

Project Management Unit  
Arth Ganga Programme of Jal Marg Vikas Project for NW-1  
**INLAND WATERWAYS AUTHORITY OF INDIA**  
(Ministry of Ports, Shipping and Waterways, Government of India)  
Head Office: A-13, Sector – 1, Noida - 201301

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## Expression of Interest

1. Inland Waterways Authority of India (IWAI), Ministry of Ports, Shipping and Waterways, Government of India has applied for financing from the World Bank towards the cost of the Project “**Arth Ganga Programme of Jal Marg Vikas Project for NW-1**”, and intends to apply part of the proceeds for consulting services.

The consulting services (“the Services”) include **Consultancy Services for preparation of Detailed Project Report (DPR) for the work of renovation / modernization of existing navigation lock at Farakka.**

2. The detailed ToR is enclosed as Annex-I. The broad scope of the study includes:
  - a) Collection and Review of available reports, studies and data,
  - b) Preliminary services including site survey investigations,
  - c) Hydrographic survey, Topographic survey, Geo Technical investigation and Numerical modelling,
  - d) FEED/Preliminary Engineering Designs for the Project,

The Project Director, Project Management Unit, IWAI, invites eligible consulting firms (“Consultants”) to submit their interest to provide Consultancy services for “**Consultancy Services for preparation of Detailed Project Report (DPR) for the work of renovation / modernization of existing navigation lock at Farakka.**” Consultants interested in providing the Service should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services. Consultants may associate with other firms in the form of a joint venture or a sub-consultancy to enhance their qualifications. It should be noted that CVs shall not be evaluated at REoI stage and therefore need not to be submitted with REoI. The short listing criteria are:

- A) Consultant should be engaged in conducting similar activities for the past 5 years – copy of Certificate of Incorporation to be submitted along with the EOI.
- B) Consultant should have an minimum average annual financial turnover of INR 1.16 Crore during the last 5 years – CA certified declaration for last 5 years to be submitted along with the EOI’.
- C) Consultant should have completed 3 consultancy works of similar nature i.e. construction/modernization of navigational locks, lock gates of barrage, dams, canals etc. during last 5 years – List of Scope of work, date of commencement, date of completion, client’s details, along with copies of work order, completion certificate issued by client to be submitted.

- D) Consultant should be having a minimum of 10 employees on their payroll – declaration to be submitted.
- E) Notarized copy of Power of Attorney of the signatory/ies signing the EoI and/or associating to submit the EoI - to be submitted.
- F) In case of EoI submission as an association of consultants, then nature of association whether Joint Venture or as Sub-Consultant and name of the lead consultant needs to be mentioned.
5. The EoI can be submitted by the interested consultants in hard copy / email / through e-procurement portal by 15<sup>th</sup> March, 2021 by 15:00 hours (IST) and it shall be clearly marked “Expression of interest for Consultancy services for **“Consultancy Services for preparation of Detailed Project Report (DPR) for the work of renovation / modernization of existing navigation lock at Farakka”**”.
6. The attention of interested Consultants is drawn to paragraph 1.9 of the World Bank’s *Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers* dated January, 2011 (“Consultant Guidelines”), setting forth the World Bank’s policy on conflict of interest.
7. A Firm or an individual Debarred by the World Bank in accordance with the anticorruption guidelines shall be ineligible for this Assignment in any form or way. A list of debarred firms and individuals is available at the Banks external website: [www.worldbank.org/debarr](http://www.worldbank.org/debarr).
8. A Consultant will be selected in accordance with the Quality and Cost Based Selection method set out in the Consultant Guidelines.
9. Further information can be obtained at the address mentioned above during office hours.

**Instructions for submission of Expression of Interest:**

1. Accomplished Expression of Interest (Application) must be submitted together with a Letter of Intent not later than 15:00 hours (IST) on 15<sup>th</sup> March, 2021. Documents in support of all qualification information shall be submitted with application. Proposal of EOI with qualification information shall be furnished on / before the due date of submission at the address mentioned above.
2. The Application shall be basis of drawing up a shortlist of eligible Consultants who will be invited to submit proposal for services required.
3. All Applications shall be submitted in English.
5. A Consultant shall submit only one proposal. If a Consultant submits or participates in more than one proposal, all such proposals shall be disqualified. This does not, however, preclude a consulting firm to participate as a sub-consultant, or an individual to participate as a team member, in more than one proposal when circumstances justify and if permitted by the Request for Proposals.

6. The Application and all related correspondence and documents should be written in the English language. Supporting documents and printed literature furnished by Applicant with the Application may be in any other language provided that they are accompanied with translations in the English language. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Application, the English language translation shall prevail.
7. IWAI reserves the right to reject any Applications, without assigning any reasons thereof.
8. The Applicant shall provide all the information sought under this Qualification Document. PMU, IWAI would evaluate only those Applications that are received within the specified time and complete in all respects. Incomplete and/or conditional Applications shall be liable to rejection.

### **Guidelines for preparation of Expression of Interest**

Following information shall be submitted:

