Any amendment/addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Owner.

1.4.3 Amendments/addendum to Bidding Documents issued by the Owner, if any, must be signed and submitted along with the Bid and the Bid submitted by the Bidder shall take into account all such amendments/addendum. If acceptance of the terms and conditions given in the Bidding Documents/amendment has any price implications, the same shall be included in the price part.

1.4.4 The Owner reserves the right to seek clarifications/information considered necessary during examination/evaluation of the Bids submitted and the same shall be furnished by the Bidder within the date and time specified by the Owner. Any clarification submitted by a Bidder that is not in response to a request by the Owner shall not be considered. The Owner’s request for clarification and the response shall be in writing. No change in the prices or substance of the Bid shall be sought.
offered, or permitted, except to confirm the correction of arithmetic errors found by the Owner in the evaluation of the Bids. If a Bidder does not provide clarifications of its Bid by the date and time set in the Owner’s request for clarification, its Bid may be rejected.

1.5 Language of Bid
1.5.1 The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Owner, shall be written in English language ONLY. If the supporting documents and printed literature that are part of the Bid are in another language, they should be accompanied by an accurate translation of the relevant passages in English language in which case, for purposes of interpretation of the Bid, such translation shall govern.

1.6 Period of Validity of Bids
1.6.1 Bids shall remain valid for a period of 180 days from the date of financial Bid opening. A Bid valid for a shorter period shall be rejected by the Owner as non-responsive.

1.6.2 In exceptional circumstances, prior to the expiration of the Bid validity period, the Owner may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bidder accepts to extend the period of Bid validity, the validity of Bid Security shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid.

1.7 EMD/Bid Security
1.7.1 The Bidder shall furnish, a Bid Security in a separate sealed envelope in the amount and currency as stipulated in the Invitation for Bid (IFB).
1.7.2 The Bid Security shall be in the form of a DD/BG from any Scheduled /Nationalized Commercial Bank.
1.7.3 Any Bid not accompanied by prescribed Bid Security shall be rejected by the Owner as non-responsive.
1.7.4 The Bid Security of all the unsuccessful Bidders will be returned as promptly as possible, but not later than twenty-eight (28) days after the expiration of the Bid validity period. The Bid Security of the Successful Bidder to whom the Contract is awarded will be returned when the said Bidder has signed the Contract Agreement and has furnished the required Contract Performance Guarantee.
1.7.5 The Bid security may be forfeited.
(i) If the Bidder withdraws or varies its Bid during the period of Bid validity.
(ii) If the Bidder does not accept the arithmetical correction of its Bid Price
(iii) If the Bidder/its representative commits any fraud while competing for this Contract.
(iv) In the case of a Successful Bidder, if the Bidder fails to sign the Contract Agreement and/or to furnish the required Contract Performance Guarantee within the specified time limit.
(v) No interest will be paid for any type of money kept with Directorate of Fisheries, Animal and Fish Resources Department, Bihar.

1.8 Deviations to Commercial Conditions
1.8.1 The Bidder is not permitted to take deviation to any of the Commercial Conditions contained in this Section 1 – Instructions to Bidders, Section 2 – Bids Evaluation Procedure and Section 3 – General Conditions of Contract. In case deviation is taken by the Bidder to any of the conditions of the aforesaid Sections, its Bid will be considered as non-responsive.
1.9 **Basis of Price**

1.9.1 The price quoted by the Bidders shall be fixed and firm for the duration of the Contract and shall include all GST, taxes, duties, levies etc. The Bidders shall quote the unit cost price inclusive of all GST, taxes, duties, levies, transportation, maintenance etc separately for 3 HP and 5 HP DC submersible SPV Water Pumping System for the entire solar water pump plant and installation services on “EPC Single Point Responsibility Basis” such that the total Bid price covers all the Contractor’s obligations mentioned in or to be reasonably inferred from the Bidding Document in respect of the design, manufacture, remote monitoring, including procurement, delivery, construction, installation and completion of the plant. This includes all requirements under the bidders responsibilities for testing and commissioning of the plant and the acquisition of all permits, approvals and licenses, etc.; Comprehensive maintenance, regular operation and maintenance and training services and such other items and services as may be specified in the Bidding Document, all in accordance with the requirements of the General Conditions of Contract and Technical Specifications. Items against which no price is entered by the Bidder will not be paid for by the Owner when executed and shall be deemed to be covered by the prices for other items.

1.10 **Signing, Sealing and Submission of Bids**

1.10.1 The original copy of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the Contract. The authorization shall be indicated by written power of attorney accompanying the Bid and submitted as per prescribed format. All pages of the Bid, except for un-amended printed literature, shall be initialed by the person or persons signing the Bid. Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

1.10.2 In case a specified date for submission of Bid being declared a holiday for the Owner, the Bids will be received up to the appointed time on the next working day. The Owner shall not consider any Bid that is received after the deadline for the submission of Bids and the same shall be declared as received late, rejected and returned unopened to the Bidder.

1.11 **Bid Opening**

1.11.1 The Owner will open the Techno Commercial Bids at the time, on the date and at the place specified in the Invitation for Bid (IFB).

1.11.2 The Financial Price Bids of those Bidders whose Techno-Commercial Bids have been found to be substantially responsive to the Bidding Documents will be opened in the presence of the Bidders representatives who choose to attend at the address, date and time intimated by the Owner. The Bidder’s representatives who are present shall sign a register evidencing their attendance. The name of the Bidder and Prices offered shall be read out and recorded. The Owner will prepare minutes of the Price Bid opening which shall be signed by all Bidders’ representatives present at the time of opening of Financial Price Bids.

1.12 **Bids Evaluation Procedure**

1.12.1 Techno- Commercial Bids and Financial Price Bids shall be evaluated in the manner as specified in Bids Evaluation Procedure.

1.12.2 Negotiation of price can be made on the L1 quoted price if L1 bidder quotes the absurd price.
1.12.3 Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna reserves the right of negotiation with eligible bidders before the finalization of the tender.

