

Fairway Maintenance on Quantity Based Dredging  
of  
Digha - Majhaua stretch (95 km)  
on  
National Waterway – 1

National Competitive Bidding - NCB  
(Two-Envelope Bidding Process with e-Procurement)  
(Without Prequalification)



**NCB: IN-IWAI – 366117 -CW-RFB**

**February ‘2023**

**Project:** *Capacity Augmentation of National Waterway – 1*

**Employer:** *Inland Waterways Authority of India,  
Ministry of Ports ,Shipping & Waterways,  
Government of India*

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

***Inland Waterways Authority of India,  
Ministry of Ports, Shipping & Waterways, Government of India***  
PROJECT: *Capacity Augmentation of National Waterway – 1*

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**NATIONAL COMPETITIVE BIDDING**  
**(Two-Envelope Bidding Process with e-Procurement)**

File NO IWAI /WB / NW-1 /14 / 2/ 2023

Bid no :- IN-IWAI- 366117 -CW-RFB

***NAME OF WORK:***

***Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1***

|  |  |
|--|--|
| PERIOD OF SALE OF BIDDING DOCUMENT   | FROM 27.02.2023  |
| TIME AND DATE OF virtual PRE-BID MEETING ..<br>link shall be shared on CPPP Portal separately  | DATE 10.03.2023 1TIME 15.00 HOURS                            |
| LAST DATE AND TIME FOR RECEIPT OF BIDS   | DATE 28.03.2023 TIME 15.00 HOURS                             |
| * TIME AND DATE OF OPENING   | DATE 28.03.2023 TIME 15.30 HOURS<br>OF BIDS – Technical Part |
| <i>. The firms that qualify technically shall be notified subsequently for opening of the financial part of their bids.</i>  |  |
| PLACE OF OPENING OF BIDS   | IWAI , A-13 Sector-1 ; Noida                                 |
| OFFICER INVITING BIDS :-<br>Project Director ( JMVP ) ; Inland Waterways Authority of India,<br>A – 13, Sector – 1, Noida – 201301,<br>Uttar Pradesh – INDIA - Telephone No. : (91) 0120-2424544 Email. : vc.iwai@nic.in |  |

***Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023***

*Inland Waterways Authority of India,  
Ministry of Ports, Shipping & Waterways, Government of India  
PROJECT: Capacity Augmentation of National Waterway – 1*

**INVITATIONS FOR BIDS (IFB)  
E-Procurement Notice  
(Two Envelope Bidding Process with e-Procurement)**

**NATIONAL COMPETITIVE BIDDING**

**Contract Title: *Fairway Maintenance on Quantity Based Dredging Digha-Majhaua stretch (95km) of National Waterway – 1***

**Loan No: 8752 – IN**

**File NO IWAI /WB / NW-1 /14 / 2/ 2023**

**Date: 27.02.2023**

**Bid no :- IN-IWAI- 366117 -CW-RFB**

1. The Government of India has received a loan from the World Bank towards the cost of the Capacity Augmentation of National Waterway – 1, Project and intends to apply a part of the funds to cover eligible payments under the contract<sup>1</sup> for construction of works as detailed below.

***Fairway Maintenance on Quantity Based Dredging of Digha-Majhaua stretch (95km)) of National Waterway – 1***

2. Bidding will be conducted through National Competitive Bidding procedures agreed with the World Bank. Bidding is open to all eligible bidders as defined in the World Bank's Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, January 2011\_Revised July 2014.
3. Interested eligible bidders may obtain further information from Inland Waterways Authority of India, Ministry of Ports, Shipping & waterways , Government of India; Project Director, e-mail [vc.iwai@nic.in](mailto:vc.iwai@nic.in) **Bidders are advised to note the clauses on eligibility (Section I Clause 4) and minimum qualification criteria (Section III – Evaluation and Qualification Criteria), to qualify for the award of the contract.** Additional details are provided in the Bidding Documents.

1. Average annual financial turnover during last five years ending 31<sup>st</sup> March of the previous financial year 2021-22, should be i.e., ***INR 17,70,68,736.00 (INR Seventeen crores seventy lacs sixty eight thousand seven hundred & thirty six only)***
2. Similar Work, such as those pertaining to General Dredging Experience in Ports / Rivers / Lakes / Canals / Water Bodies / including management of vessels and

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<sup>1</sup>.

manning of vessels or vessel related marine works or River Dredging and management of dredging materials or Dredging material used in reclamation of port /harbour during last 7 years ending last day of month previous to the one in which this tender is invited should be either of following:

- a) Single similar works each costing not less than INR 15,73,94,432.00  
Or Dredged Quantity of 4,35,200.00 cum
- b) Two similar works each costing not less than INR 9,83,71,520.00  
Or Dredged Quantity of 2,72,000.00 cum
- c) Three similar work costing not less than INR 7,86,97,216.00  
Or . Dredged Quantity of 2,17,600.00 cum
- d) Meets Cash Flow of INR 7,86,97,216.00 for during operation period.

In addition, please refer to paragraphs 1.6 and 1.7 of the World Bank's Guidelines setting forth the World Bank's policy on conflict of interest.

4. The Inland Waterways Authority of India, Ministry of Ports, Shipping & waterways , Government of India (Implementing Agency) invites online bids for the construction of works detailed below in the table. The bidders may submit bids for the work indicated therein. Interested bidders may obtain further information and inspect the bidding documents at the address given below during office hours.
5. Complete set of Bidding Documents is freely available on the NIC Portal in English may be downloaded by the interested bidders from NIC- e-procurement portal, free cost. However, to participate in the tender, bidder has to pay a non-refundable fee of Rs. 6000/-. The method of payment will be Demand Draft, to be submitted along with the bid. The bidders would be responsible for ensuring that any addenda available on the website is also downloaded and incorporated
6. For submission of the bid, the bidder is required to have Digital Signature Certificate (DSC) from one of the Certifying Authorities authorised by Government of India for issuing DSC. Aspiring bidders who have not obtained the user ID and password for participating in e-procurement in this Project, may obtain the same from the website: <https://eprocure.gov.in/cppp/download/disp>. A non-refundable fee of INR 6000/- (inclusive of tax) , is required to be paid. The method of payment will be Demand Draft. Payment documents are to be submitted along with other documents listed in paragraph 9 below before the bid submission deadline.
7. All Bids must be accompanied by a bid Security of the amount specified for the work in the table below, drawn in favour of Inland Waterways Authority of India, Ministry of Ports, Shipping & waterways , Government of India. Bid Security will have to be in any one of the forms as specified in the bidding document and shall have to be valid for 45 days beyond the validity of the bid. Procedure for submission of bid security is described in Para 9.

***Tender Document for Digha-Majhaua (95 km)***  
***On Qty Based Dredging Contract***  
***27.02.2023***

8. Bids comprise two Parts, namely the Technical Part and the Financial Part, and both parts must be submitted simultaneously online on CPPP Portal online <https://eprocure.gov.in/eprocure/app> (website) on or before 15.00 hours on 28.03.2023 and the 'Technical Part' of the bids will be publicly opened online on the same day at 15.30 hours, in the presence of the bidders designated representatives who wish to attend. The "Financial Part" shall remain unopened in the e-procurement system until the second public Bid opening for the financial part. Any bid or modifications to bid (including discount) received outside e-procurement system will not be considered. If the office happens to be closed on the date of opening of the bids as specified, the bids will be opened on the next working day at the same time and venue. The electronic bidding system would not allow any late submission of bids.
9. The bidders are required to submit (a) original payment documents towards the cost of bid document; and registration on e-procurement website (if applicable); (b) original bid security in approved form; and (c) original affidavit regarding correctness of information furnished with bid document with Project Director (JMVP), A-13, Sector-1, NOIDA, Gautam Buddha Nagar – 201301, UP before the bid submission deadline, either by registered post/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened.
10. A **pre-bid meeting will be held on 10.03.2023 at 15.00 hours** at the office of Inland Waterways Authority of India, NOIDA to clarify the issues and to answer questions on any matter that may be raised at that stage as stated in ITB Clause 7.4 of 'Instructions to Bidders' of the bidding document. Bidders are advised to download the bidding document prior to the pre-bid meeting in order for bidders to have a good understanding of the scope of work under this contract for discussion and clarification at the pre-bid meeting.
11. Other details can be seen in the bidding documents. The Employer shall not be held liable for any delays due to system failure beyond its control. Even though the system will attempt to notify the bidders of any bid updates, the Employer shall not be liable for any information not received by the bidder. It is the bidders' responsibility to verify the website for the latest information related to this bid.

12 The address for communication is as under:

*Vice Chairman & Project Director, Jal Marg Vikas Project  
Inland Waterways Authority of India  
A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301  
+91 120 2424544 Email: [vc.iwai@nic.in](mailto:vc.iwai@nic.in) ;*

| Package No                       | Name of Work   | Bid Security *<br>(Rs.)      | Cost of Document<br>(Rs.) | Period of<br>Completion     |
|----------------------------------|--|------------------------------|---------------------------|-----------------------------|
| 1                                | 2  | 3                            | 4                         | 5                           |
| IN -IWAI-<br>336117 / CW-<br>RFB | <i>Fairway Maintenance on<br/>Quantity Based Dredging<br/>of Digha-Majhaua<br/>stretch (95km) of<br/>National Waterway – 1</i> | <b>Rs<br/>1,18,04,585.00</b> | <b>6000/-</b>             | <b>Three ( 3)<br/>Years</b> |

Seal of office

**Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023**

## PART 1 – Bidding Procedures

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## Section I. Instructions to Bidders

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| ABBREVIATIONS |           |   |
|---------------|-----------|---|
|               | GOI       | Government of India   |
|               | MOPSW     | Ministry of Ports, Shipping & waterways , Government of India |
|               | IWA1      | Inland Waterways Authority of India                           |
|               | WB        | World Bank  |
|               | JMVP      | Jal Marg Vikas Project  |
|               | PMU / PMC | Project Management Unit./ Project Management Consultant       |
|               | NW-1      | National Waterways-1 ( River Ganga)                           |
|               | CPPP      | Central Public Procurement Portal.                            |
|               | INR       | Indian National Rupee   |
|               | NCB       | National Competitive Bid.                                     |
|               | ICB       | International Competitive Bid                                 |
|               | IFB       | Invitation for Bid  |
|               | QC /QR    | Qualifying Criteria / Qualifying Requirements                 |
|               | ATO       | Annual Turn Over  |
|               | NIT       | Notice Inviting Tender  |
|               | LAD       | Least Available Depth   |
|               | RFB       | Request for Bid   |
|               | ITB       | Instruction to Bidder   |
|               | BDS       | Bid Data Sheet  |
|               | EMD       | Earnest Money Deposit / Bid Security                          |
|               | GCC       | General Condition of Contract.                                |
|               | PCC       | Particular Condition of Contact.                              |
|               | ESHS      | Environment, Social, Health & Safety                          |
|               | ESIA      | Environment & Social Impact Assessment.                       |
|               | MSIP      | Management Strategies & Implementation Plan                   |
|               | C-ESMP    | Contractor's Environment & Social Management Plan.            |
|               | CPG       | Contract Performance Guarantee                                |
|               | JV        | Joint Venture   |
|               | GBV       | Gender Base Violence  |
|               | SEA       | Sexual Exploitation and Abuse.                                |
|               | DMP       | Dredging Management Plan                                      |
|               | IHO       | International Standard for Hydrographic Surveys               |
|               | OHSAS     | Occupational Health & Safety Assessment Series                |
|               | EMS       | Environmental Management System                               |
|               | IADC      | International Association of Dredging Companies               |
|               | SMC       | Safety Management Certificate                                 |
|               | DOC       | Document of Compliance  |
|               | GST       | Goods & Service Tax   |
|               | BOCW      | Building & Other Construction Worker                          |
|               | CPI       | Consumer Price Index  |
|               | WPI       | Wholesale Price Index   |
|               | EIC       | Engineer in charges   |
|               | TSSC      | Technical Support & Supervisory Consultant.                   |
|               | CSD       | Cutter Suction Dredger  |

## Section I - Instructions to Bidders

| <b>A. General</b>      |   |
|------------------------|---|
| <b>1. Scope of Bid</b> | <p>1.1 The Employer, as <b>indicated in the BDS</b>, issues this Bidding Document for the procurement of the Works as specified in Section VII (Works' Requirements)&amp;Invitation for Bids (IFB). The name, identification, and number of contracts of this bidding are <b>specified in the BDS</b>.</p> <p>1.2 Throughout this Bidding Document:</p> <ul style="list-style-type: none"> <li>(a) the term “in writing” means communicated in written form and delivered against receipt;</li> <li>(b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular;</li> <li>(c) “day” means calendar day;</li> <li>(d) “ES” is an acronym for environmental and social (including Sexual Exploitation, and Assault (SEA));</li> <li>(e) “Sexual Exploitation and Assault” “(SEA)” stands for the following: <ul style="list-style-type: none"> <li>(i) Sexual exploitation is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another. In Bank financed operations/projects, sexual exploitation occurs when access to or benefit from a Bank financed Goods, Works, Non-consulting Services or Consulting Services is used to extract sexual gain.</li> <li>(ii) Sexual assault is further defined as sexual activity with another person who does not consent. It is a violation of bodily integrity and sexual autonomy and is broader than narrower conceptions of “rape”, especially because (a) it may be committed by other means than force or violence, and (b) it does not necessarily entail penetration; and</li> </ul> </li> <li>(f) “Contractor’s Personnel” is as defined in Sub-Clause 9.1 of the</li> </ul> |

|  | General Conditions of Contract.  |
|--|--|
| <b>2. Source of Funds</b>                  | <p>2.1 The Borrower or the Recipient (hereinafter called “Borrower”) <b>specified in the BDS</b> has received/applied for financing (hereinafter called “funds”) from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called “the Bank”) in an amount <b>specified in the BDS</b>, towards the cost of the project <b>specified in the BDS</b>. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.</p> <p>2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank, and will be subject, in all respects, to the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the Loan (or other financing) account for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import, is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing).</p> |
| <b>3. Corrupt and Fraudulent Practices</b> | <p>3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section VI.</p> <p>3.2 In further pursuance of this policy, Bidders shall permit and shall cause their agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.</p>   |
| <b>4. Eligible Bidders</b>                 | <p>4.1 A Bidder may be a firm that is a private entity, a state-owned entity or institution subject to ITB 4.5, or any combination of such entities in the form of a Joint Venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent, unless otherwise <b>specified in the BDS</b>. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the Bidding process and, in the event the JV is awarded the Contract, during contract execution. This authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of</p>   |

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|  | <p>all members. Unless <b>specified in the BDS</b>, there is no limit on the number of members in a JV. The joint venture agreement shall be registered in the place <b>specified in BDS</b> so as to be legally valid and binding on members.</p>   |
|  | <p>4.2 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:</p> <ul style="list-style-type: none"> <li>(a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or</li> <li>(b) receives or has received any direct or indirect subsidy from another Bidder; or</li> <li>(c) has the same legal representative as another Bidder; or</li> <li>(d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or</li> <li>(e) participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or</li> <li>(f) any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid; or</li> <li>(g) any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Project Manager (Engineer) for the Contract implementation; or</li> <li>(h) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or</li> <li>(i) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a</li> </ul> |

|     |  |
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|     | <p>recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract.</p>   |
| 4.3 | <p>A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.7. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.</p>   |
| 4.4 | <p>A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1, including in accordance with the Bank's Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants ("Anti-Corruption Guidelines"), shall be ineligible to be prequalified for, bid for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address <b>specified in the BDS</b>.</p>  |
| 4.5 | <p>Bidders that are Government-owned enterprises or institutions in the Employer's Country may participate only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not dependent agencies of the Employer. To be eligible, a government-owned enterprise or institution shall establish to the Bank's satisfaction, through all relevant documents, including its Charter and other information the Bank may request, that it: (i) is a legal entity separate from the government (ii) does not currently receive substantial subsidies or budget support; (iii) operates like any commercial enterprise, and, inter alia, is not obliged to pass on its surplus to the government, can acquire rights and liabilities, borrow funds and be liable for repayment of its debts, and can be declared bankrupt; and (iv) is not bidding for a contract to be awarded by the department or agency of the government which under their applicable laws or regulations is the reporting or supervisory authority of the enterprise or has the ability to exercise influence or control over the</p> |

|  |  |
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|  | enterprise or institution.   |
|  | 4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid–Securing Declaration.  |
|  | 4.7 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower’s country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower’s country prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.               |
|  | 4.8 Bidder shall provide such evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request   |
| <b>5. Eligible Materials, Equipment and Services</b> | 5.1 The materials, equipment and services to be supplied under the Contract and financed by the Bank may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer’s request, Bidders may be required to provide evidence of the origin of materials, equipment and services.  |
| <b>B. Contents of Bidding Document</b>               |  |
| <b>6. Sections of Bidding Document</b>               | <p>6.1 The Bidding Document consist of Parts 1, 2, and3, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.</p> <p><b>PART 1 Bidding Procedures</b><br/> Section I - Instructions to Bidders (ITB)<br/> Section II - Bid Data Sheet (BDS)<br/> Section III - Evaluation and Qualification Criteria<br/> Section IV - Bidding Forms<br/> Section V - Eligible Countries<br/> Section VI- Bank Policy-Corrupt and Fraudulent Practices</p> <p><b>PART 2 Work’s Requirements</b><br/> Section VII –Works’ Requirements</p> <p><b>PART 3 Conditions of Contract and Contract Forms</b><br/> Section VIII - General Conditions of Contract (GCC)</p> |

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|  | Section IX - Particular Conditions of Contract (PCC)<br>Section X - Contract Forms   |
|  | 6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.  |
|  | 6.3 Unless obtained directly from the Employer or downloaded from the official website specified in the 'E-Procurement Notice', the Employer is not responsible for the completeness of the Bidding Documents, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Documents in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer or downloaded from the official website specified in the 'E-Procurement Notice' shall prevail.  |
|  | 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its bid all information and documentation as required by the Bidding Documents.  |
| <b>7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting</b> | 7.1 The electronic bidding system <b>specified in the BDS</b> provides for online clarifications. A prospective Bidder requiring any clarification on the Bidding Document may notify the Employer online or raise his inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. Clarifications requested through any other mode shall not be considered by the Employer. The Employer will respond to any request for clarification, provided that such request is received prior to the deadline for submission of bids, within a period <b>specified in the BDS</b> . Description of clarification sought and the response of the Employer shall be uploaded for information of all Bidders without identifying the source of request for clarification. Should the clarification result in changes to the essential elements of the Bidding Documents, the Employer shall amend the Bidding Documents following the procedure under ITB 8 and ITB 22.2. It is the bidder's responsibility to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document. |
|  | 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself, on its own risk and responsibility, all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.  |
|  | 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the   |

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|   | Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.  |
|   | 7.4 If so <b>specified in the BDS</b> , the Bidder's designated representative is invited to attend a pre-bid meeting and/or a Site of Works visit. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.   |
|   | 7.5 The Bidder is requested, to submit any questions only through the e-procurement portal, not later than one week before the meeting. Clarifications requested through any other mode shall not be considered by the Employer.   |
|   | 7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be uploaded online on e-procurement system. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting. It is the bidder's responsibility to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding documents. |
|   | 7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.   |
| <b>8. Amendment of Bidding Document</b> | 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing addenda.   |
|   | 8.2 Any addendum thus issued shall be part of the Bidding Document and shall be deemed to have been communicated to all bidders. The addenda will appear on the e-procurement system under "Latest Corrigendum", and Email notification is also automatically sent to those bidders who have started working on the tender, unless otherwise <b>specified in the BDS</b> . The Employer shall not be liable for any information not received by the bidder. It is the bidders' responsibility to verify the website for the latest information related to this bid.  |