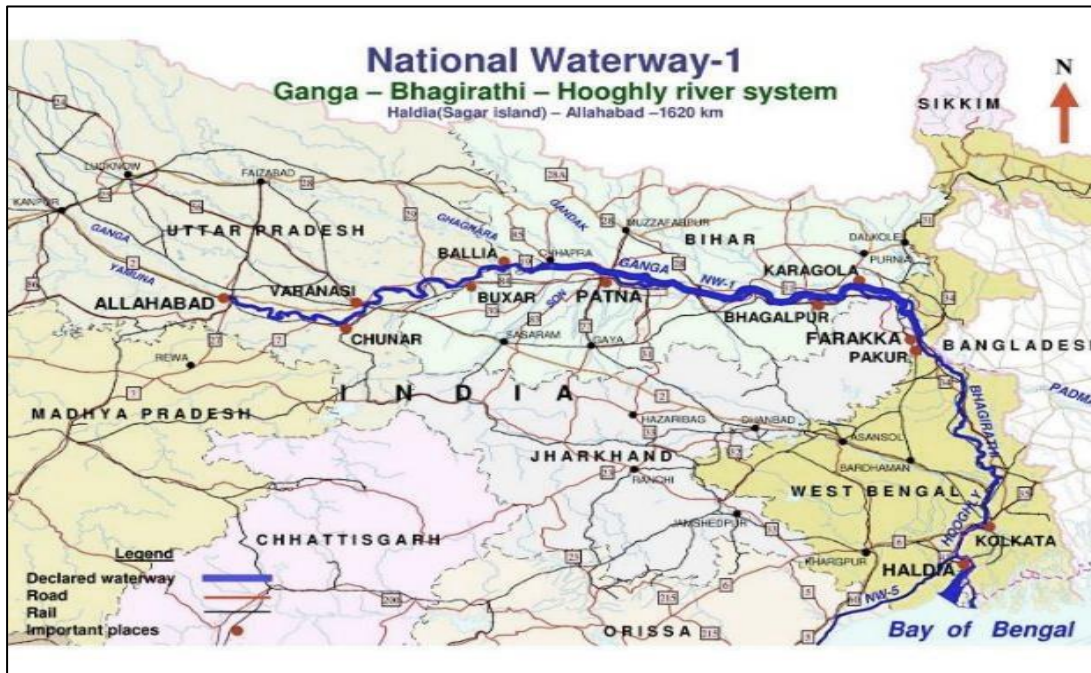
1. Complete name of firm(s), date of establishment and type of organization whether individual, proprietorship, partnership, private limited company, public limited company etc.
2. Exact and complete corporate/registered/home office address, business address, telephone numbers, fax numbers, E-mail and cable address. For Consultant of foreign registry, indicate if there is any branch office(s) established in India with details in aforesaid manner.
3. If present firm(s) is the successor to or outgrowth of one or more predecessor firms, fresh name(s) of former entity (ties) and year(s) of their original establishment with details in aforesaid manner.
4. Present a brief narrative description of the firm(s). Kindly avoid submission of company brochures for the purpose description of the firm.
5. List of not more than two (2) principals who may be contacted by this Office.
6. Listed principals must be empowered to speak for him or for the firm on policy and contractual matters.
7. Indicate financial figures from consultancy business for past 5 (five) financial years.
8. Organizational strength of Consultant shall be given.
9. Application Form : Annexure-II

**(Project Director)**

**Terms of Reference (ToR) for providing Consultancy Services for preparation of Detailed Project Report (DPR) for the work of renovation / modernization of existing navigation lock at Farakka**

**1. Background & Introduction**

- 1.1 Inland Waterways Authority of India (IWAI) (hereinafter referred to as “the **Client**”) is a statutory body of the Ministry of Ports, Shipping & Waterways (MoPSW), Government of India (GoI). The Client was set up in 1986 and is primarily responsible for the regulation and development of inland waterways for purposes of shipping and navigation for Inland Water Transport (IWT). With five (5) National Waterways (NWs) up to 2016 and today, with the enactment of NWs Act, 2016, there are a total of one-hundred eleven (111) waterways that have been declared as NWs.
- 1.2 The Allahabad-Haldia/Sagar stretch (1620km) of Ganga-Bhagirathi-Hooghly river system was declared as NW-1 in the year 1986 and is a waterway of national significance passing through four (4) states of West Bengal, Jharkhand, Bihar and Uttar Pradesh. It links the gateway ports of Haldia and Kolkata to Farakka, Sahibganj, Bhagalpur, Patna, Ghazipur, Varanasi and Allahabad, their industrial hinterland, and several other industrial hubs located along the Ganga basin.



**Figure 1: Index Map of NW-1**

- 1.3 The entire length of NW-1 has been divided into ten (10) stretches namely (i) Haldia – Tribeni (158km); (ii) Tribeni - Farakka (351km); (iii) Farakka – Kahalgaon (146km); (iv) Kahalgaon – Sultanganj (56km); (v) Sultanganj – Mahendrapur (74km); (vi) Mahendrapur – Barh (71km); (vii) Barh - Digha (69km); (viii) Digha – Majhaua (98km); (ix) Majhaua – Ghazipur (120km); and (x) Ghazipur -Varanasi (133km).
- 1.4 IWT on NW-1 has the potential to provide a cost efficient, economic, reliable, safe and environment friendly mode of transport. When developed for use by modern inland vessels operating on dependable fairway, it can reduce congestion and investment needs in rail & road infrastructure, promote greater complementarities in the riparian states, enhance intra-regional trade and through increased economies of scale, significantly reduce overall logistics costs for the benefit of the entire economy and India’s global trade competitiveness.
- 1.5 Considering the strong potential for transportation of multiple cargoes such as coal, fly ash, cement and clinker, stone chips, edible oils, petroleum products, foods grains and over dimensional cargo, the Client is implementing “*Jal Marg Vikas Project (JMVP)*” for capacity augmentation of NW-1 with the technical and financial assistance of the “*World Bank*” (hereinafter referred to as “**Bank**”) to improve the navigability of NW-1 through: (i) fairway development by providing an assured depth of 2.2m to 3.0m throughout the

corridor for atleast three hundred thirty (330) days in a year to make it navigable for comparatively larger vessels of 1,500-2,000 DWT; and (ii) civil structures, logistics and communications interventions required that includes multimodal terminals, jetties, navigational locks, barrages, channel marking systems etc.

- 1.6 With regard to the terminals, the Client has developed floating terminals at twenty (20) locations and four (4) Reinforced Cement Concrete (R.C.C) jetties / permanent terminals at GR Jetty-2 (Kolkata), Gaighat (Patna), Multi-modal terminals (MMTs) at Varanasi (Uttar Pradesh) and Sahibganj (Jharkhand) for handling / berthing of cargo vessels, cruise vessels and others inland vessels. Also, one (1) MMT at Haldia, one (1) Inter-modal terminal (IMT) at Kalughat (West Bengal) and a new navigational lock at Farakka (West Bengal) have also been taken up under JMVP.
- 1.7 Least Available Depth (LAD) of 3 m between Haldia-Farakka is being provided under fairway development through dredging/bandalling. Assured depth dredging contracts have been taken up under JMVP to achieve targeted Least Available Depth (LAD) of 3.0m between Farakka & Barh, 2.5m depth between Barh & Ghazipur and 2.2m between Ghazipur & Varanasi with minimum channel width of 45m. In order to provide safe navigation for various cargo vessels, tourist vessels and other IWT vessels by IWT operators and mechanized country boats moving in NW-1, day navigation marks are being provided in entire stretch of NW-1 all-round the year. In order to provide twenty-four (24) hours safe navigation, night navigational aids comprising of solar powered lights fixed on country boats/ bamboo structures/MS Poles/Trestle beacon towers have also been provided from Tribeni to Varanasi stretch.

In addition to the above, a state-of-the-art River Information System (RIS) that includes vessel tracking and the dissemination of important navigation information to mariners is also being implemented. Further, the Client has also developed Differential Global Positioning System (DGPS) stations at Varanasi, Patna, Bhagalpur and Swaroopganj.