1.12.4 Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna reserves the right to give work order to L₂ bidder on L₁ rate if L₁ bidder fails to execute the project work by any valid reason.

1.12.5 Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna reserves the right to increase or decrease or delete the quantity of goods and locations of supply without changing the terms and conditions and the value of the contract shall be adjusted accordingly.

1.12.6 The total work order will be awarded to L₁ bidder. If by coincidence, if more than one bidder quote the same price then the total work will be equally divided among the numbers of bidders L₁.

1.13 Owner's Right to accept any Bid, and to reject any or all Bids

1.13.1 The Owner reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract award, without thereby incurring any liability and reason to Bidders. In case of annulment, all Bids submitted and specifically, Bid securities, shall be promptly returned to the concerned Bidders.

1.14 Award of Contract

1.14.1 Subject to Clause 1.13, Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna shall award the Contract to L₁ bidder whose offer has been determined to be the lowest (L₁) evaluated Bid and is substantially responsive to the Bidding Document.

1.14.2 Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna reserves the right to vary the quantity of any of the Equipment/Spares and/or delete any item of Equipment/Spares altogether at the time of Award of Contract.

1.14.3 Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna shall issue notification of Award of the Contract to the Successful Bidders prior to the expiration of the period of Bid validity in original along with a copy thereof and the Successful Bidders shall return the copy duly accepted and signed by the authorized person on behalf of the Successful Bidder clearly indicating the date of signing, the name and designation of the signatory within such period as specified in the Notification of Award.

1.14.4 Until a formal Contract is prepared and executed, the Notification of Award and its acceptance communicated by the Successful Bidder as aforesaid shall constitute a binding Contract.

1.15 Signing of Contract

1.15.1 Within a fortnight (14) days of issue of notification of award the Successful Bidder shall sign the Contract Agreement in duplicate and return it to the Owner.

1.16 Effective Date of Contract

1.16.1 The Contract shall become effective from the date of issue of Notification of Award (NOA) to the Successful Bidder.

1.17 Completion Time Schedule

1.17.1 The Plant and Equipment covered under this Bidding Document and, in particular, in the Technical Specifications of the Bidding Document shall be designed, manufactured, supplied, erected, tested and commissioned at the Site within the 2 months (30 days for material supply and next 30 days for
complete installation) completion period specified in the Technical Specifications from the effective date of work order issued to the developer.

1.17.2 In case the Contractor (Successful Bidder) fails to achieve the completion of the commissioning and establishing agreed guaranteed technical parameters within the period specified in the Technical Specification from the effective date of Contract, the Owner, without prejudice to its other remedies under the contract, shall levy a penalty on the Contractor at the rate of 0.5 percent of the Contract Price per week of delay or part thereof subject to maximum of ten percent of the Contract Price. Once the maximum is reached, Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna may consider termination of the contract.

1.18 Re-installation & Relocation works
1.18.1 If the case arises under various situations that the reinstallation & relocation of solar water pump has to be done, the work will be taken up by the respective developers as per benchmark pricing of MNRE guidelines.
SECTION - 2

BIDS EVALUATION PROCEDURE

2.1 Evaluation of Techno- Commercial Bids

2.1.1 The Owner will examine the Bids to determine whether they are complete, whether required securities have been furnished, whether the documents have been properly signed and whether the Bids are generally in order.

2.1.2 Prior to the detailed evaluation, the Owner will determine whether each Bid is generally complete, acceptable and is substantially responsive to the Bidding Documents. The Owner's determination of a Bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence. If a Bid is not substantially responsive, it will be rejected by the Owner, and may not subsequently be made responsive by the Bidder by correction of the nonconformity.

2.1.3 The Owner will carry out a detailed evaluation in order to determine whether the technical aspects are in accordance with the requirements set forth in the Technical Specification and commercial aspects are in conformity with the Bidding Documents. In order to reach such a determination, the Owner will examine and compare the technical aspects of the Bids on the basis of the information supplied by the Bidders, taking into account the following factors:

(a) Overall completeness and compliance with the Technical Specifications and Drawings; suitability of the facilities offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the Bid. The Bid that does not meet acceptable standards of completeness, consistency and details will be rejected for non-responsive.

(b) Achievement of specified performance criteria by the facilities

(c) Any other relevant factors, if any, that the Owner deems necessary or prudent to take into consideration.

(d) Compliance with the time schedule as specified in the Bidding Documents.

(e) Functional Guarantees of the facilities

(f) Bidders shall state the functional guarantees of the proposed facilities in response to the Technical Specifications as specified in Section 4 & 5 of this Bidding Document.

(g) Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna may seek clarification/information from the bidder if any document is found not appropriate/shortfall in submitted tender bid document.
SECTION - 3
GENERAL CONDITIONS OF CONTRACT

3.1 Definitions

3.1.1 The following words and expressions shall have the meanings hereby assigned to them:
(a) “Bid” means the Bid or the proposal and the attachments thereto submitted by the Bidder in the form and manner specified in the Bidding Documents.
(b) “Bidder” means a person who submits its Bid in response to the Invitation for Bid (IFB) issued by the Owner.
(c) “Contract” means the Contract Agreement entered into between the Owner and the Contractor; together with the Contract Documents referred to herein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.
(d) “Contract Documents” means the documents listed below (including any amendments thereto):
   (i) Notification of Award till the execution of Contract Agreement between the Owner and the Contractor
   (ii) The Contract Agreement between the Owner and the Contractor and the attachments thereto.
   (iii) Minutes of negotiations if any signed between the Owner and Successful Bidder prior to signing of the Contract Agreement
   (iv) General Conditions of Contract
   (v) Technical Specifications
   (vi) Instructions to Bidders
   (vii) Designs and Drawings
   (viii) Bid submitted by the Successful Bidder (Techno-Commercial Bids, Financial Price Bids, Bid Security etc.)