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|   | 8.3  | To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2   |
| <b>C. Preparation of Bids</b>           |      |  |
| <b>9. Cost of Bidding</b>               | 9.1  | The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.  |
| <b>10. Language of Bid</b>              | 10.1 | The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in English. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in English, in which case, for purposes of interpretation of the Bid, such translation shall govern.   |
| <b>11. Documents Comprising the Bid</b> | 11.1 | The Bid shall comprise two Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted simultaneously.   |
|   | 11.2 | <p>The Technical Part shall contain the following:</p> <ul style="list-style-type: none"> <li>(a) Letter of Bid – Technical Part;</li> <li>(b) documentary evidence in accordance with ITB 17.1 establishing the Bidder's eligibility to Bid;</li> <li>(c) Bid Security, in accordance with ITB 19;</li> <li>(d) alternative bids – technical part, if permissible, in accordance with ITB 13, the Technical Part of any Alternative Bid;</li> <li>(e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;</li> <li>(f) documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the contract, if its Bid is accepted;</li> <li>(g) Technical Proposal in accordance with ITB 16;</li> <li>(h) Construction methodology proposed as detailed in Para 1.1 of Section III Evaluation Criteria;</li> </ul> |

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|   | <p>(i) Contractor Registration certificate (as per IFB); and</p> <p>(j) Any other document <b>required in the BDS.</b></p> <p>11.3 The <b>Financial Part</b> shall contain the following:</p> <p>(a) <b>Letter of Bid – Financial Part:</b> prepared in accordance with ITB 12 and ITB 14;</p> <p>(b) <b>Completed Schedules</b> including priced bill of quantities in accordance with ITB 12 and ITB 14, as <b>specified in BDS;</b></p> <p>(c) <b>Alternative Bid - Financial Part:</b> if permissible in accordance with ITB 13; and</p> <p>(d) any other document <b>required in the BDS.</b></p> <p>11.4 The Technical Part shall not include any information related to the Bid price. Where material financial information related to the Bid price is contained in the Technical Part the Bid shall be declared non-responsive.</p> <p>11.5 In addition to the requirements under ITB 11.2, Bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all members and submitted with the Bid, together with a copy of the proposed Agreement.</p> <p>11.6 The Bidder shall furnish in the Letter of Bid – Financial Part information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.</p> |
| <p><b>12. Process of Bid Submission</b></p> | <p>12.1 The Letter of Bid– Technical Part, Letter of Bid – Financial Part, Schedules including the Bill of Quantities, and all documents listed under Clause 11, shall be prepared using the relevant forms in Section IV(Bidding Forms), if so provided. The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.</p> <p>12.2 Entire Bid including the Letters of Bid and filled-up Bill of Quantity shall be submitted online on e-procurement system specified in ITB 7.1. Details and process of online submission of the tender and relevant documents are given in the website mentioned above. Scanned copies of documents listed in ITB clauses 11 and 12.3</p>   |

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|                                     | <p>should also be uploaded on this website.</p> <p>12.3 <b>Submission of Original Documents:</b> The bidders are required to separately submit (i) original payment documents towards the cost of bid document; and registration on e-procurement website (if applicable); (ii) original bid security in approved form; and (iii) original affidavit regarding correctness of information furnished with bid document, with the office <b>specified in the BDS</b>, before the deadline for Bid submission, either by registered/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened. Hard copy of rest of the bid or any other document are not to be submitted.</p>            |
| <b>13. Alternative Bids</b>         | 13.1 Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic technical design as indicated in the drawing and specifications. Alternatives will not be considered.  |
| <b>14. Bid Prices and Discounts</b> | 14.1 The prices and discounts (including any price reduction) quoted by the Bidder in the Letter of Bid - Financial Part, and in the Schedules shall conform to the requirements specified below.   |
|                                     | 14.2 The Bidder shall submit a bid for the whole of the works described in ITB 1.1 by filling in prices for all items of the Works (both in figures and words), as identified in Section IV, Bidding Forms along with the total bid price (both in figures and words). The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. <b>Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.</b> Corrections if any in the bid can be carried out by editing the information before electronic submission on e-procurement portal. |
|                                     | 14.3 The price to be quoted in the Letter of Bid - Financial Part in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered.  |
|                                     | 14.4 Discounts, if any, and the methodology for their application shall be quoted in the Letter of Bid - Financial Part, in accordance with ITB 12.1.   |
|                                     | 14.5 Unless otherwise <b>specified in the BDS</b> and the Conditions of Contract, the rates and prices quoted by the Bidder shall be fixed  |
|                                     | 14.6 If so indicated in ITB 1.1, bids are invited for individual lots (contracts) or for any combination of lots/contracts (packages). Bidders wishing to   |

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|  | <p>offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the bids for all lots/contracts are opened at the same time.</p>  |
|  | <p>14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as applicable on the deadline for submission of Bids, shall be included in the rates and prices and the total bid price submitted by the Bidder.</p>  |
|  | <p>14.8 Bidders may like to ascertain availability of tax/duty exemption benefits available in India. They are solely responsible for obtaining such benefits which they have considered in their bid and in case of failure to receive such benefits for reasons whatsoever, the Employer will not compensate the bidder (Contractor). The bidder shall furnish along with his bid a declaration to this effect in the Declaration Format provided in Section IV of the bidding documents.</p> <p>Where the bidder has quoted taking into account such benefits, it must give all information required for issue of certificates in terms of the Government of India's relevant Notifications as per the declaration format. In case the bidder has not provided the required information or has indicated to be furnished later on in the Declaration Format, the same shall be construed that the goods/construction equipment for which certificate is required is Nil.</p> <p>To the extent the Employer determines the quantities indicated therein are reasonable keeping in view the quantities in bill of quantities, construction program and methodology, the certificates will be issued within 60 days of signing of the contract and no subsequent changes will be permitted. In case of materials pertaining to Variation items and quantities the certificate shall be issued only on request from the Contractor when in need and duly certified by the Project Manager. No certificate will be issued for items where no quantity/capacity of equipment is indicated in the statement.</p> <p>If the bidder has considered the tax/duty exemption for materials/construction equipment to be bought for the work, the bidder shall confirm and certify that the Employer will not be required to undertake any responsibilities of the Government of India Scheme or the said exemptions being available during the contract execution, except issuing the required certificate. The bids which do not conform to the above provisions or any condition by the bidder which makes the</p> |

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|  | <p>bid subject to availability of tax/duty exemption for materials/construction equipment or compensation on withdrawal of any variations to the said exemptions will be treated as non-responsive and rejected.</p> <p>Any delay in procurement of the construction equipment/machinery/goods as a result of the above shall not be a cause for granting any extension of time.</p>  |
| <b>15. Currencies of Bid and Payment</b>                           | 15.1 The unit rates and prices shall be quoted by the Bidder and shall be paid for entirely in Indian Rupees.   |
| <b>16. Documents Comprising the Technical Proposal</b>             | 16.1 The Bidder shall furnish a Technical Proposal in the Technical Part of the Bid, including a statement of work methods, equipment, personnel, schedule and any other information as per details stipulated in Section IV (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.  |
| <b>17. Documents Establishing the Qualifications of the Bidder</b> | <p>17.1 To establish Bidder's eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid – Technical Part, included in Section IV, Bidding Forms.</p> <p>17.2 To establish its qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Bidder shall provide the complete information as requested in the corresponding information sheets included in Section IV(Bidding Forms).</p>  |
| <b>18. Period of Validity of Bids</b>                              | <p>18.1 Bids shall remain valid for 90 days or for a period <b>specified in the BDS</b> after the bid submission deadline date prescribed by the Employer in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.</p> <p>18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended for forty five (45) days beyond the deadline of the extended validity period. 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. except as provided in ITB 18.3.</p> <p>18.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be determined as follows:</p> |

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|                         | <p>(a) In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor <b>specified in the BDS</b>.</p> <p>(b) In the case of adjustable price contracts, no adjustment shall be made.</p> <p>(c) In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above.</p>  |
| <b>19. Bid Security</b> | <p>19.1 Unless otherwise <b>specified in the BDS</b>, the Bidder shall furnish as part of the Technical Part of its bid, in original form, a bid security for the amount <b>shown in BDS</b>, for this particular work.</p>   |
|                         | <p>19.2 A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.</p>  |
|                         | <p>19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee, at the Bidder's option, in any of the following forms:</p> <p>(a) an unconditional bank guarantee, issued by a Nationalized/Scheduled bank located in India;</p> <p>(b) an irrevocable letter of credit issued by a Nationalized or Scheduled bank located in India;</p> <p>(c) a cashier's or certified check; or demand draft from a Nationalized or Scheduled Bank located in India;</p> <p>(d) another security <b>indicated in the BDS</b>.</p> <p><i>In case of a bank guarantee, the bid security shall be submitted using the Bid Security form included in the Section IV (Bidding Forms). The form must include the complete name of the Bidder. The bid security shall be valid for forty five (45) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.</i></p> |
|                         | <p>19.4 If a Bid Security or Bid Securing Declaration is specified pursuant to ITB 19.1, any bid not accompanied by a substantially responsive Bid Security or Bid Securing Declaration shall be rejected by the Employer as non-responsive.</p>  |
|                         | <p>19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the contract and furnishing of the</p>   |

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|  | performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security pursuant to ITB 45.  |
|  | 19.6 If a bid security is specified pursuant to ITB 19.1, the bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security.   |
|  | <p>19.7 The bid security may be forfeited or the Bid-Securing Declaration executed:</p> <p>(a) if a Bidder withdraws/modifies/substitutes its bid during the period of bid validity specified by the Bidder on the Letter of Bid- Technical Part and repeated in the Letter of Bid - Financial Part, or any extension thereto provided by the Bidder in accordance with ITB 18.2 or</p> <p>(b) if the Bidder does not accept the correction of its Bid Price pursuant to ITB 36 or</p> <p>(c) if the successful Bidder fails to:</p> <p>(i) sign the Contract in accordance with ITB 44; or</p> <p>(ii) furnish a performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security in accordance with ITB 45.</p> |
|  | 19.8 The Bid Security of a JV shall be in the name of the JV that submits the bid. If the JV has not been constituted into a legally-enforceable JV, at the time of bidding, the Bid Security shall be in the names of all future members as named in the letter of intent mentioned in ITB 4.1 and ITB 11.2.  |
|  | <p>19.9 If a bid security is not required in the BDS pursuant to ITB 19.1, and</p> <p>(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or</p> <p>(b) if the successful Bidder fails to: sign the Contract in accordance with ITB 44; or furnish a performance security and if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with ITB 45;</p> <p>the Borrower may, <b>if provided for in the BDS</b>, declare the Bidder ineligible</p>  |

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|   | to be awarded a contract by the Employer for a period of time <b>as stated in the BDS</b> .   |
| <b>20. Format and Signing of Bid</b>            | 20.1 The Bidder shall prepare the Bid as per details given in ITB 21.   |
|   | 20.2 The bid shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as <b>specified in the BDS</b> , and shall be uploaded alongwith the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature.  |
|   | 20.3 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives   |
|   | 20.4 Documents establishing authority to sign the bid on behalf of the JV shall be uploaded alongwith the bid.  |
|   | 20.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.   |
| <b>D. Online Submission and Opening of Bids</b> |   |
| <b>21. Preparation of Bids</b>                  | 21.1 Bids, both Technical and Financial Parts, shall be submitted online on the e-procurement system specified in BDS 7.1. Detailed guidelines for viewing bids and submission of online bids are given on the website. The Invitation for Bids under this Project is published on this website. Any citizen or prospective bidder can logon to this website and view the Invitation for Bids and can view the details of works for which bids are invited. A prospective bidder can submit its bid online; however, the bidder is required to have enrolment/registration in the website, and should have valid Digital Signature Certificate (DSC) in the form of smart card/e-token obtained from any certifying agency authorised by the Government of India (for class of DSC <b>specified in BDS</b> ). The bidder should register in the website using the relevant option available. Then the Digital Signature registration has to be done with the e-token, after logging into the website. The bidder can then login the website through the secured login by entering the password of the e-token & the user id/ password chosen during registration. After getting the bid schedules, the Bidder should go through them carefully and submit the specified documents, alongwith the bid, |

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|   | otherwise the bid will be rejected.  |
|   | 21.2 The completed bid comprising of documents indicated in ITB 12, should be uploaded on the e-procurementportal alongwith scanned copies of requisite certificates as are mentioned in different sections in the bidding document and scanned copy of the bid security.  |
|   | 21.3 All the documents are required to be signed digitally by the bidder. After electronic on line bid submission, the system generates a unique bid identification number which is time stamped as per server time. This shall be treated as acknowledgement of bid submission.   |
|   | 21.4 Physical, E-mail, Telex, Cable or Facsimile bids will be rejected as non-responsive.  |
| <b>22. Deadline for Submission of Bids</b>                    | 22.1 Bids, both Technical and Financial Parts, must be uploaded online no later than the date and time <b>indicated in the BDS</b> .   |
|   | 22.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.   |
| <b>23. Late Bids</b>  | 23.1 The electronic bidding system would not allow any late submission of bids after due date & time as per server time.   |
| <b>24. Withdrawal, Substitution, and Modification of Bids</b> | 24.1 Bidders may modify their bids by using the appropriate option for bid modification on e-procurement portal, before the deadline for submission of bids. For this the bidder need not make any additional payment towards the cost of bid document. For bid modification and consequential re-submission, the bidder is not required to withdraw his bid submitted earlier. The last modified bid submitted by the bidder within the bid submission time shall be considered as the bid. For this purpose, modification/withdrawal by other means will not be accepted. In online system of bid submission, the modification and consequential re-submission of bids is allowed any number of times. A bidder may withdraw his bid by using the appropriate option for bid withdrawal, before the deadline for submission of bids, however, if the bid is withdrawn, re-submission of the bid is not allowed (or allowed <b>if specified in BDS</b> ). |
|   | 24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall not be opened.   |

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|  | 24.3 | No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof. This will result in the forfeiture of the Bid Security pursuant to ITB 19.7   |
| <b>E. Public Opening of Technical Parts of Bids</b>  |      |   |
| <b>25. Public Opening of Technical Parts of Bids</b> | 25.1 | <p>The Employer shall publicly open Technical Parts of all bids received by the deadline, at the date, time and place <b>specified in the BDS</b> in the presence of Bidders' designated representatives and anyone who chooses to attend, and this could also be viewed by the bidders online. The Financial Parts of the bids shall remain unopened in the e-procurement system, until the subsequent public opening, following the evaluation of the Technical Parts of the Bids. In all cases, original documents submitted as specified in ITB 12.3 shall be first scrutinized, and Bids that do not comply with the provisions of ITB 12.3 will be declared non-responsive and will not be opened. Thereafter bidder's names, the presence or absence of a Bid Security, if one was required, alternative bids – technical parts, if any, and such other details as the Employer may consider appropriate will be notified online by the Employer at the time of bid opening.</p> <p>In the event of the specified date of bid opening being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day.</p> |
|  | 25.2 | The electronic summary of the bid opening will be generated and uploaded online. The Employer will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Only Technical Parts of Bids, and technical parts of Alternative Bids if any, that are opened at technical Bid opening shall be considered further for evaluation.  |
| <b>F. Evaluation of Bids – General Provisions</b>    |      |   |
| <b>26. Confidentiality</b>                           | 26.1 | Information relating to the examination, evaluation, comparison, and post-qualification of bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders in accordance with ITB 44.   |
|  | 26.2 | Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.   |

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|  | 26.3 | Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it shall do so in writing.  |
| <b>27. Clarification of Bids</b>                   | 27.1 | To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid, giving a reasonable time for response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 36. |
|  | 27.2 | If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.  |
| <b>28. Deviations, Reservations, and Omissions</b> | 28.1 | During the evaluation of bids, the following definitions apply: <ul style="list-style-type: none"> <li>(a) "Deviation" is a departure from the requirements specified in the Bidding Document;</li> <li>(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and</li> <li>(c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.</li> </ul>   |
| <b>29. Nonconformities, Errors, and Omissions</b>  | 29.1 | Provided that a bid is substantially responsive, the Employer may waive any non-conformities in the bid which do not constitute a material deviation, reservation or omission.   |
|  | 29.2 | Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price or substance of the bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.  |
|  | 29.3 | Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid  |

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|   |      | Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner <b>specified in the BDS</b> .   |
| <b>G. Evaluation of Technical Parts of Bids</b> |      |   |
| <b>30. Evaluation of Technical Parts</b>        | 30.1 | In evaluating the Technical Parts of each Bid, the Employer shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted.   |
| <b>31. Determination of Responsiveness</b>      | 31.1 | The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.  |
|   | 31.2 | A substantially responsive Bid is one that meets the requirements of the bidding document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that: <ul style="list-style-type: none"> <li>(a) if accepted, would: <ul style="list-style-type: none"> <li>(i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or</li> <li>(ii) limit in any substantial way, inconsistent with the bidding document, the Employer's rights or the Bidder's obligations under the proposed Contract; or</li> </ul> </li> <li>(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.</li> </ul> |
|   | 31.3 | The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section VII (Works' Requirements) have been met without any material deviation, reservation or omission.  |
|   | 31.4 | If a Bid is not substantially responsive to the requirements of the bidding document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.   |
| <b>32. Qualification of the Bidder</b>          | 32.1 | The Employer shall determine to its satisfaction whether the eligible Bidders that have submitted substantially responsive Bid - Technical Parts meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.  |

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|   | 32.2 | The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the bidding document), or any other firm(s) different from the Bidder.   |
|   | 32.3 | If a Bidder does not meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria, its Bid shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.   |
|   | 32.4 | Only Bids that are both substantially responsive to the bidding document, and meet all Qualification Criteria shall have the Financial Parts of their Bids opened at the second public opening.   |
| <b>33. Subcontractors</b>                           | 33.1 | Unless otherwise <b>stated in the BDS</b> , the Employer does not intend to execute any specific elements of the Works by subcontractors selected in advance by the Employer.   |
|   | 33.2 | The Employer may permit subcontracting for certain specialized works as indicated in Section III. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section III describes the qualification criteria for sub-contractors.   |
|   | 33.3 | Bidders may propose subcontracting upto the percentage of total value of contracts or the volume of works as <b>specified in the BDS</b> . Subcontractors proposed by the Bidder shall be fully qualified for their parts of the Works.   |
| <b>H. Public Opening of Financial Parts of Bids</b> |      |   |
| <b>34. Public Opening of Financial Parts</b>        | 34.1 | Following the completion of the evaluation of the Technical Parts of the Bids, and the Bank has issued its no objection (if applicable), the Employer shall notify in writing those Bidders whose Bids were considered non-responsive to the bidding document or failed to meet the Qualification Criteria, advising them of the following information: <ul style="list-style-type: none"> <li>(a) the grounds on which their Technical Part of Bid failed to meet the requirements of the bidding document;</li> <li>(b) their Financial Part of Bid shall not be opened; and</li> <li>(c) notify them of the date, time, and place for public opening of</li> </ul> |

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|   | <b>Financial Parts of the Bids.</b>   |
|   | <p>34.2 The Employer shall, simultaneously, notify in writing those Bidders whose Technical Part have been evaluated as substantially responsive to the bidding document and met all Qualifying Criteria, advising them of the following information:</p> <ul style="list-style-type: none"> <li>(a) their Bid has been evaluated as substantially responsive to the bidding document and met the Qualification Criteria;</li> <li>(b) their Financial Part of Bid will be opened at the public opening of the Financial Parts; and</li> <li>(c) notify them of the date,time, and place of the second public opening of the Financial Parts of the Bids, <b>as specified in the BDS.</b></li> </ul>  |
|   | <p>34.3 The opening date should allow Bidders sufficient time to make arrangements for attending the opening. The Financial Part of the Bids shall be opened publicly in the presence of Bidders' designated representatives and anyone who choose to attend, and this could also be viewed by the bidders online. The bidder's names, the Bid prices, per lot (contract) if applicable, including any discounts and Alternative Bid - Financial Part if any,and such other details as the Employer may consider appropriate, will be notified online by the Employer at the time of bid opening.</p> <p>In the event of the specified date of bid opening being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day.</p> |
|   | <p>34.4 The electronic summary of the bid opening will be generated and uploaded online. The Employer will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Only Financial Parts of Bids, Financial Parts of Alternative Bids, and discounts that are opened at Bid opening shall be considered further for evaluation.</p>   |
| <b>I. Evaluation of Financial Parts of Bids</b> |   |
| <b>35. Evaluation of Financial Parts</b>        | <p>35.1 To evaluate the Financial Part, the Employer shall consider the following:</p>  |
|   | <ul style="list-style-type: none"> <li>(a) the Bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities but excluding Daywork items, where priced competitively;</li> </ul>   |