## 2. **Studies on NW-1 undertaken in the past /undertaken that are relevant to the Services**

The following important studies have been undertaken in the past / are being undertaken in respect of NW-1 which in the opinion of the Client are important for understanding the ground realities and objectives of the Client for the current study:

- 2.1 **Detailed Feasibility Study and Engineering Study for capacity augmentation of NW-1:** The principal objective of this study was to undertake a detailed techno-economic feasibility study that sets out options to improve the short & long term capacity of NW-1 to deliver increased freight movement at lower transport cost. The study was divided into two (2) parts: (a) Techno-Economic Feasibility study for improving the navigability for larger deeper draft vessels for the entire stretch of NW-1 from Haldia to Allahabad; and (b) Detailed engineering for providing and/or improving facilities for common user terminals and other navigational aids in the Haldia to Varanasi stretch. The study undertaken by *M/s Howe Engineering Projects (India) Pvt. Ltd., PMC Projects Pvt. Ltd. and Wallingford Ltd.* under JMVP.
- 2.2 **Scoping Study for the work of renovation / modernization of existing navigation lock at Farakka under Farakka Barrage Project (FBP):** The principle objective of this scoping study was to provide a documented survey of the Farakka lock and its operating equipment and to define the work to be covered in renovating and modernizing the lock. The end result of the scoping study was to facilitate hiring an Engineering Consultant for preparation of detailed design & drawings and subsequent award of work of modernizing the navigation lock. The study was undertaken by *M/s WAPCOS Limited* and was completed in March 2016.

*Note: Soft copies of the above-mentioned studies shall be provided by the Client to the successful bidder/Consultant on written request. It may, however, be noted that these study reports are to be used only as a reference and that these study reports do not purport to contain all the information that the Consultant may require. The Consultant should conduct its own investigations, due diligence and check the accuracy, reliability and completeness of the information provided in these study reports and obtain independent advice from appropriate sources. It may also be noted that the Consultant is required to fill up the missing gaps in the relevant data during the course of the Services.*

### 3. Arth Ganga and its alignment with JMVP's objective

3.1 India, with a huge network of rivers and interconnecting canals is ideal for an efficient inland waterways system which has multifarious advantages and is the cheapest mode of transportation. However, this potential could not be tapped to its full extent as development of inland waterways as a means for passenger & cargo transportation, had not been a focus area till recently.

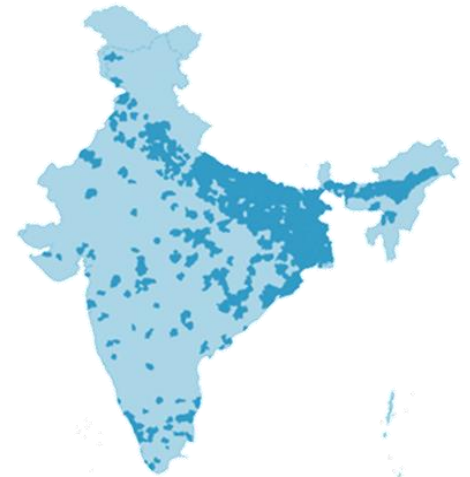
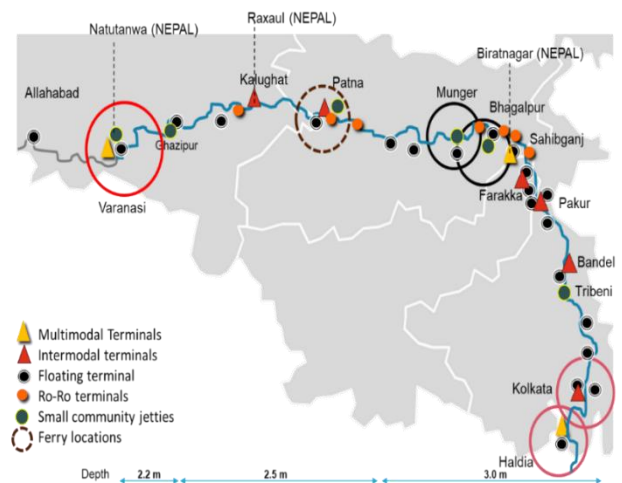


Figure 2: India's population split in half

3.2 In India, almost half the population lives around the Ganges river belt. In terms of trade, 1/5<sup>th</sup> of all India's freight originates, and 1/3<sup>rd</sup> terminates in the states around the Ganges belt. Due to the congestion faced by the cities and space constraints, there is hardly any scope for land-based development in the region. Hence, river Ganga can play a pivotal role in generating growth prospects for sustainable economic development of the regions.

3.3 The conceptualization of Arth Ganga program was finalized to energize economic activities which will impact the overall ecosystem along the riverbank. Inland waterways is one of the most important pillars of Arth Ganga program, that can lead to inclusive growth and play a key role in improving the livelihoods of the populations.

3.4 Arth Ganga program of JMVP is being developed on an approach based on principles of sustainable development model that focus on economic activities in & around the hinterland of NW-1 by providing opportunity to local communities to transport their goods / produce and passenger & tourist movements through waterways as well as skill development and public / private sector capability developments to support the following:



- (a) Economic benefits to the farmers, traders and public living around the Ganga belt;
- (b) Growth of small-scale industries;
- (c) Employment opportunities;
- (d) Easy, cost-effective and environment friendly transportation of cargo;
- (e) Improved logistics through small jetties; and
- (f) Wider choice of logistics mode for cargo movement

Since, efficient logistics and transport systems are a critical enabler for sustaining as well as accelerating the economic growth along river Ganga, in this regard, JMVP has the potential to greatly channelize economic activities along river Ganga, thus also aligning to the objective of Arth Ganga program.

3.5 The development works under Arth Ganga program will be implemented as part of JMVP through the technical assistance & investment support of the Bank. The major components that have been envisaged under Arth Ganga program are: (a) Fairway development through dredging including bandalling and navigational aids; (b) Channel Stabilisation works; (c) construction of Ro-Ro terminals; (d) construction of new community jetties; (e) modernization / rehabilitation of existing jetties; (f) modernization / rehabilitation of existing Navigational Lock at Farakka; (g) RIS and Differential Global Positioning System (DGPS); (h) Hydrographic equipment, HDP Software, Automatic Gauge Stations etc.; and (i) IWT Promotional activities.