If there is an ambiguity or discrepancy or conflict within the Contract Documents, the priority of the Documents shall be in the order in which the Contract Documents are listed above. All Documents forming part of the Contract Documents are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

(c) "Chartered Accountant" shall mean a person practicing in India or a firm whereof all the partners practicing in India as a Chartered Accountant(s) within the meaning of the Chartered Accountants Act, 1949.

(f) “Company” shall mean a company as defined under the Companies Act, 1956 including amendment thereto as in force.

(g) “Contractor” means the person(s) whose Bid to perform the Contract has been accepted by the Owner and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

(h) “Contract Price” means the sum specified in the Notification of Award and the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

(i) “EPC” means Engineering, Procurement and Construction

(j) “Government” means Government of India and/or Bihar Government and includes its departments, bodies, agencies, authorities, etc.
(k) "Guarantee/Warranty Period" means the period during which the Contractor shall remain liable for repair or replacement of any defective part of the Works performed under the Contract.

(l) "Latent Defect" means the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the Defect Liability Period and cannot be detected by reasonable examination during inspection and testing by the Owner during the Defect Liability Period.

(m) "Notification of Award" means notification in writing issued by the Owner to the Successful Bidder that its Bid has been accepted

(n) "Owner" means "Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna"

(o) "Party" means the Owner or the Contractor, as the context requires, and "Parties" means both of them

(p) "Person" means any individual, corporation, partnership, joint stock company, body corporate, trust, unincorporated organization, joint venture, government or political subdivision or agency thereof

(q) "Plant" means supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years of 100 Nos. of 3Hp and 88 Nos. of 5Hp DC Submersible Pumping System in Bihar.

(r) "Site" means Bihar

(s) "Written" or "In Writing" means handwritten, typewritten, printed or electronically made, and resulting in a permanent record

(t) "Works" shall mean engineering, design, manufacture, supply of plant and equipment, civil works, labor, services and complete erection, testing, commissioning of the equipment/system including all transportation, handling, unloading, storage, maintenance etc. to be carried out by the Contractor as per the Contract.

3.2 Amendment

3.2.1 No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.3 Applicable Laws

3.3.1 The Contract shall be governed by and interpreted in accordance with the laws of India.

3.4 Terms of Payment of Contract Price

The project cost shall include for the installation of 100 (One Hundred) numbers of 3 HP and 88 (Eighty eight) numbers of 5 HP DC Submersible SPV Water Pumping System for Aquaculture purpose in Bihar State. Of the unit cost quoted by the successful bidder (s) i.e. L 150% (Fifty) of the unit cost will be borne by the selected beneficiary either through self finance or bank credit and the remaining 50% (fifty) will be the subsidy from the State. The selected beneficiary will submit his share of contribution i.e. 50% (Fifty) of the unit cost in the form of "demand draft" issued in favour of the selected Agency to the concerned District Fisheries Officer-Cum-Chief Executive Officer. After the receipt of the demand draft, work order will be issued by the District Fisheries Officer-Cum-Chief Executive Officer. The selected Agency will complete the total installation of the Solar Pump within a fortnight. After the installation is complete, the Agency will submit in writing about the installation completed along with written certificate of the beneficiary. The concerned extension personnel In-charge of the Block will also submit along with photograph and written declaration of the concerned beneficiary about the completion of the installation of the Solar Pump to the District Fisheries Officer-Cum-Chief Executive Officer. Henceforth, the completion certificate will be issued by the concerned District Fisheries Officer-Cum-Chief
Executive Officer and he/she will complete the necessary formalities and transfer the subsidy amount in the Bank account of the Agency through NEFT/RTGS and along with hand over the demand draft (beneficiary contribution) to the Agency.

The bidder is required to submit the remote monitoring system generated data report showing the following parameters:

a. Unique ID or Beneficiary Details for each pump
b. DC Voltage consumed by solar water pumps
c. DC current consumed by solar water pumps
d. Water Discharge rate
e. Total water discharged
f. Total operational working hours

The bidder is also required to submit a consolidated data sheet stating the details as mentioned below:

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>District</th>
<th>Name of the Beneficiary</th>
<th>Aadhar no.</th>
<th>Address</th>
<th>Contact no.</th>
<th>Account no.</th>
<th>Serial No. of the Solar Pump</th>
<th>Serial No. of the Module</th>
<th>Photograph of the beneficiary</th>
</tr>
</thead>
</table>

Note: The onus of signing and submission of the required MNRE format (A, B, C) will be on the bidder itself.

(iii) Bank Guarantee (BG) submitted from a nationalized /scheduled commercialized bank of equivalent work order value can be in 5 equal parts respectively valid for 1, 2, 3, 4 and 5 years from the date of installation and the expired BG will be released every year.

- Note: In case "Bidder" does not provide service during the warranty period, BG shall be forfeited and "Bidder" will be blacklisted. In case if "Bidder" does not execute the awarded quantity, "Bidder" will be blacklisted.
- The bidder is required to submit a monthly report along with a consolidated 12 months report of the pumps with a copy of the service log book as mentioned in Clause 3.5(iii) along with the invoice for O&M.
- The bidder need to submit work order details along with beneficiary list with every invoice raised for payment i.e. for material supply payment and after installation and commissioning payment.
- The bidders are required to submit all the required documents for the release of payments failing in doing so, no claims for payments will be entertained.
3.5 Supply, Erection, Testing, Commissioning & Inspection of Plant

(i) The Contractor shall Design, manufacture, supply, erect, test and commission the Solar PV Water Pumping Plant which shall consist of equipment/components, namely, Solar PV modules comprising required number of Poly-crystalline PV modules, DC Submersible Motor pump set, Mounting structures, Tracking Device, civil structures, earthing and lightening protections, IR/UV protected PVC pipes, cables, junction boxes, ON-OFF Switch and other accessories and remote monitoring system. PV Array is mounted on Suitable Structure with a provision of tracking. The Plant shall be implemented in accordance with the Technical Specifications contained in Part II of the Bidding Documents.

(ii) Service center should be opened in each commissionary at least with two trained technician and sufficient numbers of critical components should be present there.