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|  | (b) price adjustment for correction of arithmetic errors in accordance with ITB 36.1;   |
|  | (c) price adjustment due to discounts offered in accordance with ITB 14.4;  |
|  | (d) Not used;   |
|  | (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 29.3; and   |
|  | (f) the additional evaluation factors as specified in Section III, Evaluation and Qualification Criteria.   |
|  | 35.2 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.  |
|  | 35.3 If this bidding document allows Bidders to quote separate prices for different lots (contracts), and to award multiple contracts to a single Bidder, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Bid – Financial Part, is specified in Section III, Evaluation and Qualification Criteria   |
| <b>36. Correction of Arithmetical Errors</b> | <p>36.1 In evaluating the Financial Part of each Bid, the Employer shall correct arithmetical errors on the following basis:</p> <ul style="list-style-type: none"> <li>(a) only for unit price contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected;</li> <li>(b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and</li> <li>(c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.</li> </ul> |
|  | 36.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 36.1, shall result in the rejection of the Bid and the Bid Security may be forfeited in accordance with ITB Sub-Clause 19.6.   |

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| <b>37. Conversion to Single Currency</b>                                     | 37.1 Not used.  |
| <b>38. Margin of Preference</b>  | 38.1 Not used.  |
| <b>39. Comparison of Financial Parts</b>                                     | 39.1 The Employer shall compare the evaluated prices of all responsive and qualified bids to determine the lowest evaluated bid.  |
| <b>40. Unbalanced or Front Loaded Bids</b>                                   | 40.1 If the bid, which results in the lowest Evaluated Bid Price, is seriously unbalanced, front loaded or substantially below updated estimates in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses (with breakdown of unit rates) for any or all items of the Bill of Quantities, to demonstrate the internal consistency and justification of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. |
| <b>41. Employer's Right to Accept Any Bid, and to Reject Any or All Bids</b> | 41.1 The Employer 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 to Bidders. In case of annulment, all documents submitted and specifically, bid securities, shall be promptly returned to the Bidders.  |
| <b>J. Award of Contract</b>  |   |
| <b>42. Award Criteria</b>  | 42.1 Subject to ITB 41, the Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.  |
| <b>43. Notification of Award</b>   | 43.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, via the Letter of Acceptance included in the Contract Forms, that its bid has been accepted. The Letter of Acceptance shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price").  |
|  | 43.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.   |

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| <b>44. Signing of Contract, Publication of award and Recourse to unsuccessful Bidders</b> | <p>44.1 The Contract Agreement shall incorporate all agreements between the Employer and the successful Bidder. It shall be kept ready in the office of the Employer for the signature of the Employer and the successful Bidder, within 21 days following the date of Letter of acceptance. Within 21 days of receipt of Letter of acceptance, the successful Bidder shall sign the Agreement and furnish the performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security in accordance with ITB Clause 45 and revised construction methodology. If the successful bidder is a JV, it shall also furnish the JV agreement duly signed by all the members, if it had submitted only a letter of intent to execute the JV agreement along with the bid.</p>   |
|   | <p>44.2 The Employer within 3 weeks of issue of notification of award shall publish in a national website (<a href="http://tenders.gov.in">http://tenders.gov.in</a> or GoI Central Public Procurement Portal <a href="https://eprocure.gov.in/cppp/">https://eprocure.gov.in/cppp/</a>) or on the Employer's website with free access, the results identifying the bid and lot numbers and the following information: (i) name of each bidder who submitted the bid; (ii) bid prices as read out at bid opening; (iii) name and evaluated prices of each bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning bidder, and the price it offered, as well as the duration and summary scope of the contract awarded.</p> <p>44.3 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after publication of contract award, requests the Employer in writing to explain on which grounds its bid was not selected.</p> |
| <b>45. Performance Security</b>   | <p>45.1 Within twenty-one (21) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security in accordance with the conditions of contract, subject to ITB 40.1, using for that purpose the Performance Security and ESHS Performance Security Forms included in Section X (Contract Forms). The performance security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security of a Joint Venture shall be in the name of the Joint Venture specifying the names of all members.</p>   |
|   | <p>45.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security, or to sign the Contract Agreement shall constitute sufficient grounds for the</p>  |

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|                        | annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.  |
|                        | 45.3 Upon the successful Bidder's signing the Agreement and furnishing of the Performance Security and if required in the BDS, the Environmental, Social, Health and Safety (ESHS) Performance Security, pursuant to ITB Clause 45.1, the Employer shall promptly notify the name of the winning bidder to each unsuccessful bidder and shall discharge the Bid Securities of the bidders pursuant to ITB Clause 19.5 and 19.6.   |
| <b>46. Adjudicator</b> | 46.1 The Employer proposes the person <b>named in the BDS</b> to be appointed as Adjudicator under the Contract, at the daily rate <b>specified in the BDS</b> , plus reimbursable expenses (actual boarding, lodging, travel and other incidental expenses). If the Bidder disagrees with this proposal, the Bidder should so state in Letter of Bid. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator proposed by the Bidder, the Employer will request the Appointing Authority designated in the Particular Conditions of Contract (PCC) pursuant to Clause 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator. |

## Section II - Bid Data Sheet (BDS)

### A. Introduction

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| <b>ITB 1.1</b> | The number of the Invitation for Bids is : <b>IN -IWAI-336117 -CW-RFB</b>  |
| <b>ITB 1.1</b> | <p>The Employer is:</p> <p><b><i>Vice Chairman &amp; Project Director<br/>Inland Waterways Authority of India,<br/>Ministry of Ports, Shipping and Waterways, Government of India</i></b></p>  |
| <b>ITB 1.1</b> | <p>The name of the NCB work is:</p> <p><b><i>Fairway Maintenance on Quantity Based Dredging of Digha-Majhaua stretch (95km) of National Waterway – 1</i></b></p> <p><b><i>The detailed scope of work is provided in Section VII.</i></b></p> <p>The identification number of the work is:</p> <p><b>NCB is: Bid No.: IN -IWAI- 336117 - CW-RFB/</b></p> <p><b>The Intended Completion Date is Three ( 3) Years from the Date of Commencement of Service.</b></p>   |
| <b>ITB 2.1</b> | <p>The Borrower is Government of India.</p> <p>The Employer is <b><i>Inland Waterways Authority of India, Ministry of Ports, Shipping &amp; Waterways, Government of India</i></b></p> <p>Loan or Financing Agreement amount: 317.22 million US Dollar</p> <p>The Employer is <i>Inland Waterways Authority of India,</i></p> <p>The name of the Project is: <i>Capacity Augmentation of National Waterway – 1 (Jal Marg Vikas)</i></p>  |
| <b>ITB 4.1</b> | <p>Bids from Joint ventures. ... <b><i>Are Acceptable</i></b></p> <p>(a) Maximum number of members in the Joint Venture (JV) shall be: <b><i>Three (3)</i></b></p> <p>(b) Place where the agreement to form JV to be registered is <b><i>New Delhi India.</i></b></p> <p>(c) A statement to the effect that all members of the joint venture shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms, shall be included in the authorization nominating a Representative or member in charge, as well as in the Bid and in the Agreement [<i>in case of a successful bid</i>].</p> <p>(d) The joint venture agreement should define precisely the division of assignments to each member of JV. All members of JV should have active participation in the execution during the currency of the contract. This should not be varied/ modified subsequently without prior approval of the Employer.</p> |

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| <b>ITB 4.4</b>                          | A list of debarred firms and individuals is available at the Bank's external website <a href="http://www.worldbank.org/debarr">www.worldbank.org/debarr</a> .   |
| <b>B. Contents of Bidding Documents</b> |   |
| <b>ITB 7.1</b>                          | <p><b>Electronic –Procurement System</b></p> <p>The Employer shall use the following electronic-procurement system to manage this Bidding process:</p> <p><b><u><a href="https://eprocure.gov.in/eprocure/app">https://eprocure.gov.in/eprocure/app</a></u></b></p> <p>Requests for clarification should be received by the Employer no later than <b>14 days prior to deadline for submission of bids.</b></p> <p><b><i>The clarifications can be sought / sent by e-mail or by hard copy on the following address:</i></b></p> <p style="padding-left: 40px;"><i>Vice Chairman &amp; Project Director, Jal Marg Vikas Project<br/>Inland Waterways Authority of India<br/>A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301<br/>+91 120 2424544 ... Email: <a href="mailto:vc.iwai@nic.in">vc.iwai@nic.in</a>;</i></p> <p>Requests for clarification should be received by the Employer no later than <b>Date of Pre-bid Meeting.</b></p> |
| <b>ITB 7.4</b>                          | <p>A Pre-Bid meeting <b><i>shall</i></b> take place.</p> <p>A Pre-Bid meeting will take place, at the following date, time and place:</p> <p><b><i>Date: 10.03.2023    Time: 15.00 Hrs IST</i></b></p> <p><b><i>Place: IWAI Noida or Virtual Meet Link will be shared on CPPP Portal</i></b></p> <p><b>Pre-Bid Queries should reach the employer at the following address or by E-Mail no later than Date of Pre-bid Meeting.</b></p> <p style="padding-left: 40px;"><i>Vice Chairman &amp; Project Director, Jal Marg Vikas Project<br/>Inland Waterways Authority of India<br/>A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301<br/>+91 120 2424544 ...                      Email: <a href="mailto:vc.iwai@nic.in">vc.iwai@nic.in</a></i></p> <p>A site visit conducted by the Employer <b><i>shall be</i></b> organized on request.</p>  |
|   | <p><b>Zoom Link</b></p> <p>IWAI is inviting you to a scheduled Zoom meeting.</p> <p>Topic: Pre bid Meeting for Fairway Maintenance on Quantity Based Dredging of Digha - Majhaua stretch (95 km) on National Waterway – 1</p>   |

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|                               | <p>Time: Mar 10, 2023 15:00 India</p> <p>Join Zoom Meeting<br/> <a href="https://us06web.zoom.us/j/85332689341?pwd=TjVUZlpCTGJpdXFEdWVXK2w1NDZVQT09">https://us06web.zoom.us/j/85332689341?pwd=TjVUZlpCTGJpdXFEdWVXK2w1NDZVQT09</a></p> <p>Meeting ID: 853 3268 9341<br/> Passcode: jmFHN4<br/> One tap mobile<br/> +16699006833,,85332689341#,,,*,330262# US (San Jose)<br/> +16892781000,,85332689341#,,,*,330262# US</p> <p>Dial by your location<br/> +1 669 900 6833 US (San Jose)<br/> +1 689 278 1000 US<br/> +1 719 359 4580 US<br/> +1 929 205 6099 US (New York)<br/> +1 253 205 0468 US<br/> +1 253 215 8782 US (Tacoma)<br/> +1 301 715 8592 US (Washington DC)<br/> +1 305 224 1968 US<br/> +1 309 205 3325 US<br/> +1 312 626 6799 US (Chicago)<br/> +1 346 248 7799 US (Houston)<br/> +1 360 209 5623 US<br/> +1 386 347 5053 US<br/> +1 507 473 4847 US<br/> +1 564 217 2000 US<br/> +1 646 931 3860 US<br/> +1 669 444 9171 US</p> <p>Meeting ID: 853 3268 9341<br/> Passcode: 330262<br/> Find your local number: <a href="https://us06web.zoom.us/j/85332689341?pwd=TjVUZlpCTGJpdXFEdWVXK2w1NDZVQT09">https://us06web.zoom.us/j/85332689341?pwd=TjVUZlpCTGJpdXFEdWVXK2w1NDZVQT09</a></p> |
| <b>ITB 8.2</b>                | Addendum to Bidding Documents will be hosted on the Employer's e-procurement portal [GOI Central Public Procurement Portal <a href="https://eprocure.gov.in/cppp">https://eprocure.gov.in/cppp</a> ]  |
| <b>C. Preparation of Bids</b> |   |
| <b>ITB 11.2 (j)</b>           | <p>The Bidder shall submit the following additional documents in its Bid:</p> <p>(i) Contractor Registration certificate on e-procurement system as per IFB, if applicable</p> <p>(a) <i>Dredging Management Plan – Methodology</i></p> <p style="text-align: center;"><i>Detailed methodology to indicate how various activities will be carried out to achieve the performance parameters laid down in</i></p>  |

*Section VII – Work's Requirement**(b) Detailed Dredger deployment plan with respect to:*

- *Dredging Management Plan – Methodology (including disposal of dredged material)*
- *No. of dredgers to be deployed at various points of time along with dredging capacities and manpower.*
- *Frequency of surveys along with details of equipment and manpower to be deployed to meet the work requirements in the concerned stretch.*

*(c) List of major items of equipment proposed to carry out the contracted services using the format provided in Section IV - Bidding Forms**(d) To establish its qualifications to perform the contract(s) in accordance with Section III, Qualification Criteria and Requirements, the Bidder shall provide the information requested in the corresponding Information Sheets included in Section IV, Bidding Forms.**(e) Bidder to indicate whether they are presenting  
Single Entity Bid or  
Joint Venture Bid**In the event of Joint Venture Bid or sub-contracting details of the Joint Venture Partner or the sub-contractor likely to be engaged to be identified & proposed in the Bid along with their credentials like (Experience, Financials & Profile) –**Each of the JV member will be required to furnish legally enforceable JV Operating Agreement along with its Techno-commercial Bid holding themselves jointly & severally responsible and liable to IWAI to perform all contractual obligations, valid for entire period of Contract.**As per the format enclosed in the bidding documents.**Further,*

- *No change in the composition of the JV without the written consents of the Employer after submission of Bid shall be allowed.*
- *The leader should maintain at least 51% share in the JV at all the time during the period of contract*
- *The Technical Member of the JV should meet at least 25% of the financial requirement.*

**(ii) Code of Conduct for Contractor's Personnel (ES)**

The Bidder shall submit its Code of Conduct that will apply to Contractor's Personnel (as defined in Sub-Clause 9.1 of the General Conditions of Contract), to ensure compliance with the Contractor's Environmental and Social (ES) obligations under the Contract. The Bidder shall use for this purpose the Code of Conduct form provided in

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|                     | <p>Section IV. No substantial modifications shall be made to this form, except that the Bidder may introduce additional requirements, including as necessary to take into account specific Contract issues/risks.</p> <p><b>Management Strategies and Implementation Plans (MSIP) to manage the (ESHS) risks</b></p> <p>The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key Environmental, Social, Health and Safety (ESHS) risks:</p> <ul style="list-style-type: none"> <li>• <i>Traffic Management Plan to ensure safety of local communities from work traffic;</i></li> <li>• <i>Water Resource Protection Plan to prevent contamination of drinking water, Swamp Protection Plan, Dredged Material Disposal Plan, Biological Environment Plan ;</i></li> <li>• <i>Boundary Marking and Protection Strategy for mobilization and construction to prevent offsite adverse impacts;</i></li> <li>• <i>Strategy for obtaining Consents/Permits prior to the start of relevant works such as opening a quarry or borrow pit;</i></li> <li>• <i>Gender based violence and sexual exploitation and abuse (GBV/SEA) prevention and response action plan.</i></li> </ul> <p>The Contractor shall be required to submit for approval, and subsequently implement, the Contractor's Environment and Social Management Plan (C-ESMP), in accordance with the Particular Conditions of Contract Sub-Clause 10.1, that includes the agreed Management Strategies and Implementation Plans described here.</p> |
| <b>ITB 11.3 (b)</b> | The following schedules shall be submitted with the bid: <b><i>Priced Bill of Quantities</i></b>  |
| <b>ITB 11.3 (d)</b> | The Bidder shall submit the following additional documents in its Bid: <b><i>that must be submitted with the Bid – Financial Part</i></b><br><b><i>Scanned copy of Bill of Quantities (duly filled in)</i></b>  |
| <b>ITB 12</b>       | <p><b>Added at the end of 12.3</b></p> <p><b>Note for Bidders:</b> Bidders have to submit the bids on the e-procurement portal along with the relevant required documents. For this purpose, the bidders shall fill up online, the forms that are available for online filling on the e-portal. The rest of the forms shall be download by the bidders and filled up. The filled up pages shall then be scanned and uploaded on the e-procurement portal along with the scanned copies of the supporting documents.</p>   |
| <b>ITB 12.3</b>     | <p>For submission of original documents, the Employer's address is:</p> <p><i>Vice Chairman &amp; Project Director, Jal Marg Vikas Project</i><br/><i>Inland Waterways Authority of India</i><br/><i>A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301</i></p>  |

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|                 | Email: <a href="mailto:vc.iwai@nic.in">vc.iwai@nic.in</a>  |
| <b>ITB 13.1</b> | Alternative bids <b><i>shall not be</i></b> permitted.   |
| <b>ITB 14.5</b> | The prices quoted by the Bidder “ <b><i>shall be</i></b> ” subject to adjustment during the performance of the Contract. The adjustment of contract price, if provided, will be done in accordance with GCC Clause 45 read with corresponding provisions under PCC.  |
| <b>ITB 14.8</b> | Add the following as sub-clause 14.8<br><br>Any delay in procurement of the construction equipment/ dredging equipment/ machinery/goods as a result of the above shall not be a cause for granting any extension of time.  |
| <b>ITB 15.1</b> | The currency(ies) of the bid shall be in Indian Rupee only.  |
| <b>ITB 18.1</b> | <b>The bid validity period shall be 120 days from the date of opening of Technical Bids.</b>   |
| <b>ITB 19.1</b> | <p><b>The Bidder shall furnish a bid security for INR 1,18,04,585.00. and the Cost of Bidding Document of Rs 6,000/- inclusive of GST by Demand Draft or RTGS.</b></p> <p><i>[Note: using the Two-envelope Bidding, the process requires including Bid Security to be submitted in the Technical Part.]</i> In case, the Bid security shall be in the form of a Bank Guarantee as per format attached.</p> <p><b>The Bid Security may be deposited by e-BG / Demand Draft or Online cash transfer in favour of : <u>Bank details are as given below:</u></b></p> <p><u>Advising Bank: CANARA BANK</u><br/> <u>Bank Account no.: 87781010014534</u><br/> <u>IFSC Code: CNRB0018778</u><br/> <u>Name of beneficiary: IWAI FUND Jal Marg Vikas</u><br/> <u>Branch name: Sector 18, NOIDA (Morna)</u><br/> <u>Address: Sector 18, NOIDA (Morna) – 201301</u></p> <p>“ The Bank Guarantee issued in paper form shall become operative only when the Bank Guarantee advice transmitted through SFMS is advised to the Beneficiary by the Advising Bank.</p> <p>The details of the Advising Bank are as under:-<br/> Name of the Bank: Canara Bank<br/> Branch Name &amp; Address: Morna Noida, B 16/17, Ground Floor</p> |

|   |   |
|---|---|
|   | <i>Sector-18 , Noida ( 2013010 U.P<br/>IFSC Code: CNRB0018778.</i>  |
| <b>ITB 19.3 (d)</b>                                 | Other types of acceptable securities are: <b><i>Not Applicable</i></b>  |
| <b>ITB 19.8</b>                                     | <b><i>Bid Security shall be in the name of all JV Partners.</i></b>   |
| <b>ITB 20.2</b>                                     | The written confirmation of authorization to sign on behalf of the Bidder shall consist of:<br><br>(a) <i>Legally valid Power of Attorney is required to demonstrate the authority of the signatory to sign the Bid; and</i><br><br>(b) <i>In the case of Bids submitted by an existing or intended JV, if permitted as per ITB 4.1, the authorization shall be evidenced by a Power of Attorney signed by legally authorized signatories of all the members.”]</i> |
| <b>D. Online Submission and Opening of Bids</b>     |   |
| <b>ITB 21.1</b>                                     | Class of DSC required is: <b><i>CLASS – II or above</i></b>   |
| <b>ITB 22.1</b>                                     | Both Technical and Financial Bids shall be uploaded on-line in separate electronic envelopes,<br><br><b>The deadline for uploading the bids</b><br><br>Date 28.03.2023 Time: 1500 hrs. IST or as amended from time to time.   |
| <b>ITB 24.1</b>                                     | Re-submission of the bid is <b><i>“not allowed”</i></b> , if withdrawn.   |
| <b>E. Public Opening of Technical Parts of Bids</b> |   |
| <b>ITB 25.1</b>                                     | <b>The online Bid Opening of Technical Parts of the Bid shall take place on Date: 28.03.2023 Time: <u>1530 hrs. IST</u> or as amended from time to time</b><br><br><i>Vice Chairman &amp; Project Director, Jal Marg Vikas Project<br/>Inland Waterways Authority of India<br/>A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301<br/>Email: <a href="mailto:vc.iwai@nic.in">vc.iwai@nic.in</a></i>  |
| <b>F. Evaluation of Bids – General Provisions</b>   |   |
| <b>ITB 29.3</b>                                     | Deleted   |
| <b>G. Evaluation of Technical Parts of Bids</b>     |   |
| <b>ITB 30.1</b>                                     | The Bids shall be Technically Evaluated, Bidders have to meet the Qualifying requirements as stipulated in the documents under evaluation criteria.   |