In this process, the Client wishes to carry out study “DPR for the work of renovation / modernization of existing navigation lock at Farakka” through reputed consultancy firms, the study to achieve overall objective stated above:

**Note:** It may be noted that this particular RFP is for the study the mentioned above.

### 3.6 Co-ordination & Co-operation with other Consultants

- (a) This study is expected to run concurrently with the following consultancy assignments being commissioned by the Client:
- (i) Detailed Feasibility Study and Engineering Study for capacity augmentation of NW-1 as mentioned at clause 2.1 above; and
- (ii) Technical Support Services Consultancy (TSSC) services to efficiently manage the EPC Contractor appointed for the new navigational lock at Farakka and provide assistance to successfully complete & deliver the project on behalf of Project Management Unit (PMU) of JMVP.
- (b) The Consultant is expected to co-ordinate with the aforesaid two (2) consultants on regular basis and work in a co-operative, transparent & harmonized manner and take cognizance of the recommendations of these consultancy assignments to ensure that the overall objective of the Client to get the existing navigation lock renovated and modernized to the latest technology based on the best practices followed worldwide

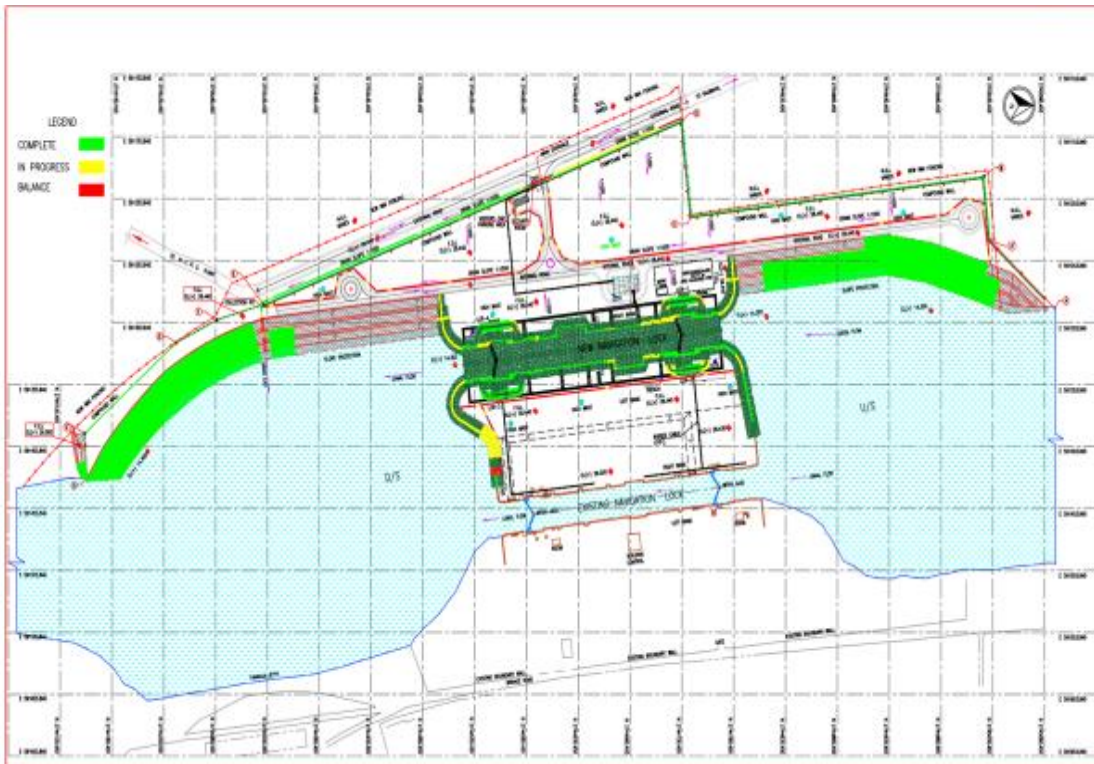
In this regard, the Client shall be made available by the Client, all the drawings, technical specifications, data, Standard Operating Procedures (SOPs) for operation and maintenance of the new navigational lock. Further, the Client will also evolve a formal mechanism for such co-ordination among all the Consultants on a regular basis

### 4. Objective of the Services

- 4.1 FBP was commissioned in the year 1975 with the primary objective of improving the navigation facilities of river Hooghly and maintaining Kolkata Port. As part of FBP, a navigation lock was constructed and commissioned in the year 1987 at Farakka (in Murshidabad district of West Bengal) to facilitate movement of inland vessels on NW-1 through Feeder Canal. The navigation lock along with all ancillary assets was taken over by the Client from FBP Authority in April 2018.
- 4.2 The navigation lock has: (a) an internal length of 179.8m & a width of 25.14m and consists of two (2) sets of mitre gates on upstream (u/s) and downstream (d/s) side (two (2) leaves per set, each hinged about a vertical axis); (b) two (2) floating caisson type stop log gates; (c) four (4) sets of radial valve gates with maintenance bulkheads; (d) eight (8) sets of mooring bits; and (e) a control tower for remote control operation.
- 4.3 Since the commissioning of navigation lock in the year 1987, no major repairs of hydraulic and electro-mechanical components have been carried out. As a result, mitre gates, radial valve gates, bulkheads, floating caissons and other mechanical components including electro-mechanical operating system are in dilapidated condition. Although the lock is operational and the vessels regularly pass through it in a month, its functioning has been inefficient and has encountered frequent breakdowns resulting in massive delays in vessels passage. Also, the movement of inland vessels on NW-1 carrying project cargo including Over Dimensional Cargo (ODC) has increased significantly / manifold in the last few years and inefficient functioning of the lock has become an impediment in smooth and efficient navigation on NW-1. At present, mitre gates and radial valve gates are operated through electro-mechanical system which is located near each gate as a result of which, it takes long time in operating these gates.
- 4.4 As already brought out at clause 1.6 above, the Client is also developing a new navigation lock adjacent to the existing navigation lock, as part of JMVP. The lock is connected to NW-1 in u/s and Feeder canal in d/s by approach channels. The broad details of the new navigation lock are as delineated below:

S#	Parameter	Details
1.	Land Acquired	14.86 hectares
2.	Project Cost	INR 359.19 Crore
3.	Number of Locks	One (1)

S#	Parameter	Details
4.	Length of lock	179m (b/w Mitre Gates) 250m (b/w Caisson Gates)
5.	Width of lock	25.148m
6.	Average depth of lock	13.10m
7.	Main Units other than the lock	<ul style="list-style-type: none"> <li>• Mitre Gates – two (2) sets (two (2) leaves per set)</li> <li>• Caisson Gates/Stoplogs - 2 Nos. (one (1) for u/s &amp; one (1) for d/s)</li> <li>• Radial Valve Gates – four (4) sets (two (2) for u/s &amp; two (2) for d/s)</li> <li>• Bulkhead Gates – eight (8) numbers (four (4) numbers for u/s and d/s)</li> <li>• Control Room for remote control operation</li> <li>• Bollards – eight (8) numbers floating type (four (4) on each bank) and fourteen (14) numbers fixed type (seven (7) on each bank)</li> </ul>
8.	Major Structural Works	<ul style="list-style-type: none"> <li>• Piling and Base Slab</li> <li>• Retaining Walls &amp; Guide Walls</li> <li>• Bank Protection Works</li> <li>• Feeder Culverts</li> <li>• Control Room Building</li> </ul>
9.	Operation Time	Total time for one operation is thirty-eight (38) minutes for average water levels. If movement of a vessel is followed by movement of another vessel in the reverse direction, the operating time is twenty-three (23) minutes