(iii) The service centers are required to maintain a service log book for complaints redressal of the beneficiary as per the format attached below:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Beneficiary</th>
<th>Address &amp; location of The beneficiary</th>
<th>Date of Complaint</th>
<th>Serial no. of pump</th>
<th>Serial No. of SPV modules</th>
<th>Date of complaint redressal</th>
<th>Issue at Site</th>
<th>Remarks of service center with date &amp; Signature</th>
<th>Remarks of beneficiary with date &amp; Signature</th>
</tr>
</thead>
</table>

(iv) Inspection order will be issued within 7 days against inspection call raised by the bidder and the inspection will start within the next 7 days from the issuance of the order.

3.6 Contract Performance Guarantee/security

(v) The Contractor shall provide to Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna within 14 (fourteen) days of 'Intimation of Work Order', the Contract Performance Guarantee in the form of an unconditional and irrevocable, on demand Bank Guarantee equivalent to 10% of the Contract Price for the due performance of its obligations under the Contract from a Nationalized/Scheduled Commercial Bank in the form approved by Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna. The work order shall be issued after the submission of 10% Contract Performance Guarantee.

(vi) The period of validity of the Contract Performance Guarantee shall be ninety (90) Days after the expiry of the defect liability period of 18 months and Contractor fulfilling all its obligations under the Contract.

(vii) If the Contractor fails to fulfill obligations under the Contract, the proceeds of Contract Performance Guarantee shall be appropriated by Owner as part compensation for any loss resulting from Contractor's failure to perform and fulfill the various obligations under Contract without prejudice to any other rights or remedies to which the Owner may be entitled to under the Contract and the applicable laws.
(iii) The Contract Performance Security shall be discharged by Owner within thirty (30) Days after the date of expiration of the validity period as provided hereinafore.

3.7 Final Acceptance

i. Upon successful completion of the performance guarantee tests at site by the Contractor, the Owner shall issue to the Contractor a prescribed format. Such certificate shall not relieve the Contractor of any of its obligations which otherwise survive by the terms and Conditions of the
Contract after issuance of such certificate.

3.8 Defect Liability Period
(i) The Contractor warrants that the Plant or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.

(ii) The Defect Liability Period shall be Eighteen (18) months from the date of commissioning. If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Owner regarding appropriate remediating of the defects, and at its cost, repair, replace or otherwise make good as the Owner shall determine at its discretion, such defect as well as any damage to the Plant caused by such defect.

3.9 Warranties and Guarantees
(i) The Contractor shall warrant that the SPV Water Pumping Plant and Equipment supplied under the Contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The Contractor shall provide warrantee covering the rectification of any and all defects in the design of Plant and Equipment, materials and workmanship for a period of five (5) years from the date of commissioning. The Contractor shall transfer all the Guarantees/ Warranties of the different components to the Owner. The Warranties and Guarantees aforesaid will not include the latent defects in the Plant and Equipment.

3.10 Functional Guarantees and Liquidated Damages
(i) The Contractor shall give the functional for the SPV Water Pumping Plant and Equipment subject to the precondition that the Guarantee Test and repeats thereof shall be conducted by the Contractor after completion of the work as per the Technical Specifications and during commissioning of the Plant and Equipment.

(ii) If bidder fails to achieve the system installation within stipulated time frame i.e. 90 days from the award of contract then 0.5% per week penalty which is subjected to a maximum 10% of the work order may be deducted.

(iii) If there is any delay found in Operation and Maintenance after the complaint registered by the beneficiary/District Fisheries Officer-cum-Chief Executive Officer, then it is the responsibility of the bidder that he/she has to rectify the problem within 7 days otherwise, Rs. 250 per day penalty will be levied from the bidder.

(iv) List of bidders (to be called project developer here in after) shall be subjected to continuous review of performance. Following will result in automatic debarment-black listing as the case may be (a) non-performance with regard to quality and supply schedule based on objective criteria (b) attempt to bribe an official (c) engaging in corrupt or fraudulent practices (d) failure of materials/equipment's supplied in more than one contract. (e) Established misbehavior and threatening officials of the Directorate of Fisheries, Animal and Fish Resources Department, Bihar, Patna black listing by other
State, central utilities or other government entities. Black listing shall be for a period ranging from three to six years. Corrupt and fraudulent practices shall attract harshest punishment.

3.11 Force Majeure

(i) Notwithstanding the provisions contained in the Bidding Documents, the Contractor shall not be liable to forfeit (a) Bid Security for delay and (b) termination of contract if it is unable to fulfill its obligation under this Contract due to force majeure conditions.

(ii) For purpose of this clause, "Force majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not limited to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by the Owner and its decision shall be final and binding on the Contractor. The Owner may extend the date of completion for a further period corresponding to the period of force majeure.

(iii) If a force majeure situation arises, the Contractor shall notify the Owner in writing promptly, not later than 7 (seven) days from the date such situation arises. The Contractor shall notify the Owner not later than 7 days of cessation of force majeure conditions. After examining the cases, the Owner shall decide and grant suitable additional time for the completion of the work, if required.

3.12 Termination of Contract

(i) The Owner reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under "Force Majeure". The Owner shall give 15 (fifteen) days notice in writing to the Contractor of its decision to do so.

(ii) In the event of such termination, the Contractor shall be eligible for compensation, equitable and reasonable, dictated by the circumstances prevalent at the time of termination. In such cases, the Owner's decision shall be final and binding on the Contractor subject to arbitration as provided for in the Contract.

3.13 Arbitration and Jurisdiction

(i) Any dispute between the Owner and the Contractor arising out of this Contract will first be resolved amicably between the Parties. In such cases where dispute is not resolved between the Parties, then the Parties may mutually agree to appoint an arbitrator under the provisions of Arbitration and Conciliation Act, 1996.