|   |  |
|---|--|
| <b>ITB 33.1</b>                                     | At this time the Employer <b><i>“does not intend”</i></b> to execute certain specific parts of the Works by sub-contractors selected in advance.   |
| <b>ITB 33.2</b>                                     | Specialised Subcontractors: Not Applicable   |
| <b>ITB 33.3</b>                                     | <p>(a) Contractor’s proposed subcontracting: Maximum percentage of subcontracting permitted is: <b>25 % of the total contract amount</b></p> <p>(b) Bidders planning to subcontract more than 10% of total volume of work shall specify, in the Bid Submission Form, the activity (ies) or parts of the works to be subcontracted along with complete details of the sub-contractors and their qualification and experience. The qualification and experience of the sub-contractors must meet the minimum criteria for the relevant work to be sub-contracted failing which such sub-contractors will not be permitted to participate.</p> <p>(c) Sub-contractors’ qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria.<br/> <i>[Note: Work should not be split into small parts and sub-contracted].</i></p>   |
| <b>H. Public Opening of Financial Parts of Bids</b> |  |
| <b>ITB 34.2 (c)</b>                                 | <p>Following the completion of the evaluation of the Technical Parts of the Bids, the Employer will notify all Bidders of the date, time, and place of the public opening of Financial Parts.</p> <p>In addition to the above the Employer shall publish a notice of the public opening of the Bid on its website <b><i>www.iwai.nic.in</i></b></p> <p style="text-align: center;"><i>Vice Chairman &amp; Project Director, Jal Marg Vikas Project<br/>Inland Waterways Authority of India<br/>A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301</i></p> <p><i>Email: <a href="mailto:vc.iwai@nic.in">vc.iwai@nic.in</a></i></p> <p>In addition to the above the Employer shall publish a notice of the opening of the Financial Parts of the Bid on its website or GoI Central Public Procurement Portal <a href="https://eprocure.gov.in/cppp">https://eprocure.gov.in/cppp</a></p> <p>or on the Employer’s website with free access if available, or in at least one newspaper of national circulation in the Employer’s Country, or in the official gazette.</p> |
| <b>J. Award of Contract</b>                         |  |
| <b>ITB 45.1 and 45.2</b>                            | <p>The successful Bidder shall also be required to submit an Environmental, Social, Health and Safety (ESHS) Performance Security.</p> <p>Throughout this bidding document the term ‘performance security’, unless the context</p>   |

|                 |  |
|-----------------|--|
|                 | clearly indicates otherwise, means and includes both ‘the performance security and the ESHS performance security’ to be submitted by the successful bidder in the amounts specified in GCC/ PCC 50.  |
| <b>ITB 46.1</b> | “The Adjudicator proposed by the Employer is: Sh S. C. Misra The daily fee payable to Adjudicator is Rs 10,000/-.” <b>The CV is attached at the end of this document.</b>  |
| <b>ITB 47</b>   | <b>New Clause added:</b><br><b>The Tender / Bid related complaints may be submitted / addressed to</b><br><i>Vice Chairman &amp; Project Director ( JMVP)</i><br><i>Inland Waterways Authority of India</i><br><i>Project Director, Jal Marg Vikas Project</i><br><i>A-13, Sector-1, Noida, Gautam Buddha Nagar, UP - 201301</i><br><i>Email: vc.iwai@nic.in</i> |

### Brief Biodata of Dr Suresh Chandra Misra

1. **Name:** MISRA SURESH CHANDRA

**Date of birth:** 12<sup>TH</sup> SEPTEMBER 1948

2. **Profession:** ACADEMIC and RESEARCH

**Present Position:** Retired as Professor from IIT Kharagpur

**Address:**

|                 |  |
|-----------------|--|
| (a) Official NA | (b) Residential<br>Plot no. 1080, Lane no. 7, Aerodrome Area,<br>Bhubaneswar – 751020, Odisha, India |
| Phone: NA       | Phone: +91 9437477180  |
|                 | Email: <a href="mailto:misra1948@gmail.com">misra1948@gmail.com</a>                                  |

### 3. Degrees Obtained

| Degree        | Awards               | University                            | Specialization     | Hall of Residence | Year    |
|---------------|----------------------|---------------------------------------|--------------------|-------------------|---------|
| B.Tech(Hons.) | Silver Medal         | IIT Kharagpur                         | Design             | Patel             | 1965-70 |
| Ph.D          | National Scholarship | University of Newcastle upon Tyne, UK | Naval Architecture |                   | 1973-76 |

### 4. Professional Achievements

| Period From To                    | Position Held                    | Organization/Institution                 | Role  | Remarks   |
|-----------------------------------|----------------------------------|--|---|---|
| 1970 1979                         | Design Engineer                  | Hindustan Shipyard Ltd.                  | Design Engineer   | Sponsored for three years to do Ph.D. in UK (1973-1976)   |
| 1979 1989<br>1990 till retirement | Assistant Professor<br>Professor | IIT Khargapur                            | Teaching, Research and Industrial Consultancy                 | On British council fellowship for 6 months in Glasgow, univ in 1984., later lien to IIT Madras and NSDR/ IMU, Visakhapatnam |
| 1998 2000                         | Visiting Professor (lien)        | IIT Madras                               | Teaching, Research and Industrial Consultancy                 |   |
| 2008 2013                         | Director (on Lien)               | NSDR/ and later IMU Visakhapatnam campus | Administration, Teaching, Research and Industrial Consultancy | NSDR/ was subsumed to Indian Maritime University in 2009 and he was the first Director of IMU Visakhapatnam campus          |

|      |           |   |
|------|-----------|---|
| 2013 | till date | Chairman, Naval Research Board, DRDO (an honorary position);<br>Founder and current President, Forum for River and Ocean Scientists and Technologists (FROST), Odisha, registration no. 24010/33 of 2018-19;<br>Visiting faculty at IMU, Visakhapatnam Campus;<br>Advisor to General Consultants for Kochi Water Metro project under KMRL, Kochi. |
|------|-----------|---|

## 5. Record of Contributions to:

### (a) Intellectual Property

#### (Publications/Design/Developments/Patents etc.)

- “Modularised Ship Hull Form”, Inventors: Prof S C Misra and Prof O P Sha of IIT Kharagpur, patents rights belong to: IIT Kharagpur, Ministry of Shipping of Govt. of India, Department of Science and Technology of Govt. of India, AAGL(Gujarat), BSL Mumbai, GSL Goa, LRS Mumbai, IRS Mumbai, Original Patent application no. 0561/Cal/2002 dt. 25.9.2002, patent no. 214274 awarded on 07/02/2008.
- **Books:**
  - S. C. Misra and P. Misra (Ed.), “2020 Lockdown Effects and Future Trends in Water Body Management”, LAP Publishing, Germany, October 2020.
  - S. C. Misra, “Design Principles of Ships and Marine Structures”, CRC Press of Tylor and Francis Group, USA, December 2015.
  - S.C.Misra and O.P.Sha, editors “Computer-Aided Ship design”, under assistance from CEP Cell of IIT Kharagpur, 1989(contributed as author also).
  - M.R.Pranesh and S.C.Misra, “Environmental Hazards and Safety Requirement in the Port sector”, under assistance from Curriculum Dev. Prog., IITMadras, 2000(contributed as author also).

### (b) Leadership (Entrepreneurship/ Organizational Development)

- *Converting a ship design organisation, National Ship Design and Research Centre, to a part of a central university, Indian Maritime University, Visakhapatnam Campus*
- *Academic leadership as stated below:*
  - *Started a new multidisciplinary Post Graduate Diploma program in Maritime Operation and Management (PGDMOM) exclusively for professional marine engineers which started at IIT Kharagpur in the academic year 2003-2004.*
  - *Started the Naval Architecture and Ocean Engineering degree programs at both UG and PG levels at IMU Visakhapatnam Campus in its first year of creation, 2009.*
  - *Started a PG program in Dredging and Harbour Engineering at IMU, Visakhapatnam campus in 2010 for the first time in the country.*
- *Developing strong research base at IITs, IISc and in other engineering institutions and generating multi-institutional research programs and developing strong connection between teaching institutions and research organisations in the context of naval research through NRB.*
- *Setting up and establishing FROST, Odisha*

### (c) Society

- Invited mentor and speaker of INSPIRE program for development of science interest in school children sponsored by DST at Port Blair Campus of Pondichery University, at IMU Visakhapatnam Campus and at NIT Rourkela during 2012, 2013 and 2015.
- Lectures at schools and colleges in Odisha regarding water awareness.
- Safety of wooden boats moving in rivers and coastal waters for tourism and fishing is a major concern which has been a major concern for me. I have now been involved in modifying an existing wooden boat for higher safety and reduction of pollution. This activity is to continue.

### (d) Any other: More than 50 technical papers published

**Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023**

**6. Peer Recognition (National/International Honours, Awards, Prizes including honorary degree)**

*Awarded National Scholarship for Higher Study Abroad by Government of India in 1973 till 1976.*

Awarded Silver Medal by IIT Kharagpur in 1970 for securing first position in B.Tech (H) course in Naval Architecture.

Awarded Marine Engineering Division Medal, Institution of Engineers (India), 2001.

Awarded Institution Medal (Col. G.N.Bajpai), Institution of Engineers (India), 2001.

H.S.Rao Memorial Award for Best paper, June 04 issue of Marine Engineers Review (India), 2005 given by Institution of Marine Engineers (India).

Rashtriya Gaurav Award presented by India International Friendship Society in 2004.

Best Citizen of India Award and Citation in the book by the same title, published by International Publishing House, New Delhi, 2004.

**7. Membership/Fellowship of National/International Professional Bodies**

*Founder President, Forum for River and Ocean Scientists and Technologists, Odisha*

*Fellow of Institution of Engineers (India)*

*Fellow of Institution of Marine Engineers(India)*

*Life Member of Institution of Marine Technologists, Mumbai*

*Life Member of Indian Society for Technical Education*

*Member of Society of Naval Architects and Marine Engineers, USA.*

Member, Indian technical Committee of Class NK, Nippon Kaiji Kyokai, Japan, 2012 onwards.

Member, Technical Committee of IRS, Mumbai.

Member of PMCC for acquisition of 2 coastal research vessels by NIOT funded by MoES.

**8. Specific outstanding Accomplishments meriting the award (within 100 words):**

(Detailed biography may be provided as an annexure)

Apart from teaching naval Architecture to students, Prof Misra has been involved in design of ships and boats and other water based infrastructure including a 600 TEU container vessel and marine engineering laboratory *Ship in Campus*. His book *Design Principles of Ships and Marine Structures* published by Taylor and Fransis Group has been widely appreciated. After his retirement from active service, apart from being the Chairman of Naval research Board, he has formed a think tank FROST. His current interests include safety and sustainability in boats of inland water transportation, increasing water awareness in Odisha and ancient river and coastal transportation system for building shore based temples.

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***Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023***

|            |  |  |
|------------|--|--|
|            | <b>Section III - Evaluation and Qualification Criteria</b>   |  |
| <b>1</b>   | <b>Technical Part</b>  |  |
| <b>1.1</b> | <b>Adequacy of Technical Proposal</b> <ul style="list-style-type: none"> <li>a. Dredging Methodology</li> <li>b. Environmental, Social, Health and Safety (ESHS) obligation</li> <li>c. Work Program</li> <li>d. Site Organization and Communications Plans</li> <li>e. Sub-Contracting</li> </ul> |  |
| <b>1.2</b> | <b>Multiple Contracts .....Not Applicable</b>  |  |
| <b>1.3</b> | <b>Specialised Sub- Contract .....Not Applicable</b>   |  |
| <b>1.4</b> | <b>Qualification Criteria</b><br><b>Nature of the Bidder</b>   |  |
|            |  |  |
| <b>2</b>   | <b>Qualification</b>   |  |
| <b>2.1</b> | <b>Eligibility</b>   |  |
| <b>2.2</b> | <b>Historical Contract Performance</b>   |  |
| <b>2.3</b> | <b>Financial Situation and performance</b>   |  |
| <b>2.4</b> | <b>Experience</b>  |  |
| <b>2.5</b> | <b>Contractors Representative &amp; Key Persons</b>  |  |
| <b>2.6</b> | <b>Contractors Equipment</b>   |  |
| <b>3</b>   | <b>Financial Part</b>  |  |
|            |  |  |

## 1. Technical Part

### 1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include:

- (i) an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, material sourcing and Quality Control/Assurance in sufficient detail and fully in accordance with the requirements stipulated in Section VII (Works' Requirements).

For this purpose, the Bidder should also submit:

#### A. Dredging Methodology:

- (a) **Statement of Work Methods:** This shall demonstrate the Bidders capability to define, optimize and carry out on a timely basis the physical interventions detailed in the scope of requirements specified in Section VII.
- (b) The work methodology shall include a mobilization and execution plan that details how the bidder will do the work of

***Fairway Maintenance on Quantity Based Dredging of Digha-Majhaua stretch (95km) of National Waterway – 1***

#### B. Environmental, Social, Health and Safety (ESHS) obligation

A detailed note outlining its proposed methodology and program of construction including compliance with the Environmental, Social, Health and Safety (ESHS) obligations

- An outline proposal on how the contractor shall minimize environmental impacts especially to sensitive and critical areas including but not limited to reed lands, mud flats, mangrove forests and migratory bird habitats taking into account:
- The requirement for dredging sediment volumes in shallow waterways; placing dredged materials in-stream; and, early detection and quantification of hazardous sediment and its removal; and any hazardous sediment if found during the dredging shall be removed by the bidder at no extra cost.
- The requirement to minimize noise, water and air pollution from its own operations.
- An outline Quality Assurance Plan; and
- A Health and Safety Plan specific to the proposed works

#### C. Work Program:

***Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023***

A Work Program compiled on a project management software (like MS Project, Primavera or similar) which must clearly show the major project works proposed and the corresponding timeline with the following characteristics:

- i. Show work stages (Mobilization, Survey, Dredging , Maintenance services, and Demobilization, etc.) and BOQ Items with the corresponding timeline;
- ii. Show the leading, lagging and critical activities, with linkages to related activities, milestones, key personnel in charge, etc.;
- iii. Resources (equipment, material, personnel, etc.) plan to achieve the Work Program.

**D. Site Organization and Communications Plans:** that clearly provide:

- i. An overall organization chart showing the division between site offices and head office responsibilities;
- ii. A site organization chart clearly showing responsibilities and functions of key personnel. The person in-charge and the second in command for each location and their responsibilities;
- iii. The proposed layout of the Contractor's facilities and equipment, including offices and accommodation units based on the proposed sites and waterways routes;
- iv. Internal Communications Plan within the Contractor's organization and between its home office and the site offices;
- v. External Communication Plan between the Contractor, the Project Manager/Supervision & Performance Monitoring Consultant, Related Stakeholders, Users, and Employer;
- vi. Navigational protocol to assure free passage for ships during dredging or other works.

**E. Sub-contracting**

an assessment of the details of subcontracting elements of works amounting to more than 10% of the bid price; for each element proposed to be sub contracted furnish details whether the identified Sub-contractor possesses the required qualifications and experiences to execute that element satisfactorily.

*[Work should not be split into small parts and sub-contracted].*

**1.2 Multiple Contracts if permitted under ITB 35.3, - Not Applicable**

**1.3 Specialised Subcontractors - Not Applicable.**

**1.4 Qualification Criteria**

Pursuant to ITB 32.1, the Employer shall assess each Bid against the following Qualification Criteria. Requirements not included in the text below shall not be used in the evaluation of the Bidder's qualifications.

In case a contractor while working on an IWAI contract, applies for another similar contract to be executed by IWAI, then to check whether the contractor meets the qualification criteria for the new contract, IWAI will calculate the bid capacity of the bidder as per the formula mentioned at 2.4.2 (d)

| Factor   |   |               |                                      |              |            |   |
|--|---|---------------|--------------------------------------|--------------|------------|---|
| Sub-Factor   | Requirement   | Criteria      |                                      |              |            | Documentation Submission Requirements   |
|  |   | Single Entity | Bidder                               |              |            |   |
|  |   |               | Joint Venture (existing or intended) |              |            |   |
|  |   |               | All partners combined                | Each partner | One Member |   |
| 1.0 Nature of Bidder   | Bidder to indicate whether they are presenting a Single Entity bid Or Joint Venture Bid Or Intend to Sub Contract on Later date |               |                                      |              |            | In the event of Sub-contracting, the details of the Sub-contractor likely to be deployed be identified in the proposal.<br><br>Details & Profile of Sub-contracting firms |
| <ul style="list-style-type: none"><li>The leader should maintain at least 51% share in the JV at all the time during the period of contract</li><li>The Technical Member of the JV should meet at least 25% of the financial requirement</li></ul> |   |               |                                      |              |            |   |

## 2. Qualification

| Eligibility and Qualification Criteria |         |             | Compliance Requirements |                               |             |            | Documentation           |
|--|---------|-------------|-------------------------|-------------------------------|-------------|------------|-------------------------|
| No.                                    | Subject | Requirement | Single Entity           | Joint Venture where permitted |             |            | Submission Requirements |
|  |         |             |                         | All Parties Combined          | Each Member | One Member |                         |

### 2.1 Eligibility

|       |  |   |                       |   |                       |       |  |
|-------|--|---|-----------------------|---|-----------------------|-------|--|
| 2.1.1 | <b>Nationality</b>   | Nationality in accordance with ITB Sub-Clause 4.3.  | Must meet requirement | Existing or intended JV must meet requirement | Must meet requirement | N / A | Forms ELI – 1.1 and ELI-1.2 With attachments |
| 2.1.2 | <b>Conflict of Interest</b>                                | No conflicts of interest in accordance with ITB Sub-Clause 4.2.   | Must meet requirement | Existing or intended JV must meet requirement | Must meet requirement | N / A | Letter of Bid                                |
| 2.1.3 | <b>Bank eligibility</b>                                    | Not having been declared ineligible by the Bank, as described in ITB Sub-Clause 4.4.& 4.7.  | Must meet requirement | Existing JV must meet requirement             | Must meet requirement | N / A | Letter of Bid                                |
| 2.1.4 | <b>Government Owned Entity</b>                             | Bidder to meet conditions of ITB Sub-Clause 4.5. The entity should not be a dependent agency of the borrower or sub-borrower or Employer.   | Must meet requirement | Must meet requirement                         | Must meet requirement | N / A | Forms ELI - 1.1 and 1.2 with attachments     |
| 2.1.5 | <b>United Nations resolution or Borrower's country law</b> | Not having been excluded as a result of prohibition in the Borrower's country laws or official regulations against commercial relations with the Bidder's country, or by an act of compliance with UN Security Council resolution, both in accordance with ITB 4.7 and Section V. | Must meet requirement | Must meet requirement                         | Must meet requirement | N / A | Forms ELI - 1.1 and 1.2 with attachments     |

### 2.2 Historical Contract Non-Performance

| Eligibility and Qualification Criteria |  |   | Compliance Requirements   |   |   |            | Documentation           |
|--|--|---|---|---|---|------------|-------------------------|
| No.                                    | Subject  | Requirement   | Single Entity   | Joint Venture where permitted                                       |   |            | Submission Requirements |
|  |  |   |   | All Parties Combined  | Each Member   | One Member |                         |
| 2.2.1                                  | <b>History of Non-Performing Contracts</b>                         | Non-performance of a contract <sup>2</sup> did not occur as contractor since 1 January 2015, Note:  | Must meet requirement by itself or as member to past or existing JV | Must meet the requirement   | Must meet requirement by itself or as member to past or existing JV | N / A      | Form CON - 2            |
| 2.2.2                                  | <b>Suspension due to withdrawal of the Bid within Bid validity</b> | Not under suspension based on execution of a Bid Securing Declaration pursuant to ITB 4.6 or withdrawal of the Bid pursuant ITB 19.9.   | Must meet requirement   | Must meet requirement   | Must meet requirement   | N/A        | Letter of Bid           |
| 2.2.3                                  | <b>Pending Litigation</b>  | Bidder's financial position and prospective long term profitability sound according to criteria established in 2.3.1 below and assuming that all pending litigation will be resolved against the Bidder | Must meet requirement   | Must meet requirement by itself or as member to past or existing JV | Must meet requirement by itself or as member to past or existing JV | N/A        | Form CON - 2            |
| 2.2.4                                  | <b>Litigation History</b>  | No consistent history of court/arbitral award decisions against the Bidder <sup>3</sup> since 1 <sup>st</sup> January 2015  | Must meet requirement   | Must meet requirement   | Must meet requirement by itself or as member to                     | N/A        | Form CON - 2            |