**Figure 4: Layout Plan of Navigation Lock**

4.5 Considering that technology of navigation lock has significantly improved in the last thirty (30) years and are now-a-days operated with faster & sophisticated hydraulic / pneumatic system controlled by computerized controls, the Client intends to engage a Consultant to prepare its Detailed Project Report (DPR)



with the objective to get: (a) the existing navigation lock renovated and modernized (hereinafter referred to as “**Project**”) to the latest technology based on the best practices followed worldwide; and (b) synchronization the operation with the new navigation lock being developed to ensure optimum utilization of both the locks, at the same time, for safe navigation & passage of vessels.

- 4.6 The Consultant shall undertake physical inspection of existing facilities of the Project and shall provide a blueprint for subsequent action for revamping of the Project to the desired level of operating efficiency keeping in view the state of art technologies. The DPR shall define the work to be covered by way of renovation & modernization including the synchronization of the operation with the new navigation lock, thus providing economies in the subsequent planning, design, supply and construction stages of the Project. The DPR shall also include Front End Engineering Designs (FEEDs) of all the proposed infrastructural interventions to fill all infrastructural gaps. The FEEDs shall be detailed enough to implement the Project in Engineering Procurement & Construction (EPC) and / or Item Rate mode. Necessary topographic & hydrographic surveys and geo-technical investigations for preparing layouts and FEEDs to be carried out by the Consultant will be limited to the scope defined under clause 5.2 respectively.

## 5. **Detailed Scope of Work for the Services**

Unless explicitly restricted, the Scope of Work of this tender shall include but shall not be limited to following:

### 5.1 *Collection and Review of available Reports, Studies and Data*

The Consultant shall collect and review the following documents / data but shall not be limited to the following:

- (i) all relevant data relating to tidal, topographic surveys, hydrographic surveys (thalweg survey & detail surveys), flow and discharge conditions, water level variations, soil (suspended sediment, bed and bank) conditions, geological, geomorphologic and all other conditions on the Ganga Bhagirathi Hooghly river system available from: Client, Central Water Commission (CWC), CWPRS Pune, concerned State Departments, the National Remote Sensing Agency, Survey of India, National Water Development Authority, Central Ground Water Board, National Disaster Management Authority, Farakka Barrage project, Irrigation Department / Flood Control Departments, Ministry of Water Resources (MoWR), the Ganga Water Development Authority (GWDA), the Ganga Flood Control Commission, the Commissioner Ganga etc.;
- (ii) detailed Feasibility Study and Engineering Study for capacity augmentation of NW-1 being undertaken at clause 2.1 above w.r.t to new navigation lock;
- (iii) scoping study undertaken at clause 2.2 above for re-validation of the same; and
- (iv) changes to river courses {based on satellite images for the past ten (10) years or more, collected by the Consultant from various agencies. The Client shall provide the available satellite imageries free of cost to the Consultant however, any missing / additional data shall be arranged by the Consultant at his own cost }

### 5.2 *Preliminary Services including Site Survey Investigations*

#### 5.2.1 *Reconnaissance Survey*

- (i) Soon after the kick-off meeting, a team of the Consultant comprising of their various domain experts shall conduct a reconnaissance survey of the Project and hold preliminary meetings with Client’s field offices & other statutory bodies to understand the ground realities and chalk out detailed action plan and way forward to carry out the task of preparation of a quality DPR as per the spirit of the Contract.
- (ii) During this reconnaissance survey, the Consultant shall carryout a detailed condition survey of the Project (including current performance levels) with a view to inspect the following but shall not be limited to the following:
  - 1. Lock chamber;
  - 2. Lock approach structures;

3. Filling / emptying systems;
4. Lock gates, Caisson Gates, Radial Gates, Bulkheads etc.;
5. Mechanical and electrical equipment;
6. Control systems;
7. Instrumentation (including water level and flow monitoring equipment);
8. Power supplies;
9. Communications systems;
10. Mooring equipment;
11. Lighting and signaling equipment;
12. Safety equipment;
13. Stocks of spares;
14. Maintenance equipment;
15. Lock operation manuals (SOPs)
16. Existing technical records, including as-built documents, specifications; and
17. Maintenance records

While carrying out reconnaissance survey, particular attention will be given to the condition of mechanical & electrical equipment and civil structures, including the need for maintenance and renovation work, and the likely operational working life with or without renovation. The Consultant shall review the scope for achieving improvements in reliability, operational performance and operating speed, and reductions in future operating & maintenance costs, by possibly replacing obsolete or life-expired equipment with modern equipment. It will also be necessary to determine the level of disruption to existing waterway traffic that can be accepted during the renovation / modernization works. This is likely to have an effect on the cost of implementing the works and could also have an effect on decisions regarding repair or replacement of certain items. The Consultant shall also take into account the new navigation lock being developed adjacent to the Project and its synchronization with the Project.

For synchronization of operation of both the locks, the Consultant shall also undertake detailed assessment of the operational aspects of both the locks with a view to study the **hydraulic imbalance / balance** which may arise due to operation of lock / locks in due course of passage of vessel.

- (iii) The reconnaissance survey shall be followed by preparation of a detailed **Condition Survey Assessment Report** setting out the conclusions of the inspection which shall cover the following aspects but shall not be limited to the following:
- (a) assessment of possible performance improvements that are necessary and / or achievable using state of art technologies;
  - (b) definition of the main items and categories of equipment & structures to be either renovated or replaced including remote control system (brief description with layout / conceptual drawings for equipment to be mentioned);
  - (c) probable type of equipment to be replaced along with their technical specifications and cost implications; and
  - (d) alterations required, if any, to the existing civil structures and/or embedments to accommodate equipment to be replaced and methodology for the same

Consequent to the detailed Condition Survey Assessment , the Consultant, shall undertake the following survey investigations:

### 5.2.2 *Hydrographic Survey*

- (i) The Client is conducting regular longitudinal thalweg surveys in the entire stretch of NW-1 every fortnight and issues river notices to disseminate navigational information to the users and other stakeholders of the waterway. The Client also carries out detailed hydrographic surveys at the approach u/s and d/s navigation channels of the navigation lock from time to time. Soft or hard copies (as available) of all these hydrographic survey details shall be provided by the Client to the Consultant on demand on written request with

justification, free of cost, provided the EIC is convinced that these are indeed required for carrying out any part of the scope of work of this Contract; and

- (ii) Any additional hydrographic survey required for preparation of this DPR with regard to morphological study, hydraulic imbalance/balance study, siltation pattern study etc. shall be conducted by the Consultant by duly engaging a professional third party agency subject to the requirements (if at all it is necessary) and at the discretion of EIC.