(ii) Any disputes arising shall be subject to the jurisdiction of the Appropriate Court of Patna.
SECTION - 4

Technical Specification
Solar Photovoltaic Water Pumping Systems : 3HP

1. Introduction
A Solar Photovoltaic (SPV) Water Pumping System consists of:
a. PV Array: PV Array should be mounted on a suitable structure with provision of tracking the sun.
b. Motor Pump Set (submersible):
   • D.C. Motor Pump Set (with Brushes or Brush less D.C.)
c. Electronics:
   • Maximum Power Point Tracker (MPPT)
   • Electronic Protections.
d. Interconnection Cables and

e. "On-Off" Switch

2. Performance specifications and requirements
Solar PV Water Pumps with PV module capacity in the range of 3000Wp may be installed on a suitable bore-well etc.

Under the "Average Daily Solar Radiation" condition of 7.15 KWh / sq.m. on the surface of PV array (i.e. coplanar with the PV Modules), the minimum water output from a Solar PV Water Pumping System at different "Total Dynamic Heads" should be as specified below:

For D.C. Motor Pump set with Brushes or Brush less D.C. (B.L.D.C.):
i. 35 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 metres and the shut off head being at least 45 metres.
ii. 21 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 metres and the shut off head being at least 70 metres.
iii. 14 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 metres and the shut off head being at least 100 metres.
iv. 9.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 metres and the shut off head being at least 150 metres

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

Indicative performance specifications for the Shallow and Deep well SPV Water Pumping Systems are given in the Annexure A.
The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

3. PV ARRAY

The SPV water pumping system should be operated with a PV array capacity in the range of 3000-Watts peak (as per MNRE models), measured under Standard Test Conditions (STC). Sufficient number of modules in series and parallel could be used to obtain the required PV array power output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of 125 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.

Indigenously produced PV module(s) containing mono/multi crystalline silicon solar cells should be used in the PV array for the SPV Water Pumping systems.

- Modules supplied with the SPV water pumping systems should have certificate as per IEC 61215 specifications or equivalent National or International / Standards.
- Modules must qualify to IEC 61730 Part I and II for safety qualification testing.
- The efficiency of the PV modules should be minimum 14% and fill factor should be more than 70%.
- The terminal box on the module should have a provision for “Opening” for replacing the cable, if required.
- There should be a Name Plate fixed inside the module which will give:
  a. Name of the Manufacturer or Distinctive Logo
  b. Model Number
  c. Serial Number
  d. Year of manufacture
  e. Made in India

4. MOTOR PUMP-SET

The SPV water pumping systems may use any of the following types of motor pump sets:

a. Surface mounted motor pump-set.

b. Submersible motor pump set.

c. Floating motor pump set.

d. Any other type of motor set approval from Test Centers of Ministry.

The "Motor Pump Set" should have a capacity of 3HP (DC) should have the following features:

- The mono block DC centrifugal motor pump set with the impeller mounted directly on the motor shaft and with appropriate mechanical seals which ensures zero leakage.

- The motor of the capacity 3Hp should be PMDC or BLDC type. The suction and delivery head will depend on the site specific condition of the field.

- Submersible pumps could also be used according to the dynamic head of the site at which the pump is to be used.

- It is recommended that all parts of the pump and the motor of the submersible pumps should be made of stainless steel.

- The manufacturers of pumps should self certify that, the pump and all external parts of motor used in submersible pump which are in contact with water, are of stainless steel. The pumps used for solar application should have a 5 years warranty so it is essential that the construction of the pump be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years.

- Provision for remote monitoring of the installed pumps must be made in the controllers or the inverters either through an integral arrangement or through an externally fitted arrangement. It should be possible to ascertain the daily water output, the power generated by the PV array, the UP TIME of the pump
during the year, Number of days the pump was unused or under breakdown/repairs. Seamless or with sim (data-card) (communication pack cost will be borne by bidder) provision for data fetching will be provided by successful bidder.

- The following details should be marked indelibly on the motor pump set
  a. Name of the Manufacturer or Distinctive Logo.
  b. Model Number.
  c. Serial Number.
- The Suction/delivery pipe (GI/HDPE), electric cables, floating assembly, civil work and other fittings required to install the Motor Pump Set.

5. MOUNTING STRUCTURES and TRACKING SYSTEM

The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The support structure used in the pumping system should be hot dip galvanized iron with minimum 80 micron thickness.

To enhance the performance of SPV water pumping systems, manual or passive or auto tracking system must be used. For manual tracking, arrangement for seasonal tilt angle adjustment and three times manual tracking in a day should be provided.

6. MOUNTING STRUCTURES and TRACKING SYSTEM

- Maximum Power Point Tracker (MPPT) should be included to optimally use the Solar panel and maximize the water discharge.
- Controller for BLDC motor driven pumps, if required be used. The controller must have IP 54 protection or must be housed in a cabinet having at least IP 54 protection.
- Adequate protections should be incorporated against dry operation of motor pump set, lightning, hails and storms.
- Full protection against open circuit, accidental short circuit and reverse polarity should be provided.

7. ON/OFF SWITCH

A good reliable switch suitable for DC use is to be provided. Sufficient length of cable should be provided for interconnection of the PV array, Controller / Inverter and the motor pump set.

8. WARRANTY

The PV Modules must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. The whole system including submersible/surface pumps shall be warranted for 5 years. Required Spares for trouble free operation during the Warrantee period should be provided along with the system.

9. OPERATION AND MAINTENANCE MANUAL

An Operation and Maintenance Manual, in English and the local language, should be provided with the solar PV pumping system. The Manual should have information about solar energy, photovoltaic modules, DC motor pump set, tracking system, mounting structures, electronics and switches. It should also have clear instructions about mounting of PV module, DO's and DONT's and on regular maintenance and Trouble Shooting of the pumping system. Name and address of the person or Centre to be contacted in case of failure or complaint should also be provided. A warranty card for the modules and the motor pump set should also be provided to the beneficiary.
10. NOTES

The type of pump set used must match the total dynamic head requirement of the site (i.e. the location at which it is installed). Moreover, it should be appropriately tested and certified by the authorized test centres of the Ministry to meet the performance and water discharge norms specified in section II above.