<sup>2</sup> Non-performance, as decided by the Employer, shall include all contracts where (a) non-performance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Non-performance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Non-performance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

<sup>3</sup> The Bidder shall provide accurate information on the letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of court/arbitral awards against the Bidder or any member of a joint venture may result in disqualifying the Bidder.

| Eligibility and Qualification Criteria |   |  | Compliance Requirements   |                               |  |               | Docu<br>ment<br>ation                   |
|--|---|--|---|-------------------------------|--|---------------|---|
| No.                                    | Subject   | Requirement  | Single Entity   | Joint Venture where permitted |  |               | Submissio<br>n<br>Requirem<br>ents      |
|  |   |  |   | All Parties<br>Combined       | Each<br>Member   | One<br>Member |   |
|  |   |  |   |                               | past or<br>existing JV   |               |   |
| 2.2.5                                  | <b>Declaration:<br/>Environmental,<br/>Social, Health, and<br/>Safety (ESHS) past<br/>performance</b> | Declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social, (including sexual exploitation and abuse (SEA) and gender based violence (GBV)), or health or safety requirements or safeguard in the past five years <sup>4</sup> (ending 2021-22) | Must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration. | N/A                           | Each must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration. | N/A           | Form CON-3 ESHS Performance Declaration |

<sup>4</sup>The Employer may use this information to seek further information or clarifications in carrying out its due diligence.

| Qualification Criteria |         |             | Compliance Requirements |                               |             | Documentation           |
|------------------------|---------|-------------|-------------------------|-------------------------------|-------------|-------------------------|
| No.                    | Subject | Requirement | Single Entity           | Joint Venture where permitted |             | Submission Requirements |
|                        |         |             |                         | All Parties Combined          | Each Member | One Member              |

### 2.3 Financial Situation and Performance

|       |                               |   |                       |                            |  |  |                                  |
|-------|-------------------------------|---|-----------------------|----------------------------|--|--|----------------------------------|
| 2.3.1 | <b>Financial Capabilities</b> | (a) The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the <b>construction cash flow requirements estimated as INR 7.86 Crores Seven Crore &amp; Eighty six Lac only) (about 6 six months cash flow at peak dredging / construction period)</b> for the subject contract(s) net of the Bidders other commitments | Must meet requirement | Must meet requirement      | (a) Must meet at least 25% of the requirement as a minimum | (a) Must meet at least 50% of the requirement as a minimum | Form FIN – 3.1, with attachments |
|       |                               | (b) The Bidder shall also demonstrate, to the satisfaction of the Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments   | Must meet requirement | must meet the requirement. | N / A  | N/A  | Form FIN – 3.1, with attachments |

**Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023**

| Qualification Criteria |                         |  | Compliance Requirements |                               |  |  | Documentation                    |
|------------------------|-------------------------|--|-------------------------|-------------------------------|--|--|----------------------------------|
| No.                    | Subject                 | Requirement  | Single Entity           | Joint Venture where permitted |  |  | Submission Requirements          |
|                        |                         |  |                         | All Parties Combined          | Each Member  | One Member                                       |                                  |
|                        |                         |  |                         |                               |  |  |                                  |
|                        |                         | (c) The audited balance sheets or, if not required by the laws of the Bidder’s country, other financial statements acceptable to the Employer, for the last 5 years (ending FY 2020-21) shall be submitted and must demonstrate the current soundness of the Bidder’s financial position and indicate its prospective long-term profitability. | Must meet requirement   | N/A                           | must meet the requirement                              | N/A  | Form FIN – 3.1, with attachments |
| 2.3.2                  | Annual Average Turnover | Minimum average annual turnover of INR 17.7068 Crs ( Seventeen Crores seventy lacs & sixty eight thousand), calculated as total certified payments received for contracts in progress and/or completed within the last five financial years, divided by five years. ending 31 <sup>st</sup> march 2021-22                                      | Must meet requirement   | Must meet requirement         | Must meet twenty five percent (25%) of the requirement | Must meet fifty percent (50%) of the requirement | Form FIN - 3.2                   |

| Qualification Criteria |         |             | Compliance Requirements |                               |             | Documentation |                         |
|------------------------|---------|-------------|-------------------------|-------------------------------|-------------|---------------|-------------------------|
| No.                    | Subject | Requirement | Single Entity           | Joint Venture where permitted |             |               | Submission Requirements |
|                        |         |             |                         | All Parties Combined          | Each Member | One Member    |                         |

## 2.4 Experience

|       |                                    |   |                       |                       |  |     |                |
|-------|------------------------------------|---|-----------------------|-----------------------|--|-----|----------------|
| 2.4.1 | <b>General Dredging Experience</b> | <p>Experience under construction contracts for similar works such as those pertaining to <b>General Dredging Experience in Ports / River / Lakes/ Canals/ Water Bodies / River Management of Vessel, Manning of Vessel or Vessel related Marine Works</b></p> <p>a. River Dredging and management of dredging materials.</p> <p>b. Dredged material used in reclamation of port / harbour will also be considered.</p> <p>in the role of contractor, JV member, sub-contractor, or management contractor for at least the last seven [7] years ending last day of month previous to the one in which this tender is invited</p> | Must meet requirement | Must meet requirement | (a) Must meet at least 50% of the requirement as a minimum | N/A | Form EXP – 4.1 |
|-------|------------------------------------|---|-----------------------|-----------------------|--|-----|----------------|

| Qualification Criteria |                                     |   | Compliance Requirements |                               |   |  | Documentation   |
|------------------------|-------------------------------------|---|-------------------------|-------------------------------|---|--|---|
| No.                    | Subject                             | Requirement   | Single Entity           | Joint Venture where permitted |   |  | Submission Requirements   |
|                        |                                     |   |                         | All Parties Combined          | Each Member   | One Member   |   |
| 2.4.2 (a)              | <b>Specific Dredging Experience</b> | <p>Bidder should have successfully completed as a prime contractor, JV member<sup>5</sup>, management contractor or sub-contractor, minimum</p> <p>a) Three similar works each costing not less than INR 7,86,97,216.00 or Dredged Quantity of 2,17,600.00 cum</p> <p>b) Two similar works each costing not less than INR 9,83,71,520.00 or Dredged Quantity of 2,72,000.00 cum</p> <p>c) One similar work costing not less than INR 15,73,94,432.00 Or Dredged Quantity of 4,35,200.00 cum</p> <p>For the purpose of completed works, The value of the</p> | Must meet requirement   | Must meet requirement         | Must meet requirement for one contract of 25% value | Must meet requirement for one contract of 50% in value | Form EXP 4.2(a). The contractor should have borne responsibility for execution of works to the extent he claims experience. A contractor should not claim experience for the works he has never executed. |

<sup>5</sup> For contracts under which the Bidder participated as a joint venture member or sub-contractor, only the Bidderr's share, by value, shall be considered to meet this requirement

| Qualification Criteria |   |  | Compliance Requirements |                               |                                     |                                     | Documentation           |
|------------------------|---|--|-------------------------|-------------------------------|-------------------------------------|-------------------------------------|-------------------------|
| No.                    | Subject   | Requirement  | Single Entity           | Joint Venture where permitted |                                     |                                     | Submission Requirements |
|                        |   |  |                         | All Parties Combined          | Each Member                         | One Member                          |                         |
|                        |   | completed contract for similar works should not be less than 80% of the contract value.<br>A certificate for ongoing works from the employer stating the Value <sup>6</sup> of the work & 80 % completion has been achieved shall be considered as completed and certificate of employer in this regard stating percentage of completion shall be submitted. |                         |                               |                                     |                                     |                         |
| 2.4.2 (b)              | <p><b>The value of the similar work where 80% of contract value is paid will be considered for evaluation purposes as Complete.</b></p> <p><i>In the case of JV, the value of contracts completed by its members shall not be aggregated to determine whether the requirement of the minimum value of a single contract has been met. Instead, each contract performed by each member shall satisfy the minimum value of a single contract as required for single entity. In determining whether the JV meets the requirement of total number of contracts, only the number of contracts completed by all members each of value equal or more than the minimum value required shall be aggregated</i></p> |  |                         |                               |                                     |                                     |                         |
| 2.4.2 (c)              | <b>Specific Experience in managing ES aspects</b>   | For the contracts in 2.4.2 (a) above and/or any other contracts [substantially completed and under   | Must meet requirements  | Must meet requirement         | Must meet the following requirement | Must meet the following requirement | Form EXP – 4.2 (c)      |

<sup>6</sup> At FY 2021-22 price level. Cost of completed works of previous years shall be given weightage @5% per year based on rupees value to bring them to the price level of the financial year in which bids are received.

| Qualification Criteria |   |  | Compliance Requirements |                               |  | Documentation   |                         |
|------------------------|---|--|-------------------------|-------------------------------|--|---|-------------------------|
| No.                    | Subject   | Requirement  | Single Entity           | Joint Venture where permitted |  |   | Submission Requirements |
|                        |   |  |                         | All Parties Combined          | Each Member  | One Member  |                         |
|                        |   | implementation] as prime contractor, joint venture member, or Subcontractor between 1st January [insert year] and Application submission deadline, experience in managing ES risks and impacts in the following aspects: [Based on the ES assessment, specify, as appropriate, specific experience requirements to manage ES aspects.] |                         |                               | s: [list key requirements to be met by each member otherwise state: "N/A"] | s: [list key requirements to be met by one member otherwise state: "N/A"] |                         |
| 2.4.2 d                | Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity for construction work is equal to or more than the total bid value of the work. The available bid capacity will be calculated as under:<br>Assessed Available bid capacity <sup>7</sup> = (A*N*1.5-B)<br>Where,<br>A = Maximum value of civil engineering works executed in any one year during the last five years (updated to the price level of the financial year 31 March2022 (end of Gol’s Financial Year) ..... at the rate of 5% per year), taking into account the completed as well as works in progress).<br>N = Number of years prescribed for completion of the works for which bids are invited (period up to 6 months to be |  |                         |                               |  |   |                         |

<sup>7</sup> During technical evaluation, the available bid capacity will be calculated and compared with the estimated cost. After opening of the Financial bids (Part – II) and during the financial evaluation, the bid capacity will be further validated with discovered price.

| Qualification Criteria |   |             | Compliance Requirements |                               |             | Documentation |                         |
|------------------------|---|-------------|-------------------------|-------------------------------|-------------|---------------|-------------------------|
| No.                    | Subject   | Requirement | Single Entity           | Joint Venture where permitted |             |               | Submission Requirements |
|                        |   |             |                         | All Parties Combined          | Each Member | One Member    |                         |
|                        | <i>taken as half-year and more than 6 months as one year).</i><br><i>B = Value, at the current price level, of existing commitments on on-going works to be completed during the period of completion of the works for which bids are invited.</i><br><i>Note: the statements in Section IV showing the value of existing commitments of on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer in charge, not below the rank of an Executive Engineer or equivalent.</i> |             |                         |                               |             |               |                         |

| Qualification Criteria  |   | Compliance Requirements |                               |             |                       | Documentation                                |
|---|---|-------------------------|-------------------------------|-------------|-----------------------|--|
|   |   |                         | Joint Venture where permitted |             |                       |  |
| Subject   | Requirement   | Single Entity           | All Parties Combined          | Each Member | One Member            | Submission Requirements                      |
| <b>2.4.3 Quality Requirements</b>   |   |                         |                               |             |                       |  |
| <b>2.4.3 (a)</b><br><b>ISO 9001-2008/2015</b><br><b>quality Management</b><br><b>system requirement</b>                 | Valid - Quality Management Certificate issued by the International Organization for Standardization         | Must meet requirement   | Must meet requirement         | N/A         | Must meet requirement | Valid ISO 9001 Certification. Form EXP – 5.0 |
| <b>2.4.3 (b)</b><br><b>OHSAS 18001 -</b><br><b>Occupational Health</b><br><b>and Safety</b><br><b>Assessment Series</b> | Valid - Relevant OHSAS certificate and Experience in occupational health and safety management              | Must meet requirement   | Must meet requirement         | N/A         | Must meet requirement | Valid OHSAS certificate.                     |
| <b>2.4.3 (c)</b><br><b>ISO 14001: 2004 / 2015</b><br><b>Environmental</b><br><b>Management systems</b>                  | Valid - Relevant Environmental management certificate and experience with environmental management systems. | Must meet requirement   | Must meet requirement         | N/A         | Must meet requirement | Valid ISO 14001:2004/2015 certificate.       |



### 2.5 Contractors Representative & Key personnel

The Bidder must demonstrate that it will have a suitably qualified ( and in adequate numbers) minimum key personnel, as described in the table below, that are required to perform the contract.

The Bidder shall provide details for the key personnel and such other Key Personnel that the Bidder considers appropriate, together with their academic qualifications and work experience.

The Bidder shall complete the relevant Forms in Section IV, Bidding Forms.

The Contractor shall require the Employer's consent to substitute or replace the Key Personnel.

| Item No. | Position/specialization required for each lot | Relevant academic qualifications   | Minimum years of relevant work experience | MUST meet requirement   |
|----------|---|--|---|---|
| 1        | Contract Manager                              | Contract/Project Manager shall have a bachelor's degree in civil/mechanical engineering and an experience of minimum 10 years', out of which at least 7 years shall be in managing projects of similar nature. Personnel must have experience in executing dredging projects.<br>The desirable age of the personnel as on the date of bid submission shall not be more than 50 years,<br>However, if the personnel above 50 years is proposed, then the specific health fitness certificate shall be submitted with the bid. | 7   | Bidder to provide the details of the manpower at the time of Bid Submission |
| 2        | Surveyor                                      | Diploma in Civil Engineering / Surveying with 3 years experience in Hydrographic Survey or Survey Recorder I/II in Hydrographic Survey   | 3   |   |
| 3        | Crew  | Must have inland vessel certification  |   |   |
| 4        | Details of the Sub- Contracting agencies.     |  |   |   |
|          |   | Suitable experts in the following specializations  |   |   |
| 5        | Dredger Master                                | Dredging experience in River/Canal/Port  | 7   | Desirable at the time of Bid Submission                                     |
| 6        | Social Expert                                 | Graduate or equivalent in social sciences  | 3   |   |
| 7        | Environment Expert                            | Graduate in Environmental Engineering/ Environmental Sciences  | 3   |   |
| 8        | Health & Safety Expert                        | Graduate in Engineering/ Sciences and must have Diploma / Certification in health and safety   | 3   |   |

The Bidder must not have in his employment:

[i]the near relations (defined as first blood relations, and their spouses, of the bidder or the bidder's spouse) of persons of the following Government Departments. All organization entities / agencies under Ministry of Shipping ( Sagarmala) Without Government permission, any person who retired as Gazetted officer within the last two years.

| 2.5 Contractors Representative & Key personnel   |   |   |
|--|---|---|
| <b>2.6.0 Equipment – The Bidder must demonstrate that it has the Key equipment listed hereafter</b>  |   |   |
| Equipment  | Equipment Type & Characteristics Minimum Capacity   | <p>The details of these equipment shall be submitted at the <b>TIME OF BIDDING along with the technical details for Evaluation of the bids</b></p> <p>These equipment must be either owned or hired* or to be procured by the bidder and by member of JV</p> <p>(In case of JV)</p> |
| 6.1 Dredger  | <p><b>Dredger - Minimum of Two (2) nos. of Cutter Suction Dredgers</b> having capacity of dredging minimum of 250 -650 cum of solids per hour with suitable discharge pipes.</p> <p>River worthiness certificate to be provided at the time of Bid Submission, from the certifying authority.</p> |   |
| 6.2 Survey Vessel  | <p><b>Survey Vessel. 1 no.</b> should be Equipped with Multi beam eco-sounder, Altimeter for facilitating the measurement of Depth &amp; Width of the Channel</p> <p>River worthiness certificate to be provided at the time of Bid Submission, from the certifying authority</p>                 |   |
| 6.3 Tug Boats  | <p><b>Tug Boats</b> - Having suitable capacity of Main Engine for pulling the Dredgers and allied equipment / floating boats / pipelines etc. River worthiness certificate to be provided before deployment at the Dredging Site from the certifying authority.</p>                               | Desirable at the time of bidding  |
| 6.4 Discharge Pipes  | <b>Should have at least 1 Km of discharge pipes</b>   |   |
| 6.5 Accommodation Boats  | <p><b>Accommodation Boats.</b> To accommodate Operational staff</p> <p>River worthiness certificate to be provided before deployment at the Dredging Site by the certifying authority</p>   |   |
| 6.6 Details of Equipments  | To be hired with the details of the Equipment as per format   | <b>As per format at Form EXP – 6.6</b>  |
| <p>Note: Bidders to Note:</p> <p>The documentary evidence to be submitted by the Bidders for the proposed Dredgers &amp; other Equipments to be deployed should indicate the Name , Capacity with Registration where ever applicable , Rated Capacity ; Technical Details , year of Manufacture; Survey Certificates ; Details of Previous Dry Dock; River Worthiness Certificate from certifying authority. As per Format Attached</p> <ul style="list-style-type: none"> <li>The Bidders to ensure that fitness certificate of the equipments like Dredgers &amp; Survey Vessels should be duly certified by an authorized certifying agency at the time of Bidding.</li> <li>Successful Contractor shall to produce the fitness certificate of the equipments like Tug Boats, Accommodation Boat duly certified by an authorized certifying agency at the time of Bidding.</li> </ul> |   |   |
| <ul style="list-style-type: none"> <li>In case the dredgers are leased or hired, a proper lease agreement on Stamp paper shall be submitted along with the Bid stating that the proposed dredgers ( along with the details ) shall be available to the bidders for immediate deployment on the Award of the Work.</li> <li>The Bidder shall provide Scanned copy of the details of dredgers, Tools, Plants, equipment and machinery/ workshop facilities and its planning schedule using Form EQU in Section IV, Bidding Forms. However, the actual deployment of equipment shall be as per site requirement.</li> <li>The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV</li> </ul>  |   |   |

### 3. Financial Part

|   |  |                |
|---|--|----------------|
| 1 | Margin of Preference   | Not Applicable |
| 2 | DELETED  |                |
| 3 | Alternative Completion Times (ITB 13.2)  | Not Applicable |
| 4 | Alternative Technical Solutions Financial Part for specified parts of the Works (ITB 13.4) | Not Applicable |
| 5 | Other criteria (if permitted under ITB 35.1(f))  | Not Applicable |

#### 3.1 Multiple Contracts if permitted under ITB 35.3, will be evaluated as under.

##### Not Permitted /not applicable

If works are grouped in multiple contracts pursuant to Sub-Clause 35.3 of the Instructions to Bidders, the Employer will evaluate and compare Bids on the basis of a contract, or a combination of contracts, or as a total of contracts in order to arrive at the least cost combination for the Employer by taking into account discounts offered by Bidders in case of award of multiple contracts, subject to the selected Bidder(s) meeting the required qualification criteria for lot or combination of lots as the case may be.

#### 3.2 Other Criteria (if permitted under ITB 35.1 (f) – Not Applicable

In addition to the criteria listed in ITB 35.1 (a) – (e) the following criteria shall apply:

determining aggregate of the Net Present Value (NPV) of

Two years (for 2nd & 3rd Year of maintenance period) prices for Services quoted in the Priced Activity Schedule, by discounting these prices to the Date of Commencement of Services, *assuming only for purpose of the evaluation* that the prices are payable at the end of the respective years. For the purpose of determining NPV, discount factor of 10 % per annum shall be applied.