*[Note: For the sake of transparency and evaluation of the Bids on equal footing, it may be noted that:*

- (1) the Consultant need not include the cost / rate for carrying out hydrographic survey in his Bid;*
- (2) the actual cost of carrying out such hydrographic survey shall be reimbursed to the Consultant provided, (a) the cost has been arrived at after obtaining competing Bids by the Consultant; (b) prior approval for the scope of work and the rates thereof have been taken by the Consultant from the Client / EIC; and*
- (3) the claim for reimbursement is accompanied with the proper invoice from the agency which carried out the hydrographic survey]*

5.2.3 *Topographic Survey: The Consultant shall undertake fresh topographic survey for preparation of lay-outs, General Arrangement (GA) drawings, sections and elevations etc. These surveys shall be carried out up to the water line during the survey period as per standard norms and practices. The Topographic Survey charts shall be prepared in the scale of 1:1000 and these will include spot levels in a grid of 25 m as well as other physical features and contours. Both hard and soft copies of survey charts as well as raw data shall be submitted to the EIC as per normal practice.*

#### 5.2.4 *Geo-technical Investigation*

- (i) The Consultant shall carry out geo-technical investigation (boreholes) for the purpose of design of structures. The locations of the boreholes shall be clearly marked on the topographic survey charts;
- (ii) The geo-technical investigation shall be carried out as per relevant IS codes & manuals and structures being proposed; and
- (iii) The geo-technical report will include but not limited to the following:
  - (a) Methodology;
  - (b) Laboratory Tests including Bulk Density and Moisture content, Sieve analysis, Hydrometer analysis, Liquid limits & Plastic limits, Specific gravity, Shear test on undisturbed & remoulded saturated disturbed soil samples and determination of void ratio etc;
  - (c) Detailed Bore logs for each Borehole; and
  - (d) Foundation Design Calculations including Scour Depth, Bearing Capacity and Recommendations

*[Note: Since the extent of geo-technical investigations (number of boreholes) which may be finally carried out by the Consultant cannot be fixed before-hand and the same will be known only during the course of this Services, for the sake of transparency and evaluation of the Bids on equal footing, it may be noted that:*

- (1) the Consultant need not include the cost / rate for carrying out geo-technical investigations in his Bid;*
- (2) the actual cost of carrying out such geo-technical investigations shall be reimbursed to the Consultant provided, (a) the cost has been arrived at after obtaining competing Bids by the Consultant; (b) prior approval for the scope of work and the rates thereof have been taken by the Consultant from the Client / EIC; and*
- (3) the claim for reimbursement is accompanied with the proper invoice from the agency which carried out the geo-technical investigations]*

5.2.5 *Numerical Modelling: The Consultant, if asked to do so by the EIC, shall carry out numerical modelling studies through a reputed expert agency to verify design parameters. As a minimum, this shall include a*

*numerical model to produce detailed pictures of flow in the river system under current & future flow conditions. Detailed proposal for such numerical modelling shall be submitted by the Consultant along with methodology and cost with justification to enable the Client to reimburse the cost of numerical modelling to the Consultant. In this regard, the necessary hydrographic data shall be provided by the Client.*

The Consultant, while undertaking numerical modelling study, shall take into consideration the outcome of the hydraulic imbalance / balance study as per clause 5.2.1 (ii) above.

#### 5.2.6 Capacity building, institutional strengthening & knowledge enhancement of the Client:

For capacity building, institutional strengthening, knowledge enhancement and adequately equipping the Client's personnel for effective & efficient project management and implementation of the navigation lock, the Consultant shall organize and facilitate a seven (7) to ten (10) days international study tour of four (4) to five (5) Client officials to developed countries (EU, USA, China etc.) where modern lock systems are being utilized significantly. The study visit shall cover the (a) exchange of ideas, identification of the needs for modernization, witnessing and understanding the planning, development and implementation of similar projects; (b) understanding the concept of navigation lock and use of modern technology; (c) economic and business aspects; (d) asset risk management strategies; (e) recommend safety and security guidelines, institutional and organization management system for safe & secure navigation lock; and (f) review and recommend best systems, practices and procedures for operation, maintenance and management of navigation lock. The cost for arranging the international study tour for the Client officials shall be borne by the Consultant at his own cost.

**Note:** *The Client shall arrange necessary permissions from CISF for visiting and undertaking survey investigations at the lock site. However, the Consultant shall be required to provide requisite permit papers viz. passports, visa etc. and requisite clearance as per MHA/MEA in respect of foreign consultants to the Client.*

#### 5.3 FEED / Preliminary Engineering Designs for the Project

- (i) The Consultant shall provide FEED / preliminary designs, component / sub-component wise including layouts, basic drawings (plans, sections & elevations etc) and specifications for the Project. The Project shall be divided into separate logic-based packages i.e. one for the

Modernisation of the lock and other will be for operation Synchronisation with new lock including required imbalance/balance hydraulic study so that their execution can be carried out in a systematic and efficient manner;

- (ii) The preliminary engineering designs shall include appropriate designs & drawings and construction standards, which are safe, economical, local site conditions, environmental requirements, social needs and have considerable design life & economic rate of return;
- (iii) It may be noted that preliminary engineering design & drawings and other details of every component/ sub-component covered in this DPR shall be detailed enough to enable preparation of tender document(s) for carrying out the Project on EPC and / or Item rate mode;
- (iv) The preliminary engineering designs shall cover but not be limited to: master plan / detailed layout plan, preliminary designs & drawings for all components / sub-components of the Project, Bill of Quantities (BoQ) and technical specifications (including those of brought out items) for all components / sub-components of the Project, schematic layouts of all services and utilities etc, complete in all respect to the satisfaction of the EIC; and
- (v) **Proof Checking**
- (a) The Consultant shall submit detailed design basis reports of all components / sub-components of the Project after their review and vetting by an IIT/ NIT or any other reputed Engineering Institute which shall be approved by the Client. The Fee for such Proof checking shall be borne by the Consultant itself; and

- (b) The Consultant shall facilitate coordination among the proof consultant and other advisors/ consultants/ professionals appointed by the Client for monitoring of preparation of this DPR. In this process, the Consultant shall attend meetings and provide all necessary information drawings and details sufficient enough for systematic review/ vetting of the design proposals before and after submission to the Client.