ANNEXURE - A


With **D.C. Motor Pump** Set with Brushes or Brush less D.C. (B.L.D.C.)

<table>
<thead>
<tr>
<th>Description</th>
<th>Model-III</th>
<th>Model-IV</th>
<th>Model-V</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV array</td>
<td>3000 Wp</td>
<td>3000 Wp</td>
<td>3000 Wp</td>
</tr>
<tr>
<td>Motor capacity</td>
<td>3 hp Submersible with controller</td>
<td>3 hp submersible with controller</td>
<td>3 hp Submersible with controller</td>
</tr>
<tr>
<td>Shut Off Dynamic Head</td>
<td>45 meters</td>
<td>75 meters</td>
<td>100 meters</td>
</tr>
<tr>
<td>Water output*</td>
<td>105,000 liters per day from a total head of 30 meters</td>
<td>63,000 liters per day from a total head of 50 meters</td>
<td>42,000 liters per day from a total head of 70 meters</td>
</tr>
</tbody>
</table>

- Water output figures are on a clear sunny day with three times tracking of SPV panel, under the “Average Daily Solar Radiation” condition of 7.15 KWh/sq.m. on the surface of PV array (i.e. coplanar with the PV Modules).

Notes:

1. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause II. (i.e. performance specifications and requirements) specified earlier.
2. If surface pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified in this table.
3. Module mounting structure shall be MS hot dipped galvanized, with a facility of manual tracking at least three times a day.
Section-5
Technical Specification
Solar Photovoltaic Water Pumping Systems-5HP

2. Introduction
A Solar Photovoltaic (SPV) Water Pumping System consists of:

b. PV Array: PV Array should be mounted on a suitable structure with provision of tracking the sun.
c. Motor Pump Set (submersible):
   - D.C. Motor Pump Set (with Brushes or Brush less D.C.)

j. Electronics:
   - Maximum Power Point Tracker (MPPT)
   - Inverter for A.C. Motors (Appropriate Electronic Controller in case of B.L.D.C.)
   - Electronic Protections.

k. Interconnection Cables and
l. "On-Off" Switch

5. Performance specifications and requirements
Solar PV Water Pumps with PV module capacity in the range of 4800Wp may be installed on a suitable bore-well etc.

Under the "Average Daily Solar Radiation" condition of 7.15 KWh / sq.m. on the surface of PV array (i.e. coplanar with the PV Modules), the minimum water output from a Solar PV Water Pumping System at different "Total Dynamic Heads" should be as specified below:

For D.C. Motor Pump set with Brushes or Brush less D.C. (B.L.D.C.):

   i. 35 liters of water per watt peak of PV array, from a Total Dynamic Head of 30 metres and the shut off head being at least 45 metres.
   ii. 21 liters of water per watt peak of PV array, from a Total Dynamic Head of 50 metres and the shut off head being at least 70 metres.
   iii. 14 liters of water per watt peak of PV array, from a Total Dynamic Head of 70 metres and the shut off head being at least 100 metres.
   iv. 9.5 liters of water per watt peak of PV array, from a Total Dynamic Head of 100 metres and the shut off head being at least 150 metres.

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.

Indicative performance specifications for the Shallow and Deep well SPV Water Pumping Systems are given in the Annexure C.

The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the solar intensity, location, season, etc.
Indicative performance specifications for the Shallow and Deep well SPV Water Pumping Systems are given in the Annexure B.

2 PV ARRAY

The SPV water pumping system should be operated with a PV array capacity in the range of 4800-Watts peak (as per MNRE models), measured under Standard Test Conditions (STC). Sufficient number of modules in series and parallel could be used to obtain the required PV array power output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of 125 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.

Indigenously produced PV module(s) containing mono/multi crystalline silicon solar cells should be used in the PV array for the SPV Water Pumping systems.

a. Modules supplied with the SPV water pumping systems should have certificate as per IEC 61215 specifications or equivalent National or International Standards.
b. Modules must qualify to IEC 61730 Part I and II for safety qualification testing.
c. The efficiency of the PV modules should be minimum 14% and fill factor should be more than 70%.
d. The terminal box on the module should have a provision for "Opening" for replacing the cable, if required.
e. There should be a Name Plate fixed inside the module which will give:
   - Name of the Manufacturer or Distinctive Logo.
   - Model Number
   - Serial Number
   - Year of manufacture
   - Made in India

2 MOTOR PUMP-SET

The SPV water pumping systems may use any of the following types of motor pump sets:
- Surface mounted motor pump-set.
- Submersible motor pump set.
- Floating motor pump set.
- Any other type of motor set approval from Test Centers of Ministry.

The "Motor Pump Set" should have a capacity of 5Hp (DC) should have the following features:
- The mono block DC centrifugal motor pump set with the impeller mounted directly on the motor shaft and with appropriate mechanical seals which ensures zero leakage.
- The motor of the capacity 5Hp should be PMDC or BLDC type. The suction and delivery head will depend on the site specific condition of the field.
- Submersible pumps could also be used according to the dynamic head of the site at which the pump is to be used.
- It is recommended that all parts of the pump and the motor of the submersible pumps should be made of stainless steel.
- The manufacturers of pumps should self certify that, the pump and all external parts of motor used in submersible pump which are in contact with water, are of stainless steel. The pumps used for solar application should have a 5 years warranty so it is essential that the construction of the pump be made using parts which have a much higher durability and do not need replacement or corrode for at least 5 years.
• Provision for remote monitoring of the installed pumps must be made in the controllers or the inverters either through an integral arrangement or through an externally fitted arrangement. It should be possible to ascertain the daily water output, the power generated by the PV array, the UP TIME of the pump during the year. Number of days the pump was unused or under breakdown/repairs. Seamless or with sim (data-card) (communication pack cost will be borne by bidder) provision for data fetching will be provided by successful bidder.