## Section IV - Bidding Forms

| Section IV. Bidding Forms |   |                           |  |
|---------------------------|---|---------------------------|--|
| Table of Forms            |   |                           |  |
| <b>1</b>                  | <b>Bid Submission Form / letter of Bid &amp; Technical Proposal Form</b><br>The bidder's Technical Proposal shall include the following elements:<br>SCHEDULE B.....Site Organizations<br>SCHEDULE C.....Method statement / Dredging Management Plan<br>SCHEDULE D.....Mobilization Schedule.<br>SCHEDULE E.....Contractor's Equipment<br>SCHEDULE F.....Key Personnel Proposed<br>SCHEDULE G.....Subcontractors& JV details<br>SCHEDULE H.....ESHS Management Strategies and Implementation Plans<br>SCHEDULE I.....Code of Conduct (ESHS) |                           |  |
|                           | format  | reference                 | Content  |
| 1.1                       | Form ELI-1.1 & 1.3  | Section-III QR 1          | Bidder's Information Form with attachments                                     |
| 1.2                       | Form ELI-1.2 & 1.3  | Section-III QR 1.1 to 1.4 | Bidder's JV Information Form with attachment                                   |
| 1.3                       | Form CON-2  | Section-III QR 2.1 -2.2   | Historical Contract Non-performance, pending litigation and Litigation history |
| 1.4                       | Form FIN-3.1  | Section-III QR 2.3        | Financial Situation and Performance  |
| 1.5                       | Form EXP-4.1  | Section-III QR 2.4        | General Dredging Experience  |
| 1.6                       | Form EXP-4.2(a)   |                           | Specific Dredging and Contract Management Experience                           |
| 1.7                       | Form EXP-4.2(b)   |                           | Specific Dredging Experience of Key Activities                                 |
| 1.8                       | Form Exp 5.0  | Section-III QR 2.5        | Quality Requirements   |
| 1.9                       | Schedule-C  | Section-III QR 6.9        | Details of the proposed Sub-Contractors  |
| 1.10                      | Schedule- E   | Section-III QR 6.4        | Detailed Dredging Management Plan – Approach & Methodology                     |
| 1.11                      | Schedule D  | Section-III QR 2.6        | Major Equipment's available with bidder  |
| 1.12                      | Schedule-F  | Section-III QR 2.7        | Detailed Manpower deployment plan of the Main Bidder with CV                   |
| 2                         | ESHS Management Strategies and Implementation Plans<br>Code of Conduct: Environmental, Social, Health and Safety (ESHS)<br>CON – 3 Environmental, Social, Health, and Safety Performance Declaration  |                           |  |
| 3                         | Under Taking towards ITC – Input Tax Credit in GST ( as per Clause GCC67.14 of PCC)   |                           |  |
| 4                         | Bid Securing Declaration ( Format )   |                           |  |
| 5                         | Format for the Affidavit  |                           |  |
| <b>6</b>                  | <b>Letter of Bid – Finance Pat ( Bid Price Form )</b>   |                           |  |

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*Tender Document for Digha-Majhaua (95 km)*  
*On Qty Based Dredging Contract*  
**27.02.2023**

## Letter of Bid – Technical Part

*The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and address.*

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

NCB No.: \_\_\_\_\_

Invitation for Bid No.: \_\_\_\_\_

To: ***(Insert name of the Employer)***

***Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1***

We, the undersigned, hereby submit our bid, in two parts, namely:

- (a) the Technical Part, and
- (b) the Financial Part

In submitting our Bid, we make the following declarations:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB8);
- (b) We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration or Proposal-Securing Declaration in the Employer's Country in accordance with ITB 4.6;
- (d) We offer to execute in conformity with the Bidding Documents the following Works: ***— Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1***
- (e) Our bid shall be valid for a period of 120 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) We accept the appointment of .....***[insert name proposed in Bid Data Sheet]*** as the Adjudicator or]

We do not accept the appoint of .....***[insert name proposed in Bid Data Sheet]*** as the Adjudicator, and propose instead that ***[insert name]*** be appointed as Adjudicator, whose daily fees and biographical data are attached;

***Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023***

- (g) If our bid is accepted, we commit to obtain a performance security [*and an Environmental, Social, Health and Safety (ESHS) Performance Security, Delete if not applicable*] in accordance with the Bidding Document;
- (h) We are not participating, as a Bidder, in more than one bid in this bidding process in accordance with ITB 4.2,
- (i) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by the Bank, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council(ITB 4.7);
- (j) We are not a government owned entity / We are a government owned entity but meet the requirements of ITB 4.5<sup>8</sup>;
- (k) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption.
- (l) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (m) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive; and
- (n) If awarded the contract, the person named below shall act as Contractor's Representative

Name of the Bidder\* *[insert complete name of person signing the Bid]*

Name of the person duly authorized to sign the Bid on behalf of the Bidder\*\* *[insert complete name of person duly authorized to sign the Bid]*

Title of the person signing the Bid *[insert complete title of the person signing the Bid]*

Signature of the person named above *[insert signature of person whose name and capacity are shown above]*

Date signed *[insert date of signing]* day of *[insert month]*, *[insert year]*

\*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

\*\* : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

<sup>8</sup>Use one of the two options as appropriate.

## Technical Proposal

Technical Proposal shall include the following elements

- Schedule – B ➔ Site Organization
- Schedule – C ➔ Method Statement / Dredging Management Plan
- Schedule – D ➔ Mobilization Schedule
- Schedule – E ➔ Contractors equipment
- Schedule – F ➔ Personnel
- Schedule – G ➔ Subcontractors & JV details
- Schedule – H ➔ Environmental, Social, Health, and Safety Management (ESHS) Strategies and Implementation Plans
- Schedule – I ➔ Code of Conduct (ESHS)
  
- Appendix to the Technical Parts
  - Form ELI-1.1 & 1.3
  - Form ELI-1.2 & 1.3
  - Form CON-2
  - Form FIN-3.1
  - Form EXP-4.1
  - Form EXP-4.2(a)
  - Form EXP-4.2(b)
  - Form Exp 5.0
  
- ➔ *Form of Bid Securing Declaration*
  
- Letter of Bid ... Financial Part
  - ➔ Appendix to Financial Part – BOQ
  - ➔ Financial Bid – BOQ on line submission Schedule
  - ➔ Schedule of Sub-contractors
  - ➔ Schedule of Adjustment data.
  
- Sub-contracting elements or works which in aggregate adds to more than 10% of Bid price (*for each the qualifications and experiences on the identified subcontractor in the relevant field should be given.*)
  
- *Note: Work should not be split into small parts and sub-contracted; but sub-contracting specialized elements of works is acceptable.*

**Appendix to Technical Part ... Schedule – B**  
**Technical Proposal – Site Organization**

*[Insert Site Organization information]*

**Site Organization**

Bidders shall give below full particulars of the organisation they propose to establish, direct, and administer the performance of the Contract. In particular, bidders shall indicate the location of site camps and the resources they intend to allocate to Self Control Units for planning and monitoring purposes.

- 1. SITE ORGANIZATION CHART**
- 2. NARRATIVE DESCRIPTION OF SITE ORGANISATION CHART**

Site Organization and Communications Plans: that clearly provide:

- i. An overall organization chart;
- ii. A site organization chart;
- iii. Preliminary layout of the Contractor's facilities and equipments;
- iv. Internal Communications Plan;
- v. External Communication Plan; and
- vi. Navigational protocol to assure free passage for ships during dredging or other works.

## Appendix to Technical Part ... Schedule – C

### Technical Proposal – Dredging Methodology &

### Method Statement / Dredging Management Plan

#### (a) Contractor's Statement of Work Methods

To demonstrate a clear understanding of the requirements of the Contract, Bidders shall provide in the form of a narrative descriptions, sketches and drawings, how the works shall be undertaken.

The Statement of Work Methods shall demonstrate the Bidders capability to define, optimize and carry out on a timely basis the physical interventions detailed in the scope of requirements specified in Section VI.

The Statement of Work Methods shall include a mobilization and execution plan that details how the bidder will, on waterway stretch, carry out on a timely basis the following:

***Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – I***

- i. An outline proposal on how the Contractor shall minimize environmental impacts especially to sensitive and critical areas including but not limited to reed lands, mud flats, mangrove forests and migratory bird habitats taking into account:
  - The requirement for dredging sediment volumes in shallow waterways; placing dredged materials in-stream or in-river; and, early detection and quantification of hazardous sediment and its removal; and,
  - The requirement to minimize noise, water and air pollution from its own operations.
- ii. An outline Quality Assurance Plan; and,
- iii. A Health and Safety Plan specific to the proposed works.

*[insert method Statement – A detailed note should be submitted outlining bidders proposed methodology and program of construction including Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHS-MSIP), backed with equipment, materials and manpower planning and deployment, duly supported with broad calculations and quality control system/assurance procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated review of completion as per mile stones]*

## Appendix to Technical Part .... Schedule – D

### Technical Proposal – Mobilization Schedule

*[Insert Mobilization Schedule]*

In accordance with the Particular Conditions, Sub-Clause 16.2, the Contractor shall not carry out mobilization to Site unless the Project manager gives consent that appropriate measures are in place to address environmental and social risks and impacts, which at a minimum shall include applying the Management Strategies and Implementation Plans (MSIPs) and Code of Conduct for Contractor's Personnel, submitted as part of the Bid and agreed as part of the Contract.

\*\*\*\*\*

## Appendix to Technical Part

### Technical Proposal – Construction Schedule: : Schedule E

#### Technical Proposal – Contractor's Equipment

*[The construction schedule shall include the following key milestone - No-objection to the Contractor's MSIPs, which collectively form the C-ESMP, in accordance with the Particular Conditions of Contract Sub-Clause 16.2.]*

The bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III (Evaluation and Qualification Criteria). The Bidder shall provide all the information requested below.

| S. No. | Item of Equipment Description | Make | Capacity | Age (years) | Condition | No. available and present location | Owned | Leased | Purchased on |
|--------|-------------------------------|------|----------|-------------|-----------|------------------------------------|-------|--------|--------------|
|        |                               |      |          |             |           |                                    |       |        |              |
|        |                               |      |          |             |           |                                    |       |        |              |
|        |                               |      |          |             |           |                                    |       |        |              |
|        |                               |      |          |             |           |                                    |       |        |              |

## Appendix to Technical Part ..schedule -H

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

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## **ES Management Strategies and Implementation Plans**

### **(ES-MSIP)**

The Bidder shall submit comprehensive and concise Environmental and Social Management Strategies and Implementation Plans (ES-MSIP) as required by ITB 11.2 (j) of the Bid Data Sheet. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

In developing these strategies and plans, the Bidder shall have regard to the ES provisions of the contract including those as may be more fully described in the Works' Requirements described in Section VII.

### **Appendix to Technical Part .... Schedule – I**

#### **Code of Conduct: (ESHS)**

#### **Environmental, Social, Health and Safety**

The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors as required by ITB 11.2 (j) of the Bid Data Sheet. The Code of Conduct shall ensure compliance with the ESHS provisions of the contract, including those as may be more fully described in the Works Requirements described in Section VII.

In addition, the Bidder shall submit an outline of how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

## Appendix to Technical Part

### Code of Conduct for Contractor's Personnel (ES) Form

#### CODE OF CONDUCT FOR CONTRACTOR'S PERSONNEL

We are the Contractor, *[enter name of Contractor]*. We have signed a contract with *[enter name of Employer]* for *[enter description of the Works]*. These Works will be carried out at *[enter the Site and other locations where the Works will be carried out]*. Our contract requires us to implement measures to address environmental and social risks related to the Works, including the risks of sexual exploitation and assault and gender-based violence.

This Code of Conduct is part of our measures to deal with environmental and social risks related to the Works. It applies to all our staff, labourers and other employees at the Works Site or other places where

#### **Note to the Bidder:**

**The minimum content of the Code of Conduct form as set out by the Employer shall not be substantially modified.** However, the Bidder may add requirements as appropriate, including to take into account Contract-specific issues/risks.

The Bidder shall initial and submit the Code of Conduct form as part of its bid.

the Works are being carried out. It also applies to the personnel of each subcontractor and any other personnel assisting us in the execution of the Works. All such persons are referred to as “**Contractor's Personnel**” and are subject to this Code of Conduct.

This Code of Conduct identifies the behavior that we require from all Contractor's Personnel.

Our workplace is an environment where unsafe, offensive, abusive or violent behavior will not be tolerated and where all persons should feel comfortable raising issues or concerns without fear of retaliation.

#### **REQUIRED CONDUCT**

Contractor's Personnel shall:

1. carry out his/her duties competently and diligently;
2. comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Personnel and any other person;
3. maintain a safe working environment including by:
  - a. ensuring that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;

***Tender Document for Digha-Majhaua (95 km)  
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- 
- b. wearing required personal protective equipment;
  - c. using appropriate measures relating to chemical, physical and biological substances and agents; and
  - d. following applicable emergency operating procedures.
4. report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health;
  5. treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
  6. not engage in any form of sexual harassment including unwelcome sexual advances, requests for sexual favors, and other unwanted verbal or physical conduct of a sexual nature with other Contractor's or Employer's Personnel;
  7. not engage in Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another. In Bank financed projects, sexual exploitation occurs when access to or benefit from Bank financed Goods, Works, Consulting or Non-consulting services is used to extract sexual gain;
  8. not engage in Sexual Assault, which means sexual activity with another person who does not consent. It is a violation of bodily integrity and sexual autonomy and is broader than narrower conceptions of "rape", especially because (a) it may be committed by other means than force or violence, and (b) it does not necessarily entail penetration.
  9. not engage in any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage;
  10. complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation, and Assault (SEA);
  11. report violations of this Code of Conduct; and
  12. not retaliate against any person who reports violations of this Code of Conduct, whether to us or the Employer, or who makes use of the [Project Grievance [Redress] Mechanism].

## **RAISING CONCERNS**

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact *[enter name of the Contractor's Social Expert with relevant experience in handling gender-based violence, or if such person is not required under the Contract,*

*another individual designated by the Contractor to handle these matters]* in writing at this address [ ] or by telephone at [ ] or in person at [ ]; or

2. Call [ ] to reach the Contractor's hotline (*if any*) and leave a message.

The person's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

### **CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT**

Any violation of this Code of Conduct by Contractor's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

#### **FOR CONTRACTOR'S PERSONNEL:**

I have received a copy of this Code of Conduct written in a language that I comprehend. I understand that if I have any questions about this Code of Conduct, I can contact [*enter name of Contractor's contact person with relevant experience in handling gender-based violence*] requesting an explanation.

Name of Contractor's Personnel: [insert name]

Signature: \_\_\_\_\_

Date: (day month year): \_\_\_\_\_

Countersignature of authorized representative of the Contractor:

Signature: \_\_\_\_\_

**Date: (day month year):** \_\_\_\_\_

## **Appendix to Technical Part ....Schedule – F**

### **Technical Proposal – Key Personnel Proposed**

*Tender Document for Digha-Majhaua (95 km)*

*On Qty Based Dredging Contract*

*27.02.2023*

## Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

| S. No. | Position                        | Name | Qualification | Years of Experience | Years of Experience in proposed position |                 |         |       |
|--------|---------------------------------|------|---------------|---------------------|--|-----------------|---------|-------|
|        |                                 |      |               |                     | Road works *                             | Building* works | Others* | Total |
|        |                                 |      |               |                     |  |                 |         |       |
|        |                                 |      |               |                     |  |                 |         |       |
|        |                                 |      |               |                     |  |                 |         |       |
|        | [Environmental Specialist#]     |      |               |                     |  |                 |         |       |
|        | [Health and Safety Specialist#] |      |               |                     |  |                 |         |       |
|        | [Social Specialist#]            |      |               |                     |  |                 |         |       |
|        |                                 |      |               |                     |  |                 |         |       |
|        |                                 |      |               |                     |  |                 |         |       |
|        |                                 |      |               |                     |  |                 |         |       |

(\* Modify this as appropriate to suit the works for which bids are invited,

# As listed in Section III)

## Appendix to Technical Part ... Schedule – F

### Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (\*) shall be used for evaluation.

|                             |                                       |
|-----------------------------|---------------------------------------|
| Position*                   |                                       |
| Personnel information       | Name *                                |
|                             | Date of birth                         |
| Professional qualifications |                                       |
| Present employment          | Name of Employer                      |
|                             | Address of Employer                   |
|                             | Telephone                             |
|                             | Contact (manager / personnel officer) |
|                             | Fax                                   |
| E-mail                      |                                       |
| Job title                   |                                       |
| Years with present Employer |                                       |

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

| From* | To* | Company, Project, Position, and Relevant Technical and Management Experience* |
|-------|-----|---|
|       |     |   |
|       |     |   |

### Declaration

I, the undersigned Key Personnel, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

| Commitment                          | Details  |
|-------------------------------------|--|
| Commitment to duration of contract: | [insert period (start and end dates) for which this Key Personnel is available to work on this contract] |
| Time commitment:                    | [insert the number of days/week/months/ that this Key Personnel will be engaged]                         |

I understand that any misrepresentation or omission in this Form may:

- (a) be taken into consideration during Bid evaluation;
- (b) my disqualification from participating in the Bid;
- (c) my dismissal from the contract.

**Name of Key Personnel:** *[insert name]*

Signature: \_\_\_\_\_ Date: (day month year): \_\_\_\_\_

**Countersignature of authorized representative of the Bidder:** Signature: \_\_\_\_\_

**Date: (day month year):** \_\_\_\_\_

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

## Appendix to Technical Part ....Schedule – E

### Technical Proposal – Contractor’s Equipment

The bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III (Evaluation and Qualification Criteria). The Bidder shall provide all the information requested below.

| S. No. | Item of Equipment Description | Make | Capacity | Age (years) | Condition | No. available and present location | Owned | Leased | Purchased on |
|--------|-------------------------------|------|----------|-------------|-----------|------------------------------------|-------|--------|--------------|
|        |                               |      |          |             |           |                                    |       |        |              |
|        |                               |      |          |             |           |                                    |       |        |              |
|        |                               |      |          |             |           |                                    |       |        |              |
|        |                               |      |          |             |           |                                    |       |        |              |

## Appendix to Technical Part ... Schedule – G

### Technical Proposal – Sub Contracting& JV

*[Insert proposal of sub-contracting elements of works amounting to more than 10% of the bid price for each element and indicate the name of the sub-contractor, its qualifications and experiences to execute that element satisfactorily]*

#### **Form SC- Sub Contracting**

#### **SCHEDULE OF SUBCONTRACTORS**

| Item | Element of work | % of bid price | Name and address of sub-contractor | Qualification and experience of sub-contractor on similar works of the elements executed |
|------|-----------------|----------------|------------------------------------|--|
|      |                 |                |                                    |  |

The Bidder shall enter in this schedule a list of the major sections and appropriate value of the work for which he proposes to use subcontractors *[for those costing more than 10% of the bid price for each element], together with the names, addresses and experiences of the proposed subcontractors.*

The capability of the sub-contractor will also be assessed (on the same lines as for the main Contractor) before according approval to him.