#### 5.4 *Environment Impact Assessment (EIA)*

The Consultant shall:

- (i) assess the environmental impacts due to development of the Project and suggest suitable Environment Management Plan (EMP) to mitigate the adverse impacts, if any, including its cost. Only rapid EIA / EMP study is envisaged for which one season data shall be sufficient;
- (ii) analysis of alternatives (all feasible technical options) must be considered in the EIA / EMP study before finalizing the option that provides for at least amount of disturbance to riverbeds & bank erosion;
- (iii) analyse and assess disturbances to riverbed and riverbanks (mainly erosion & disturbance to the habitats) for which riverbed samples needs to be collected; and
- (iv) assess and bring out in sufficient details along with supporting documents, the need of obtaining environmental clearances for construction of Project based on prevailing rules and regulations of Central & State Governments. If environmental clearance is not required, in that case, the list of statutory and regulatory clearances required for the Project along with the timeline and concerned Government Agency needs to be given in the EIA / EMP study. The Consultant shall be required to submit application of these statutory clearances to the concerned Government Agency on behalf of the Client & also follow up and guide the Client for the same. Further, the Consultant shall also

#### 5.5 *Cost Estimates*

The Consultant is required to submit both the Capital as well as O&M expenses (CAPEX & OPEX) for the Project in sufficient details. The component / sub-component wise cost estimates shall be based on the Schedule of Rates (SoR) and / or Delhi Schedule of Rates (DSR). Market Rates can be adopted for those items for which SoR is not available. Transportation of men & material to the construction sites taking into account the ground realities of geographical region will be suitably considered in the rates / cost of various components / sub-components. The basis / supporting documents / SoRs considered for various rates used for preparing the cost estimate shall be given in the DPR.

#### 5.6 *Organizational Structure*

The Consultant shall suggest:

- (i) institutional mechanism for execution of the Project including supervision of modernisation works without time and cost overrun; and
- (ii) organization structure for operation & maintenance/ management of the lock after its commissioning.

#### 5.7 *Time Schedule for Project Execution*

The Consultant shall prepare:

- (i) detailed & realistic construction time schedule indicating the sequence of activities duly considering the Hydro-mechanical, Electrical / Electronic & Civil engineering works required for the modernization of the Lock and priority of works. Suggestion shall also be given for executing the Project in different phases with split up of the works (if required) and the costs thereto; and
- (ii) monthly physical and financial target statement

#### 5.8 *Preparation of tender document for execution of Project*

The Consultant shall prepare tender document(s) for execution of various works on EPC and / or Item rate mode, as per the Bank's Standard Procurement Guidelines, which will inter-alia include all necessary detailed technical specifications, BoQ, Price Schedule and Special Conditions of Contract. Accordingly, the preliminary designs and cost estimates of every component and sub-component will have all such details, authenticity and backup / supporting documents which are required for preparing and processing the tender

document(s) for execution of the Project on EPC and / or Item Rate mode as per prevailing norms and practices.

## 6. Methodology, Standards and Assumptions

- (i) The Consultant, shall, be responsible for evolving an appropriate methodology in accordance with relevant industry standards, undertake all fieldwork and ensure that all data is quality assured & corrected wherever appropriate. The Consultant shall keep a record of all information collected and present this in a manner that allows making statistical comparisons. Qualitative or Quantitative assessments must be backed up by case studies and relevant industry examples.
- (ii) The Consultant, shall, for the purposes of this study, take into account all recognized standards, guidelines and codes of practice as required in accordance with Indian law and as recognized internationally.
- (iii) All consultancy works which are included in the scope of work shall be carried out by the Consultant and the Consultant cannot transfer any responsibility for completion of DPR to the Client.
- (iv) To facilitate the Consultant to obtain data from various Government and other agencies, the Client will only provide necessary assistance through letters authorizing the Consultant to obtain the data for the purpose of the study. All follow up etc. in this regard will have to be done only by the Consultant.

## 7. Time Schedule & Key Deliverables

- (i) The total duration of the Consultancy services shall be **eight (8) months** from the Effective Date, including 21 days time assumed to be taken by the Client in conveying its comments on the Reports at each stage of the Key Deliverables.
- (ii) The Consultant shall submit the following Key Deliverables (minimum two (2) copies) within the time schedule as summarized below:

S. No.	Reports to be delivered (Key Deliverables)	Time Schedule from Effective Date
(i)	<b>Inception Report</b> shall be submitted after kick-off meeting and it will cover important observations, preliminary data / reports collected and reviewed (as per clause 5.1 above), data requirement & availability, questionnaires, proposed benchmarks & reasons for their selection and detailed methodology, timelines and way forward, the Consultant intends to fulfil the entire Scope of Work as defined in this Section	Within 1 month
(ii)	<b>Condition Survey Assessment Report</b> covering the aspects as mentioned in clause 5.2.1 above	Within 3 months
(iv)	<b>Draft DPR:</b> This will cover the aspects of Hydrographic Survey, Topographic Survey, Geo-technical Investigation, Numerical Modelling, FEED/ Preliminary Engineering Designs duly proof checked from reputed Institute as approved by the Client, Environmental Impact Assessment, Cost Estimates, Organization Structure, Time Schedule for Project execution and Tender document(s) complete in all respect as detailed in this Section	Within 6 months
(vii)	<b>Final DPR:</b> Final DPR shall be submitted after addressing all the comments/ observations on the Draft DPR made by the Client and will cover all the scope of work complete in all respect as detailed in this Section	Within 8 months

**Notes:**

- (a) The Consultant will have to conduct minimum five (5) presentations at the head office of the Client in Noida / Regional Office at Kolkata as & when required by the Client and Ministries at his own cost;
- (b) The report submission shall be signed by the relevant Key Experts for related chapters and final cover page shall be signed by the Team Leader. Moreover, all the correspondences shall be done mainly with the Team Leader; and
- (c) During the presentations and meetings, the Client may ask for presence of all the Key Experts to be present personally for necessary discussions and clarifications with respect to inputs

## 8. Payment Terms

8.1 The payment shall be only made against submission and approval of Reports by the Client.

## 9. Manpower Requirement & Eligibility Criteria

The Consultant shall form a multi-disciplinary team (the "**Consultancy Team**") for undertaking this assignment. The following Key Experts whose minimum & desired qualification and experience are briefly described herein would be considered for evaluation of the Technical Proposal.