• The following details should be marked indelibly on the motor pump set
  a Name of the Manufacturer or Distinctive Logo.
  b Model Number.
  c Serial Number.

• The Suction/delivery pipe (GI/HDPE), electric cables, floating assembly, civil work and other fittings required to install the Motor Pump Set.

11. MOUNTING STRUCTURES and TRACKING SYSTEM

The PV modules should be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour.

The support structure used in the pumping system should be hot dip galvanized iron with minimum 80 micron thickness.

To enhance the performance of SPV water pumping systems, manual or passive or auto tracking system must be used. For manual tracking, arrangement for seasonal tilt angle adjustment and three times manual tracking in a day should be provided.

☐ MOUNTING STRUCTURES and TRACKING SYSTEM

Maximum Power Point Tracker (MPPT) should be included to optimally use the Solar panel and maximize the water discharge.

Controller for BLDC motor driven pumps, if required be used. The controller must have IP 54 protection or must be housed in a cabinet having at least IP 54 protection.

Adequate protections should be incorporated against dry operation of motor pump set, lightning, hails and storms.

Full protection against open circuit, accidental short circuit and reverse polarity should be provided.

☐ ON/OFF SWITCH

A good reliable switch suitable for DC use is to be provided. Sufficient length of cable should be provided for interconnection of the PV array, Controller / Inverter and the motor pump set.

☐ WARRANTY

The PV Modules must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. The whole system including submersible/ surface pumps shall be warranted for 5 years. Required Spares for trouble free operation during the Warrantee period should be provided along with the system.

☐ OPERATION AND MAINTENANCE MANUAL

An Operation and Maintenance Manual, in English and the local language, should be provided with the solar PV pumping system. The Manual should have information about solar energy, photovoltaic, modules, DC motor pump set, tracking system, mounting structures, electronics and switches. It should also have clear instructions about mounting of PV module, DO’s and DONT’s and on regular maintenance and Trouble Shooting of the pumping
system. Name and address of the person or Centre to be contacted in case of failure or complaint should also be provided. A warranty card for the modules and the motor pump set should also be provided to the beneficiary.

□ NOTES

The type of pump set used must match the total dynamic head requirement of the site (i.e. the location at which it is installed). Moreover, it should be appropriately tested and certified by the authorized test centres of the Ministry to meet the performance and water discharge norms specified in section II above.

ANNEXURE – B


With D.C. Motor Pump Set with Brushes or Brush less D.C. (B.L.D.C.)

<table>
<thead>
<tr>
<th>Description</th>
<th>Model-VI</th>
<th>Model-VII</th>
<th>Model-VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV array</td>
<td>4800 Wp</td>
<td>4800 Wp</td>
<td>4800 Wp</td>
</tr>
<tr>
<td>Motor capacity</td>
<td>5 hp submersible with controller</td>
<td>5 hp submersible with controller</td>
<td>5 hp submersible with controller</td>
</tr>
<tr>
<td>Shut Off Dynamic Head</td>
<td>70 meters</td>
<td>100 meters</td>
<td>150 meters</td>
</tr>
<tr>
<td>Water output*</td>
<td>100,800 liters per day from a total head of 50 meters</td>
<td>67,200 liters per day from a total head of 70 meters</td>
<td>45,600 liters per day from a total head of 100 meters</td>
</tr>
</tbody>
</table>

4. Water output figures are on a clear sunny day with three times tracking of SPV panel, under the “Average Daily Solar Radiation” condition of 7.15 KWh/sq.m. on the surface of PV array (i.e. coplanar with the PV Modules).

Notes:

□ For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause II. (i.e. performance specifications and requirements) specified earlier.

□ If surface pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified in this table.

□ Module mounting structure shall be MS hot dipped galvanized, with a facility of manual tracking at least three times a day.
## FORMATS & CHECK LIST

### Format 1

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars of Information/Documents Attached</th>
<th>Format /Annexure Number</th>
<th>Bid Stage</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Formats to be attached with the Bid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>This Check List</td>
<td>Format 1</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Covering Letter</td>
<td>Format 2</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Letter of Authorization/Power of Attorney</td>
<td>Format 3</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Annual Turnover and Net Worth</td>
<td>Format 4</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Certificate of Chartered Accountant Firm</td>
<td>Format 5</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bidder’s Experience</td>
<td>Format 6</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Current Contract Commitments/Work in Progress</td>
<td>Format 7</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Project Completion Schedule</td>
<td>Format 8</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>B. Documents to be attached with the Bid as Annexure in the same order as mentioned below</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Business Profile of Bidder Company/Firm (Not more than one page of A4 size)</td>
<td>Annexure 1</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Certificate of Incorporation/Registration of Bidder Company/Firm</td>
<td>Annexure 2</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Memorandum and Articles of Association/Bye-Laws of Bidder Company/Firm</td>
<td>Annexure 3</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Annual Reports for the last three completed Financial Years</td>
<td>Annexure 4</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Attested Copies of Completion Certificates issued by the Owner in respect of the Projects completed.</td>
<td>Annexure 5</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Attested copies of the valid Registration Certificates of GST</td>
<td>Annexure 6</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Signed and stamped copy of the Bidding Document including amendments/clarifications, if any, issued by the Owner.</td>
<td>Annexure 7</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Undertaking for not blacklisted</td>
<td>Annexure 8</td>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Undertaking for remote monitoring, protection of pump being provided like dry run, reverse polarity, accidental short ckt, open ckt, under load, overload etc.</td>
<td>Annexure 9</td>
<td>Technical</td>
<td></td>
</tr>
</tbody>
</table>
Format 2

Covering Letter
(On the Bidder Company Letter Head):

From:

(Full name and address of the Bidder Company)

To:

Director Fisheries,
Directorate of Fisheries,
Block 'A', 4th Floor,
Officers' Hostel,
Bailey Road, Patna,
Pin: 800001, Bihar

Sub: Supply, installation, remote monitoring, erection, testing, commissioning and warranty with comprehensive maintenance contract (including regular operation and maintenance) for a period of five (5) years of 100 Nos. of 3Hp and 88 Nos. of 5Hp DC Submersible Pumping System in Bihar.