*(Work should not be split into small parts and sub-contracted; but, sub-contracting specialized elements of works is acceptable).*

## Appendix to Technical Part

### **Form-ELI -1.1: Bidder Information Form**

Date: *[insert day, month, year]*

NCB No. and title: *[insert NCB number and title]*

Page *[insert page number]* of *[insert total number]* pages

| <b>1.1 Bidder Information</b>   |                           |          |          |
|---|---------------------------|----------|----------|
| Bidder's legal name   |                           |          |          |
| In case of JV, legal name of each member  |                           |          |          |
| Bidder's country of constitution  |                           |          |          |
| Bidder's year of constitution   |                           |          |          |
| Bidder's legal address in country of constitution   |                           |          |          |
| Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)  |                           |          |          |
| <p>Attached are copies of the following original documents.</p> <ol style="list-style-type: none"> <li>1. In case of single entity, articles of incorporation or constitution of the legal entity names above, in accordance with ITB 4.1 and 4.3.</li> <li>2. Authorization to represent the firm or JV named in above, in accordance with ITB 20.2.</li> <li>3. In case of JV, letter of intent to form JV or JV agreement: in accordance with ITB 4.1 read with BDS</li> <li>4. In case of government-owned entity, documents establishing legal and financial authority and compliance with the principles of commercial law in accordance with ITB 4.5 read with Sub-clause 2.1.4 of Qualification Criteria.</li> <li>5. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.</li> </ol> |                           |          |          |
| <b><u>DETAILS OF PARTICIPATION IN THE JOINT VENTURE</u></b>   |                           |          |          |
| PARTICIPATION DETAILS   | FIRM 'A'<br>(Lead Member) | FIRM 'B' | FIRM 'C' |
| Financial   |                           |          |          |
| Name of the Banker(s)   |                           |          |          |
| Planning  |                           |          |          |
| Construction Equipment  |                           |          |          |
| Key Personnel   |                           |          |          |
| Execution of Work (Give details on proposed contribution of each)   |                           |          |          |
| The Joint Venture should indicate the details of participation as above.  |                           |          |          |

## Appendix to Technical Part

### Form-ELI -1.2: JV Information Form& 1.2 A Specialized Subcontractor's (Where permitted as per BDS ITB 4.1)

*Each member of a JV must fill in this form*

Date:[insert day, month, year]

NCB No. and title:[insert NCB number and title]

Page [insert page number] of [insert total number] pages

| <b>JV/Specialist Subcontractor Information</b>   |  |  |  |
|--|--|--|--|
| Bidder's legal name  |  |  |  |
| JV Member's legal name   |  |  |  |
| JV Member's country of constitution  |  |  |  |
| JV Member's year of constitution   |  |  |  |
| JV Member's legal address in country of constitution   |  |  |  |
| JV Member's authorized representative information<br>(name, address, telephone numbers, fax numbers, e-mail address)   |  |  |  |
| <p>Attached are copies of the following original documents.</p> <ol style="list-style-type: none"> <li>1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 read with BDS.</li> <li>2. Authorization to represent the firm names above, in accordance with ITB 20.2.</li> <li>3. In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB Sub-Clause 4.5 read with Sub-Clause 2.1.4 of Qualification Criteria.</li> <li>4. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.</li> </ol> |  |  |  |
| <b>Form ELI -1.2 A</b><br><b>Specialized Subcontractor's Information Form</b><br><b>(to be completed for each Specialized Subcontractor)</b>   |  |  |  |
| Bidder's legal name:   |  |  |  |
| Specialized Subcontractor's legal name:  |  |  |  |
| Specialized Subcontractor's country of registration:   |  |  |  |
| Specialized Subcontractor's year of constitution:  |  |  |  |
| Specialized Subcontractor's legal address in country of constitution:  |  |  |  |
| Specialized Subcontractor's authorized representative information  |  |  |  |
| Name: _____  |  |  |  |
| Address: _____   |  |  |  |
| Telephone/Fax: _____ E-mail address: _____   |  |  |  |
| <p>Attached are copies of original documents of</p> <p><input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4.</p> <p><input type="checkbox"/> Authorization to represent the Specialized Subcontractor.</p>   |  |  |  |

## Appendix to Technical Part

### Form CON – 2

### Historical Contract Non-Performance, Pending Litigation and Litigation History

*[The following table shall be filled in for the Bidder and for each member of a Joint Venture]*

*Bidder's Name: [insert full name] Date: [insert day, month, year]*

*Joint Venture Party Name: [insert full name]*

*NCB No. and title: [insert NCB number and title]*

*Page [insert page number] of [insert total number] pages*

| Non-Performed Contracts in accordance with Section III, Qualification Criteria and Requirements   |                                       |   |  |
|---|---------------------------------------|---|--|
| <input type="checkbox"/> Contract non-performance did not occur during the <i>(number)</i> years specified in Section III, Qualification Criteria and Requirements, Sub-Factor 2.2.1. |                                       |   |  |
| <input type="checkbox"/> Contract(s) not performed during the <i>(number)</i> of years specified in Section III, Qualification Criteria and Requirements, requirement 2.2.1           |                                       |   |  |
| Year  | Non-performed portion of contract     | Contract Identification   | Total Contract Amount (in Indian Rupees) |
| <i>[insert year]</i>  | <i>[insert amount and percentage]</i> | Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i><br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Reason(s) for non-performance: <i>[indicate main reason(s)]</i> | <i>[insert amount]</i>                   |
| Pending Litigation, in accordance with Section III, Qualification Criteria and Requirements   |                                       |   |  |
| <input type="checkbox"/> No pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2.3.   |                                       |   |  |
| <input type="checkbox"/> Pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2.3 as indicated below.                             |                                       |   |  |

***Tender Document for Digha-Majhaua (95 km)***  
***On Qty Based Dredging Contract***  
***27.02.2023***

| <b>Year of dispute</b>  | <b>Amount in dispute (Rupees)</b>         | <b>Contract Identification</b>  | <b>Total Contract Amount (Rupees)</b> |
|---|---|---|---------------------------------------|
| <i>[insert year]</i>  | <i>[insert amount]</i>                    | Contract Identification: [indicate complete contract name, number, and any other identification]<br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Matter in dispute: <i>[indicate main issues in dispute]</i><br>Party who initiated the dispute: <i>[indicate "Employer" or "Contractor"]</i><br><br>Status of dispute: <i>[Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]</i>   | <i>[insert amount]</i>                |
| <b>Litigation History in accordance with Section III, Evaluation and Qualification Criteria</b><br><input type="checkbox"/> No litigation history in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2.4.<br><input type="checkbox"/> Litigation history in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.2.4 as indicated below. |   |   |                                       |
| <b>Year of award</b>  | <b>Outcome as percentage of Net Worth</b> | <b>Contract Identification</b>  | <b>Total Contract Amount (Rupees)</b> |
| <i>[insert year]</i>  | <i>[insert percentage]</i>                | Contract Identification: [indicate complete contract name, number, and any other identification]<br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Matter in dispute: <i>[indicate main issues in dispute]</i><br>Party who initiated the dispute: <i>[indicate "Employer" or "Contractor"]</i><br>Reason(s) for Litigation and award decision <i>[indicate main reason(s)]</i><br>Status of dispute: <i>[Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]</i> | <i>[insert amount]</i>                |

## Appendix to Technical Part - Form CON – 3: Environmental, Social, Health, and Safety Performance Declaration

*[The following table shall be filled in for the Bidder, each member of a Joint Venture and each Specialized Subcontractor]*

Bidder's Name: \_\_\_\_\_

Joint Venture Member's or Specialized Subcontractor's Name: \_\_\_\_\_

NCB No. and title: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_ pages

### Environmental, Social, Health, and Safety Performance Declaration in accordance with Section III, Qualification Criteria, and Requirements

- ☐ **No suspension or termination of contract:** An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.5.
- ☐ **Declaration of suspension or termination of contract:** The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.5. Details are described below:

| Year                 | Suspended or terminated portion of contract | Contract Identification  | Total Contract Amount (Rs.) |
|----------------------|---|--|-----------------------------|
| <i>[insert year]</i> | <i>[insert amount and percentage]</i>       | Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i><br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Reason(s) for suspension or termination: <i>[indicate main reason(s) e.g. for GBV/ SEA breaches]</i> | <i>[insert amount]</i>      |
| ...                  | ...   | <i>[list all applicable contracts]</i>   | ...                         |

#### Performance Security called by an employer(s) for reasons related to ESHS performance

| Year                 | Contract Identification  | Contract Amount (Rs.)  |
|----------------------|--|------------------------|
| <i>[insert year]</i> | Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i><br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Reason(s) for suspension or termination: <i>[indicate main reason(s) e.g. for GBV/ SEA breaches]</i> | <i>[insert amount]</i> |

## Appendix to Technical Part .. Form FIN – 2.3.1 to 2.3.3

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

| <b>Financial Situation and Performance</b>   |   |                          |               |        |                       |  |
|--|---|--------------------------|---------------|--------|-----------------------|--|
| Bidder's Name  | [insert full name]  |                          |               |        |                       |  |
| Date:  | [insert day, month, year]   |                          |               |        |                       |  |
| Joint Venture Member Name  | [insert full name]:   |                          |               |        |                       |  |
| NCB No. and title  | [insert NCB number and title]   |                          |               |        |                       |  |
| Page...  | [insert page number] of [insert total number] pages   |                          |               |        |                       |  |
| <b>1. Financial data :-</b> [The following table shall be filled in for the Bidder and for each member of a Joint Venture]   |   |                          |               |        |                       |  |
| <b>Type of Financial information in (INR)</b>  | <b>Historic information for previous [insert number] years, [insert in words](amount in currency,</b> |                          |               |        |                       |  |
|  | Year 1  | Year 2                   | Year 3        | Year 4 | Year 5                |  |
| <b>Statement of Financial Position (Information from Balance Sheet)</b>  |   |                          |               |        |                       |  |
| Total Assets   | (TA)  |                          |               |        |                       |  |
| Total Liabilities  | (TL)  |                          |               |        |                       |  |
| Total Equity/Net Worth   | (NW)  |                          |               |        |                       |  |
| Current Assets   | (CA)  |                          |               |        |                       |  |
| Current Liabilities  | (CL)  |                          |               |        |                       |  |
| Working Capital  | (WC)  |                          |               |        |                       |  |
| <b>Information from Income Statement</b>   |   |                          |               |        |                       |  |
| Total Revenue  | (TR)  |                          |               |        |                       |  |
| Profits Before Taxes   | (PBT)   |                          |               |        |                       |  |
| <b>Cash Flow Information</b>   |   |                          |               |        |                       |  |
| Cash Flow from Operating Activities  |   |                          |               |        |                       |  |
| This information should be extracted from the Annual Financial Statements/ Balance sheets, which should be enclosed. Year 1 will be the latest year for which audited financial statements are available. Year 2 shall be the year immediately preceding year 1 and year 3 shall be the year immediately preceding Year 2.   |   |                          |               |        |                       |  |
| <b>2. Sources of Finance:</b> [The following table shall be filled in for the Bidder and for each member of a Joint Venture] Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.   |   |                          |               |        |                       |  |
|  | <b>No.</b>  | <b>Source of finance</b> | <b>Amount</b> |        | <b>Equivalent INR</b> |  |
|  | 1   |                          |               |        |                       |  |
|  | 2   |                          |               |        |                       |  |
| <b>3. Financial documents :</b> The Bidder and its parties shall provide copies of financial statements for [number] years pursuant Section III, Qualifications Criteria and Requirements, Sub-factor 3.1. The financial statements shall: <ul style="list-style-type: none"> <li>(a) Reflect the financial situation of the Bidder or in case of JV member , and not an affiliated entity (such as parent company or group member).</li> <li>(b) Be independently audited or certified in accordance with local legislation.</li> <li>(c) Be complete, including all notes to the financial statements.</li> <li>(d) Correspond to accounting periods already completed and audited.</li> </ul> Attached are copies of financial statements <sup>9</sup> for the [number] years required above; and complying with the requirements |   |                          |               |        |                       |  |

<sup>9</sup> If the most recent set of financial statements is for a period earlier than 12 months from the date of Bid, the reason for this should be justified.

|  |                            |               |               |               |               |                          |                |
|--|----------------------------|---------------|---------------|---------------|---------------|--------------------------|----------------|
| <b>Form FIN 3.2 JOINT VENTURE</b>  |                            |               |               |               |               |                          |                |
| <b>Names of all partners of a joint venture</b>  |                            |               |               |               |               |                          |                |
| <b>1. Partner in charge</b>  |                            |               |               |               |               |                          |                |
| <b>2. Partner</b>  |                            |               |               |               |               |                          |                |
| <b>3. Partner</b>  |                            |               |               |               |               |                          |                |
| <b>Total value of annual dredging turnover, in terms of work billed to clients, in US\$ equivalent, converted at the rate of exchange at the end of the period reported:</b>   |                            |               |               |               |               |                          |                |
| <b>Annual Turnover Data (construction only; INR equivalent)*</b>   |                            |               |               |               |               |                          |                |
| <b>Partner</b>   | <b>Form 2<br/>page no.</b> | <b>Year 1</b> | <b>Year 2</b> | <b>Year 3</b> | <b>Year 4</b> | <b>Year 5</b>            | <b>Average</b> |
| <b>1. Partner in charge</b>  |                            |               |               |               |               |                          |                |
| <b>2. Partner</b>  |                            |               |               |               |               |                          |                |
| <b>3. Partner</b>  |                            |               |               |               |               |                          |                |
| <b>TOTALS</b>  |                            |               |               |               |               |                          |                |
| <b>Name and address of Bankers to the Joint Venture .....</b>  |                            |               |               |               |               |                          |                |
| <b>* to be certified by a Chartered Accountant or a Professional with an equivalent internationally recognized title.</b>  |                            |               |               |               |               |                          |                |
| <b>Form FIN-3.3 Financial Resources</b>  |                            |               |               |               |               |                          |                |
| Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III, Evaluation and Qualification Criteria |                            |               |               |               |               |                          |                |
| Source of financing  |                            |               |               |               |               | Amount (US\$ equivalent) |                |
| 1.   |                            |               |               |               |               |                          |                |
| 2.   |                            |               |               |               |               |                          |                |

## Appendix to Technical Part

### FORM FIN – 3.1(A)

**FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CASH FLOW**  
**[To be given from a Nationalized or Scheduled Bank in India]**

#### **Clause 2.3.1(b) of Section II – Qualification Criteria**

#### **(1) AVAILABILITY OF CASH FLOW (WORKING CAPITAL)**

*Tender Document for Digha-Majhaua (95 km)*  
*On Qty Based Dredging Contract*  
**27.02.2023**

This is to certify that M/s. \_\_\_\_\_ is a reputed company with a good financial standing.

If the contract for the works, namely \_\_\_\_\_ [funded by the World Bank] is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. \_\_\_\_\_ to meet their capital requirements for executing the above contract.

-- Sd. --

Name of Bank Manager  
Senior Bank Manager  
Address of the Bank

**\* Change the text as follows for Joint venture:**

*This is to certify that M/s. .... who has formed a JV with M/s. .... and M/s. .... for participating in this bid, is a reputed company with a good financial standing.*

*If the contract for the work, namely ..... [funded by the World Bank] is awarded to the above Joint Venture, we shall be able to provide overdraft/credit facilities to the extent of Rs. .... to meet the working capital requirements for executing the above contract.*

*[This should be given by the JV members in proportion to their financial participation.]*

**Form FIN –2.3.1 to 2.3.3****Average Annual Dredging Turnover ... Form FIN - 3.2**

*[The following table shall be filled in for the Bidder and for each member of a Joint Venture]*

|                           |  |
|---------------------------|--|
| Bidder's Name             | <i>[insert full name]</i>                                  |
| Date:                     | <i>[insert day, month, year]</i>                           |
| Joint Venture Member Name | <i>[insert full name]:</i>                                 |
| NCB No. and title         | <i>[insert NCB number and title]</i>                       |
| Page...                   | <i>[insert page number] of [insert total number] pages</i> |

*[Identify contracts that demonstrate continuous construction work over the past [number] years pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 4.1. List contracts chronologically, according to their commencement (starting) dates.]*

**Annual turnover data (construction only)**

| Year                   | Amount Currency  | INR |
|------------------------|--|-----|
| <i>[calendar year]</i> | <i>[insert amount and indicate currency] and Source of Figures and attach the relevant documents</i> |     |
| <b>1. YEAR 2022</b>    |  |     |
| <b>2. YEAR 2021</b>    |  |     |
| <b>3. YEAR 2020</b>    |  |     |
| <b>4. YEAR 2019</b>    |  |     |
| <b>5. YEAR 2018</b>    |  |     |

*Annual construction turnover calculated as total certified payments received for work in progress or completed, for 5 years. Specified in Section III, Qualification Criteria and Requirements, Sub-Factor 2.3.2. This should be certified by a Chartered Accountant*

**Names of all members of a joint venture****1. Member in charge****2. Member****3. Member****Total value of annual construction turnover, in terms of work billed to clients, in Rupees****Annual Turnover Data (construction only; in Rupees \*)**

| Member                     | Form 2<br>page no. | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Average |
|----------------------------|--------------------|--------|--------|--------|--------|--------|---------|
| <b>1. Member in charge</b> |                    |        |        |        |        |        |         |
| <b>2. Member</b>           |                    |        |        |        |        |        |         |
| <b>3. Member</b>           |                    |        |        |        |        |        |         |
| <b>TOTALS</b>              |                    |        |        |        |        |        |         |

**Name and address of Bankers to the Joint Venture**

Provide details regarding financial responsibility and participation (percentage share in the total) of each firm in the Joint Venture. Attach a Memorandum of Understanding for the Proposed Agreement of joint Venture which should lay down responsibility regarding work and financial arrangements in respect of each of the firm in the Joint Venture (Refer also ITB Clause 4.1). **\*To be certified by a chartered accountant.**

Page ...of....Pages

**Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023**

## Appendix to Technical Part - Form EXP –2.4.1

| <b>General Dredging Experience</b><br><i>[The following table shall be filled in for the Bidder and in the case of a JV Bidder, each Member]</i>   |  |  |  |
|--|--|--|--|
| Bidder's Name  | <i>[insert full name]</i>                                  |  |  |
| Date:  | <i>[insert day, month, year]</i>                           |  |  |
| Joint Venture Member Name  | <i>[insert full name]:</i>                                 |  |  |
| NCB No. and title  | <i>[insert NCB number and title]</i>                       |  |  |
| Page...  | <i>[insert page number] of [insert total number] pages</i> |  |  |
| <i>[Identify contracts that demonstrate continuous construction work over the past [number] years pursuant to Section III, Qualification Criteria and Requirements, Sub-Factor 4.1. List contracts chronologically, according to their commencement (starting) dates.]</i> |  |  |  |
| Starting Year  | Ending Year  | Contract Identification  | Role of Bidder   |
| <i>[indicate year]</i>   | <i>[indicate year]</i>                                     | Contract name: <i>[insert full name]</i><br>Brief Description of the Works performed by the Bidder: <i>[describe works performed briefly]</i><br>Amount of contract: <i>[insert amount in currency, mention currency used, exchange rate and US\$ equivalent*]</i><br>Name of Employer: <i>[indicate full name]</i><br>Address: <i>[indicate street/number/town or city/country]</i> | <i>[insert "Prime Contractor" or "JV Member" or "Sub-contractor" or "Management Contractor"]</i> |
|  |  | Contract name: <i>[insert full name]</i><br>Brief Description of the Works performed by the Bidder: <i>[describe works performed briefly]</i><br>Amount of contract: <i>[insert amount in currency, mention currency used, exchange rate and US\$ equivalent*]</i><br>Name of Employer: <i>[indicate full name]</i><br>Address: <i>[indicate street/number/town or city/country]</i> | <i>[insert "Prime Contractor" or "JV Member" or "Sub-contractor" or "Management Contractor"]</i> |
|  |  | Contract name: <i>[insert full name]</i><br>Brief Description of the Works performed by the Bidder: <i>[describe works performed briefly]</i><br>Amount of contract: <i>[insert amount in currency, mention currency used, exchange rate and US\$ equivalent*]</i><br>Name of Employer: <i>[indicate full name]</i><br>Address: <i>[indicate street/number/town or city/country]</i> | <i>[insert "Prime Contractor" or "JV Member" or "Sub-contractor" or "Management Contractor"]</i> |

|   |  |   |  |  |
|---|--|---|--|--|
| <b>Specific Dredging and Contract Management Experience - Form EXP – 2.4.2(a)</b><br><i>[The following table shall be filled in for contracts performed by the Bidder, each member of a Joint Venture, and Specialized Sub-contractors]</i> |  |   |  |  |
| Bidder's Name   | <i>[insert full name]</i>  |   |  |  |
| Date:   | <i>[insert day, month, year]</i>   |   |  |  |
| Joint Venture Member Name   | <i>[insert full name]:</i>   |   |  |  |
| NCB No. and title   | <i>[insert NCB number and title]</i>   |   |  |  |
| Page...   | <i>[insert page number] of [insert total number] pages</i>                   |   |  |  |
| <b>Similar Contract No.</b><br><i>[insert number] of [insert number of similar contracts required]</i>  | <b>Information</b>   |   |  |  |
| Contract Identification   | <i>[insert contract name and number, if applicable]</i>                      |   |  |  |
| Award date  | <i>[insert day, month, year]</i>   |   |  |  |
| Completion date   | <i>[insert day, month, year]</i>   |   |  |  |
| Role in Contract<br><i>[check the appropriate box]</i>  | Prime Contractor<br><input type="checkbox"/>                                 | Member in JV<br><input type="checkbox"/>                | Management Contractor<br><input type="checkbox"/>                                | Sub-contractor<br><input type="checkbox"/> |
| Total Contract Amount   | <i>[insert total contract amount in local currency]</i>                      |   | US\$ <i>[insert Exchange rate and total contract amount in US\$ equivalent]*</i> |  |
| If member in a JV or sub-contractor, specify participation in total Contract amount   | <i>[insert a percentage amount]</i>  | <i>[insert total contract amount in local currency]</i> | <i>[insert exchange rate and total contract amount in US\$ equivalent]*</i>      |  |
| Employer's Name:  | <i>[insert full name]</i>  |   |  |  |
| Address:  | <i>[indicate street / number / town or city / country]</i>                   |   |  |  |
| Telephone/fax number  | <i>[insert telephone/fax numbers, including country and city area codes]</i> |   |  |  |
| E-mail:   | <i>[insert e-mail address, if available]</i>                                 |   |  |  |