CVs shall not be evaluated at REoI stage. The same shall be evaluated during detailed technical proposal evaluation stage.

The estimated man-month requirement for the Consultancy assignment is 31.

S. No.	Key Expert	Numbers	Educational Qualification	Relevant Experience
1.	Team Leader	1	<i>Minimum Qualification</i> Master's Degree / Post Graduate Diploma (PGD) in relevant field	Minimum experience of fifteen (15) years out of which minimum ten (10) years of experience in Barrage / Weirs / Dams / Navigation Lock / Hydel related projects  Preference will be given those experts who have exposure in design / construction / operation & maintenance of Navigation lock
2.	Structural Engineer	1	<i>Minimum Qualification</i> Graduate in Civil Engineering  <i>Preferred Qualification</i> Master's Degree in Structural Engineering	Minimum experience of fifteen (15) years out of which minimum ten (10) years of experience in design of Barrage / Weirs / Dams / Navigation Lock / Hydel related projects
3.	Geotechnical Engineer	1	<i>Minimum Qualification</i> Graduate in Civil Engineering  <i>Preferred Qualification</i> Master's Degree in Geotechnical Engineering	Minimum experience of seven (7) years out of which minimum five (5) years of experience in soil investigation, reclamation work, soil improvement and foundation design etc.
4.	Hydrographic	1	<i>Minimum Qualification</i>	Minimum experience of Ten (10) years out of which

S. No.	Key Expert	Numbers	Educational Qualification	Relevant Experience
	Expert		Graduate in Civil Engineering/ Cat“B” International Hydrographic Course/ Certification course in Hydrography Survey  <i>Preferred Qualification</i>  Master degree in Civil Engineering / Cat “A”	minimum seven (7) years of experience in conducting hydrographic surveys, investigations & measurements, bathymetric surveys, etc.
5.	Electronics & Communication Expert	1	<i>Minimum Qualification</i>  Graduate in Electronic & Communication Engineering  <i>Preferred Qualification</i>  Post Graduation (Master’s Degree / PGD) in relevant field	Minimum experience of ten (10) years out of which minimum seven (7) years of experience in cable laid up, remote operations of all machineries and system
6.	Marine / Mechanical Engineer		<i>Minimum Qualification</i>  Graduate in Mechanical Engineering / Marine Engineering  <i>Preferred Qualification</i>  Post Graduation (Master’s Degree / PGD) in relevant field	Minimum experience of ten (10) years out of which minimum seven (7) years of experience in operations of Barrage / Weirs / Dams / Navigation Lock / Hydel related projects
7.	Environment Expert	1	<i>Minimum Qualification</i>  Graduate in Environmental Engineering / Master’s in Environmental Science  <i>Preferred Qualification</i>  Post Graduation (Master’s Degree / PGD) in relevant field	Minimum experience of ten (10) years out of which minimum seven (7) years of experience in environment impact assessment involving river and / or maritime transport
8.	Procurement Expert	1	<i>Minimum Qualification</i>  Graduate in any field  <i>Preferred Qualification</i>  Master’s Degree in Law or any other related field	Minimum experience of seven (7) years out of which minimum five (5) years of experience in managing procurement of various goods / consultancy / works contracts in the infrastructure sector. Should also have relevant experience of working on working on multilateral funded (World Bank, ADB, JICA etc.) projects



## [DOCUMENT TITLE]

Reference :-

Date:-

To,  
Project Director  
IWAI – Jal Marg Vikas  
(Ministry of Ports, Shipping and Waterways, GOI)  
A – 13, Sector – 1, Noida -201301

**Subject :- Consultancy Services for preparation of Detailed Project Report (DPR) for the work of renovation / modernization of existing navigation lock at Farakka.**

**IWAI Reference :-**

Dear Sir,

**Refer your Expression of Interest .....**

**We are pleased to enclose our credentials for the subject cited assignment as per your requirements listed at Para 3 (a through d).**

SL.NO	Description of Documents	Documents required to be furnished	Yes / No	Reference
1	Name of the Organization	<i>Copy of Certificate of Incorporation.</i>		
	Date of Establishment			
	Date of Commencement of Business			
	Type of Organization – Legal Status			
	Nature of Business			
	PAN No			
	GST No			
	Exact & Complete Address			
	Telephone / Fax numbers.			
	E-mail and cable address.			
	Present a brief profile - narrative description of the firm(s)..		<i>Kindly avoid submission of company brochures for the purpose description of the firm</i>	
Organizational strength of Consultant				
Key persons .. 2 principals with contact details to be Contacted by IWAI.				
1.1	EOI Submitted as Sole Applicant or Joint Venture	<i>If yes, details of JV Partner similar to 1 above</i>		
	Details of Joint Venture Partner			
2	For Consultant of <b>Foreign registry</b> , indicate if there is any branch office(s) established in India with details in aforesaid manner	<i>If yes, details similar to 1 above</i>		

3	Qualification Requirements	<i>Details of relevant Engagement,</i>			
3b	Consultant should have an minimum average annual financial turnover of INR 1.16 Crore during the last 5 years – CA certified declaration for last 5 years to be submitted along with the EOI’.	2019-20	<i>CA certified declaration for last 5 years.</i>		
		2018-19			
		2017-18			
		2016-17			
		2015-16			
3c	Consultant should have completed 3 consultancy works of similar nature i.e. construction / modernization of navigational locks, lock gates of barrage, dams, canals etc. during last 5 years – List of Scope of work, date of commencement, date of completion, client’s details, along with copies of work order, completion certificate issued by client to be submitted.	<i>Kindly Provide following details toward completed works.</i>			
		<ul style="list-style-type: none"> <li>• <i>Client’s details</i></li> <li>• <i>Scope of work</i></li> <li>• <i>Date of commencement,</i></li> <li>• <i>Date of completion,</i></li> <li>• <i>Synopsis of the Projects ( relevant certificates of Commencement &amp; completions issued by client should be enclosed)</i></li> </ul>			
3d	Consultant should be having a minimum of 10 employees on their payroll – declaration to be submitted.	<i>Declaration to be made by company HR</i>			

Hope you will find the same in line with your requirements.

Signature & Name of the Consultant  
Date & Seal

Certificate

This is to confirm & certify that the information furnished with this Expression of Interest (EOI) are true & Correct and are not debarred by the World Bank.

Signature & Name of the Consultant  
Date & Seal

**Enclosure :-**

**As listed here under:-**