Letter No: ____________________ Dated ____________________

Sir,

In response to your above referred Tender, we hereby submit our Bid in full compliance with terms & conditions in the Bidding Documents referred to therein. A copy of the Bidding Document, duly signed on each page is also submitted as a proof of our acceptance of all specifications as well as terms and Conditions therein. We have submitted the documents as per Checklist and requisite amount of Bid Security in the form of Bank Guarantee in the prescribed Format.

Seal of Bidder Company

______________________________
Signature

______________________________
Name

______________________________
Designation

______________________________
Date
Format 3

Letter of Authorization/Board Resolution/ Power of Attorney

To:
Director Fisheries,
Directorate of Fisheries,
Block ‘A’, 4th Floor,
Officers’ Hostel,
Bailey Road, Patna,
Pin: 800001, Bihar

Sir(s),

The Letter of Authorization / Board Resolution/ Power of Attorney to sign the Bid & enter into negotiations, furnish information/clarification, data and documents requested by the Owner in connection with the Bid and to sign the Contract in case the Works are awarded to the Bidder on behalf of the Bidder Company is enclosed herewith:

Seal of Bidder Company

Signature
Name
Designation
Date

In case Power of Attorney given by the Board of Directors/ Authorized/ competent Person of the Company already exits duly notarized by Public Notary authorizing the said person(s) to sign the Bid, enter into negotiations, furnish information/clarification, data and documents requested by the Owner in connection with the Bid and to sign the Contract in case the Works are awarded to the Bidder on behalf of the Bidder Company, the same may be attached with the Bid and this form may be ignored.
Average Annual Turnover and Net Worth

A. Average Annual Turnover*

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount in INR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td></td>
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<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Average Annual Turnover

B. Net Worth

<table>
<thead>
<tr>
<th>Signature</th>
</tr>
</thead>
</table>

Seal of Bidder Company

Name

Designation

Date

*Annual turnover represents the value of work of the project(s) completed as per the contract between the Owner and the Bidder Company but does not include the value of completed work(s) of the projects in progress/under execution. Other income shall not be considered for arriving at annual turnover.

@Net worth means the sum total of the paid up share capital and free reserves. Free reserve means all reserves credited out of the profits and share premium account but does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation. Further any debit balance of Profit and Loss account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus.
Format 5

Certificate of the Chartered Accountant Firm
(On the Letter Head of the Firm)

We certify that the Bidder Company/Firm had an average annual Turnover of INR .......... based on the Annual Statement of Accounts of the three preceding completed Financial Years, calculated in the manner as provided in Format 4.

We also certify that the Bidder Company/Firm had a Net Worth of INR .......... at the end of the preceding Completed Financial Year based on the Annual Statement of Accounts for that year, calculated in the manner as provided in Format 4.

Signature
Name
Designation
Name of the Chartered Accountant Firm
Registration Number
Date
## Bidder's Experience

<table>
<thead>
<tr>
<th>Owner Name, contact address/telephone/fax/Email ID</th>
<th>Name of Solar PV power plant</th>
<th>Location of the plant</th>
<th>Capacity of the plant</th>
<th>LOI/LOA No. and date (to be attached)</th>
<th>Main Parameters of the plant</th>
<th>Value of work Rs. Lac</th>
<th>Construction period &amp; Commissioning date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>5</td>
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<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

Signature: 
Name: 
Designation: 
Date: 

Seal of Bidder Company
### Format 7

**Current Contract Commitments / Works in Progress**

<table>
<thead>
<tr>
<th>Name of the Contract</th>
<th>Owner's Name</th>
<th>Value of Outstanding Work in INR</th>
<th>Expected Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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</tbody>
</table>

Seal of Bidder Company

Signature ____________________
Name ________________________
Designation __________________
Date ________________________
Format-8
Project Completion Schedule

Zero Date (Date of Issue of Work order)

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Milestones Activities</th>
<th>Commencement /Completion (in months from Zero Date)</th>
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<tbody>
<tr>
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</tbody>
</table>

Signature
Name
Designation
Date

Seal of Bidder Company
FORMAT-9

Bank Guarantee No. ........................................
Date............................................................

To:

Director Fisheries,
Directorate of Fisheries,
Block ‘A’, 4th Floor, Officers’ Hostel, Bailey Road, Patna, Pin: 800001, Bihar

Dear Sir,

In accordance with Invitation for Bids under your Bid Letter No. ........................................
M/s.............................................................. having its Registered/Head Office (here-in-after called the ‘Bidder’) wish to
participate in the said Bid for [Name of Contract Package]

As an irrevocable bank guarantee against Bid Security for an amount of .................................
................................................................. valid for ........................................ days from
................................................................. required to be submitted by the Bidder as
a condition precedent for participation in the said Bid which amount is liable to be forfeited
on the happening of any contingencies mentioned in the Bidding Documents.

We, the .......................................................... [Name & address of the Bank] having our Head
Office at ....................................................... guarantee and undertake to pay
immediately on demand by Directorate of Fisheries, Animal and Fish Resources Department the amount of
................................................................. without any reservation, protest, demand and recourse. Any such
demand made by the ‘Directorate of Fisheries, Animal and Fish Resources Department’ shall be conclusive and binding on us
irrespective of any
dispute or difference raised by the Bidder.

This Guarantee shall be irrevocable and shall remain valid up to ........................................... If any
further extension of this guarantee is required, the same shall be extended to such required period (not exceeding one year) on receiving instructions from M/s ........................................ on whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this ........................................ day of ........................................ 200...... at ............

WITNESS :

.................................................................................................................................
(Signature)

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

(Name)

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

(Official Address)

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

Authorized vide Power of Attorney No.................

Date ..........................................

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

(Signature)

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

(Name)

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

(Designation with Bank Stamp)

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