## Appendix to Technical Part

### Form EXP - 4.2(a)

### Specific Construction and Contract Management Experience

- (B) **Work performed as prime Contractor or JV Member or Sub-Contractor or Management Contractor** (*in the same name and style*) on construction works of a similar nature and volume over the last five years<sup>10</sup>. [Attach certificate from the Engineer-in-charge.]

| Project Name | Name of Employer | Description of work | Contract No. | Value of contract | Date of Issue of Work Order | Stipulated Date of Completion | Actual Date of Completion | Remarks explaining reasons for Delay, if any |
|--------------|------------------|---------------------|--------------|-------------------|-----------------------------|-------------------------------|---------------------------|--|
|              |                  |                     |              |                   |                             |                               |                           |  |
|              |                  |                     |              |                   |                             |                               |                           |  |

| <b>Form EXP – 2. 4.2(a) (cont.)</b><br><b>Specific Dredging and Contract Management Experience (cont.)</b>  |   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
|---|---|----------------------|-------------|---|--|--|--|-----------|---|--|--|---------------|---|-----------------------|---|---|---------------------------------|--------------------------|---|
| Bidder's Name   | <i>[insert full name]</i>   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| Date:   | <i>[insert day, month, year]</i>  |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| Joint Venture Member Name   | <i>[insert full name]:</i>  |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| NCB No. and title   | <i>[insert NCB number and title]</i>  |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| Page...   | <i>[insert page number] of [insert total number] pages</i>                            |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 45%; padding: 5px;">Similar Contract No.</th> <th style="padding: 5px;">Information</th> </tr> <tr> <td style="padding: 5px;"><i>[insert number] of [insert number of similar contracts required]</i></td> <td></td> </tr> <tr> <td style="padding: 5px;">Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:</td> <td></td> </tr> <tr> <td style="padding: 5px;">1. Amount</td> <td style="padding: 5px;"><i>[insert amount in local currency, exchange rate, US\$ in words and in Figures]</i></td> </tr> <tr> <td style="padding: 5px;">2. Physical size of required works items</td> <td style="padding: 5px;"><i>[insert physical size of items]</i></td> </tr> <tr> <td style="padding: 5px;">3. Complexity</td> <td style="padding: 5px;"><i>[insert description of complexity]</i></td> </tr> <tr> <td style="padding: 5px;">4. Methods/Technology</td> <td style="padding: 5px;"><i>[insert specific aspects of the methods/technology involved in the contract]</i></td> </tr> <tr> <td style="padding: 5px;">5. Construction rate for key activities</td> <td style="padding: 5px;"><i>[insert rates and items]</i></td> </tr> <tr> <td style="padding: 5px;">6. Other Characteristics</td> <td style="padding: 5px;"><i>[insert other characteristics as described in Section X, Scope of Works]</i></td> </tr> </table> |   | Similar Contract No. | Information | <i>[insert number] of [insert number of similar contracts required]</i> |  | Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III: |  | 1. Amount | <i>[insert amount in local currency, exchange rate, US\$ in words and in Figures]</i> | 2. Physical size of required works items | <i>[insert physical size of items]</i> | 3. Complexity | <i>[insert description of complexity]</i> | 4. Methods/Technology | <i>[insert specific aspects of the methods/technology involved in the contract]</i> | 5. Construction rate for key activities | <i>[insert rates and items]</i> | 6. Other Characteristics | <i>[insert other characteristics as described in Section X, Scope of Works]</i> |
| Similar Contract No.  | Information   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| <i>[insert number] of [insert number of similar contracts required]</i>   |   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:  |   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| 1. Amount   | <i>[insert amount in local currency, exchange rate, US\$ in words and in Figures]</i> |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| 2. Physical size of required works items  | <i>[insert physical size of items]</i>  |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| 3. Complexity   | <i>[insert description of complexity]</i>   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| 4. Methods/Technology   | <i>[insert specific aspects of the methods/technology involved in the contract]</i>   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| 5. Construction rate for key activities   | <i>[insert rates and items]</i>   |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |
| 6. Other Characteristics  | <i>[insert other characteristics as described in Section X, Scope of Works]</i>       |                      |             |   |  |  |  |           |   |  |  |               |   |                       |   |   |                                 |                          |   |

<sup>10</sup> Immediately preceding the financial year in which bids are received.

## Dredging Experience in Key Activities - Form EXP –2.4.2(b)

|   |  |  |   |
|---|--|--|---|
| Bidder's Name   | <i>[insert full name]</i>  |  |   |
| Date:   | <i>[insert day, month, year]</i>   |  |   |
| Joint Venture Member Name   | <i>[insert full name]:</i>   |  |   |
| NCB No. and title   | <i>[insert NCB number and title]</i>   |  |   |
| Page...   | <i>[insert page number] of [insert total number] pages</i>                   |  |   |
| All Sub-contractors for key activities must complete the information in this form as per ITB 5.6 and Section III, Qualification Criteria and Requirements, Clause 4.2.  |  |  |   |
| 1. Key Activity No. One: <i>[insert brief description of the Activity, emphasizing its specificity]</i>   |  |  |   |
| Total Quantity of Activity under the contract: _____  |  |  |   |
| <b>Information</b>  |  |  |   |
| Contract Identification   | <i>[insert contract name and number, if applicable]</i>                      |  |   |
| Award date  | <i>[insert day, month, year]</i>   |  |   |
| Completion date   | <i>[insert day, month, year]</i>   |  |   |
| Role in Contract<br><i>[check the appropriate box]</i>  | Prime Contractor<br><input type="checkbox"/>                                 | Member in JV<br><input type="checkbox"/> | Management Contractor<br><input type="checkbox"/>                               |
|   |  |  | Sub-contractor<br><input type="checkbox"/>                                      |
| Total Contract Amount   | <i>[insert total contract amount in contract currency(ies)]</i>              |  | US\$ <i>[insert exchange rate and total contract amount in US\$ equivalent]</i> |
| Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year<br><i>[Insert extent of participation indicating actual quantity of key activity successfully completed in the role performed]</i> | Total quantity in the contract<br>(i)  | Percentage participation<br>(ii)         | Actual Quantity Performed<br>(i) x (ii)   |
| Year 1 (FY 2021-22 )  |  |  |   |
| Year 2 (FY 2020 -21)  |  |  |   |
| Year 3 (FY 2019-20)   |  |  |   |
| Year 4 (FY 2018-19)   |  |  |   |
| Year 5 (FY 2017-18)   |  |  |   |
| Employer's Name:  | <i>[insert full name]</i>  |  |   |
| Address:  | <i>[indicate street / number / town or city / country]</i>                   |  |   |
| Telephone/fax number  | <i>[insert telephone/fax numbers, including country and city area codes]</i> |  |   |
| E-mail:   | <i>[insert e-mail address, if available]</i>                                 |  |   |

## Appendix to Technical Part

### Form EXP - 4.2(c)

### Specific Experience in Managing ES aspects

*[The following table shall be filled in for contracts performed by the Bidder, and each member of a Joint Venture]*

Bidder's Name: \_\_\_\_\_

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

Bidder's JV Member Name: \_\_\_\_\_

IFB No. and title: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Key Requirement no 1 in accordance with 2.4.2 (c): \_\_\_\_\_

|                                |  |  |   |   |
|--------------------------------|--|--|---|---|
| Contract Identification        |  |  |   |   |
| Award date                     |  |  |   |   |
| Completion date                |  |  |   |   |
| Role in Contract               | Prime Contractor<br><input type="checkbox"/> | Member in JV<br><input type="checkbox"/> | Management Contractor<br><input type="checkbox"/> | Subcontractor<br><input type="checkbox"/> |
| Total Contract Amount          |  |  | Rs.   |   |
| Details of relevant experience |  |  |   |   |

2. Key Requirement no 2 in accordance with 2.4.2 (c): \_\_\_\_\_

3. Key Requirement no 3 in accordance with 2.4.2 (c): \_\_\_\_\_

## Appendix to Technical Part

### Form for Current Contract Commitments/Works in Progress

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

#### (A) Existing commitments and on-going works:

| Project Name /<br>Description of<br>Work | Name of<br>Employer<br>Place & State | Contract No.<br>& Date | Name and<br>Address of<br>Employer | Value of<br>Contract<br>(Rs. equivalent<br>in million) | Stipulated<br>period of<br>completion | Value of<br>works <sup>11</sup><br>remaining to<br>be completed<br>(Rs. equivalent<br>in million) | Anticipated<br>date of<br>completion | Average<br>Monthly<br>Invoicing Over<br>Last Six<br>Months<br>(Rs./month)<br>Equivalent in<br>millions) |
|--|--------------------------------------|------------------------|------------------------------------|--|---------------------------------------|---|--------------------------------------|---|
| (1)                                      | (2)                                  | (3)                    | (4)                                | (5)  | (6)                                   | (7)   | (8)                                  | (9)   |
|  |                                      |                        |                                    |  |                                       |   |                                      |   |
|  |                                      |                        |                                    |  |                                       |   |                                      |   |
|  |                                      |                        |                                    |  |                                       |   |                                      |   |

#### (B) Works for which bids already submitted and likely to be awarded – expected additional commitment.

| (1)                    | (2)           | (3)                             | (4)   | (5)                                | (6)                               | (7)                |
|------------------------|---------------|---------------------------------|---|------------------------------------|-----------------------------------|--------------------|
| Description of<br>Work | Place & State | Name and Address<br>of Employer | Estimated value of Works<br>(Rs. equivalent in million) | Stipulated period of<br>completion | Date when decision is<br>expected | Remarks, if<br>any |
|                        |               |                                 |   |                                    |                                   |                    |
|                        |               |                                 |   |                                    |                                   |                    |
|                        |               |                                 |   |                                    |                                   |                    |

<sup>11</sup> Attach certificate(s) from the Engineer(s)-in-Charge.

**Form EXP – 5.0**  
**Quality Requirements**  
(Sub-factor of 2.4.3 of Section III)

|                           |  |
|---------------------------|--|
| Bidder's Name             | <i>[insert full name]</i>                                  |
| Date:                     | <i>[insert day, month, year]</i>                           |
| Joint Venture Member Name | <i>[insert full name]:</i>                                 |
| NCB No. and title         | <i>[insert NCB number and title]</i>                       |
| Page...                   | <i>[insert page number] of [insert total number] pages</i> |

**To indicate the details of the Quality Requirements**  
**Change of information after Bid Submission & Opening date shall not be allowed.**

|     |   |  |                       |  |                |
|-----|---|--|-----------------------|--|----------------|
| 5.1 | <b>ISO 9001-2008/2015<br/>Quality management system requirements</b>      | <b>Quality management certificate issued by an international standards organization</b>  | Must meet requirement | Valid ISO 9001 Certification.          | Yes / No - ref |
| 5.3 | <b>OHSAS 18001 -<br/>Occupational Health and Safety Assessment Series</b> | <b>Relevant OHSAS certificate and Experience in occupational health and safety management over the last 2 years,</b>             | Must meet requirement | Valid OHSAS certificate.               |                |
| 5.4 | <b>ISO 14001:2004/2015<br/>Environmental Management systems</b>           | <b>Relevant Environmental management certificate and experience with environmental management systems over the last 2 years,</b> | Must meet requirement | Valid ISO 14001:2004/2015 certificate. |                |

**Form EXP – 6.0**

[Reference: BDS 5.2]&amp; QR ( 2.6 )

**List of Major Equipment – Tools & Plants ( Available with Bidder )**

|                           |   |
|---------------------------|---|
| Bidder's Name             | [insert full name]                                  |
| Date:                     | [insert day, month, year]                           |
| Joint Venture Member Name | [insert full name]:                                 |
| NCB No. and title         | [insert NCB number and title]                       |
| Page...                   | [insert page number] of [insert total number] pages |

Bidder to provide the

1. List of Tools and plants - including Floating Crafts, Machinery & other Equipment required for deployment on the works and successful operation of the contract.

Available with the Bidder / Contractor

**MUST MEET REQUIREMENTS →**

**These equipment's at the TIME OF BIDDING must be either owned or hired\* or to be procured by the bidder and by member of JV. ( in case of JV )**

- In case the dredgers are leased or hired, a proper lease agreement on Stamp paper shall be submitted along with the bid clearly stating that the proposed dredgers ( along with details) shall be available to the bidder for immediate deployment on Award of Work.

| Sl.no            | Name of dredger / Equipment /Machinery /plants | Qty. | Description, Size, Capacity | Date of Purchase / Age | Present Location |
|------------------|--|------|-----------------------------|------------------------|------------------|
|                  |  |      |                             |                        |                  |
| <b>AVAILABLE</b> |  |      |                             |                        |                  |
| <b>6.1</b>       | <b>Dredgers</b>                                |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
| <b>6.2</b>       | <b>Survey Boats</b>                            |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |
|                  |  |      |                             |                        |                  |

Signature of the Bidder

## Form EXP – 6.4

( Reference: BDS 11.2 a )

### Detailed Dredging Management Plan Approach&Methodology

|                           |   |
|---------------------------|---|
| Bidder's Name             | [insert full name]                                  |
| Date:                     | [insert day, month, year]                           |
| Joint Venture Member Name | [insert full name]:                                 |
| NCB No. and title         | [insert NCB number and title]                       |
| Page...                   | [insert page number] of [insert total number] pages |

To indicate how various activities which will be carried out, to meet the requirements Laid down at Appendix A to the Tender documents / Contract

#### SCHEDULE E

#### Dredging Methodology<sup>12</sup>

##### (a) Contractor's Statement of Work Methods

To demonstrate a clear understanding of the requirements of the Contract, Bidders shall provide in the form of a narrative descriptions, sketches and drawings, how the works shall be undertaken.

The Statement of Work Methods shall demonstrate the Bidders capability to define, optimize and carry out on a timely basis the physical interventions detailed in the scope of requirements specified in Section VI.

The Statement of Work Methods shall include a mobilization and execution plan that details how the bidder will, **on waterway stretch**, carry out on a timely basis the following:

***Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1***

##### ***Digha – Majhaua 95 km.***

- iii. An outline proposal on how the Contractor shall minimize environmental impacts especially to sensitive and critical areas including but not limited to reed lands, mud flats, mangrove forests and migratory bird habitats taking into account:

<sup>12</sup> The Dredging Methodology included here is a SAMPLE taken from a specific project, and should be suitably modified as necessary. It should correspond to the construction methodology specified in Section III Evaluation and Qualification Criteria.

- iv. The requirement for dredging sediment volumes in shallow waterways; placing dredged materials in-stream or in-river; and, early detection and quantification of hazardous sediment and its removal; and,
- v. The requirement to minimize noise, water and air pollution from its own operations.
- vii. An outline Quality Assurance Plan; and,
- viii. A Health and Safety Plan specific to the proposed works.

**(b)****Co**

**ntractor's Work Program:** A Work Program compiled on a project management software (like MS Project, Primavera or similar) which must clearly show the major project works proposed and the corresponding timeline with the following characteristics:

- Show work stages (Mobilization, Survey, Dredging / Bandalling Work, Erection and Maintenance of Navigation Aids, and Demobilization, etc.) and BOQ Items with the corresponding timeline;
- Show the leading, lagging and critical activities, with linkages to related activities, milestones, key personnel in charge, etc.; and
- Resources (equipment, material, personnel, etc.) plan to achieve the Work Program.

**(c) Site Organization and Communications Plans:** that clearly provide:

- An overall organization chart;
- A site organization chart;
- Preliminary layout of the Contractor's facilities and equipments;
- Internal Communications Plan;
- External Communication Plan; and
- Navigational protocol to assure free passage for ships during dredging or other works.

|  |  |
|--|--|
| <b>Form EXP – 6.5</b><br><i>( Reference: BDS 11.2 b )</i><br><b>Detailed Dredger Deployment Plan w.r.t<br/>Detailed Dredging Management Plan<br/>Approach&amp;Methodology</b>              |  |
| Bidder's Name  | <i>[insert full name]</i>                                  |
| Date:  | <i>[insert day, month, year]</i>                           |
| Joint Venture Member Name  | <i>[insertfull name]:</i>                                  |
| NCB No. and title  | <i>[insert NCB number and title]</i>                       |
| Page...  | <i>[insert page number] of [insert total number] pages</i> |
| <p>To indicate how various Dredgers shall be deployed to meet the requirements explained at Dredging Management Plan and as Laid down at Appendix A to the Tender documents / Contract</p> |  |
|  |  |

| Form EXP – 6.6 List of Equipment's and Availability Plan's (Reference: BDS 11.2 c)   |   |   |                |   |          |           |  |                  |  |
|--|---|---|----------------|---|----------|-----------|--|------------------|--|
| Bidder's Name  |   | [insert full name]  |                |   |          |           |  |                  |  |
| Date:  |   | [insert day, month, year]   |                |   |          |           |  |                  |  |
| Joint Venture Member Name  |   | [insert full name]:   |                |   |          |           |  |                  |  |
| NCB No. and title  |   | [insert NCB number and title]   |                |   |          |           |  |                  |  |
| Page...  |   | [insert page number] of [insert total number] pages   |                |   |          |           |  |                  |  |
| <p>Bidder to provide the</p> <p>a. List of Tools and plants → Available with the bidder details to be furnished in the table under</p> <p>b. List of Tools and plants → Available on Hire<br/>In case of Hire → A JV agreement with the agency along with the list of equipment being Hired.</p> <p>c. List of Tools and plants → Likely to be Procured .. Proof or Intent along with expected delivery period from Award date.</p>  |   |   |                |   |          |           |  |                  |  |
| <p>It may be noted that the Cutter Suction Dredger (CSD) can be either non-propelled or self-propelled. However, rated dredging capacity of each of these shall not be less than 250 cum/hour of solids. The dredgers should be accompanied with all the supporting vessels for dredging works as well as for shoal-to-shoal movement of dredging fleet and personnel.</p>   |   |   |                |   |          |           |  |                  |  |
| Sl no  | Name of the Dredger / Craft Equipment / Land Equipment proposed - with Registration details wherever applicable & fitness Certificate | Technical details ie<br>a. Type,<br>b. Size<br>c. Rated Capacity<br>d. year of Manufacture<br>e. Registration details<br>f.. details of pipe lines.<br>g. Survey Certificates.<br>i. other Machineries included | Rated Capacity | Out Put expected ( Cubic metre of solids at situ) to be achieved during operation |          |           | Whether<br>a. OWNED<br>b. to be hired<br>c. to be procured | Present Location | a. Dry Dock Details<br><br>b. River Worthiness Certificate |
|  |   |   |                | Per hour  | Per week | Per month |  |                  |  |
|  |   |   |                |   |          |           |  |                  |  |
|  |   |   |                |   |          |           |  |                  |  |
|  |   |   |                |   |          |           |  |                  |  |
| In case deployment of Equipment id delayed , Suitable penalties shall be imposed.  |   |   |                |   |          |           |  |                  |  |
| <p>Bidders to Note: :- The documentary evidence to be submitted by the Bidders for the proposed Dredgers &amp; other Equipments to be deployed should indicate the Name , Capacity with Registration where ever applicable , Rated Capacity ; Technical Details , year of Manufacture; Survey Certificates ; Details of Previous Dry Dock; River Worthiness Certificate from certifying Authority. As per Format A</p> <ul style="list-style-type: none"> <li>The Bidders to ensure that fitness certificate of the equipments like Dredgers &amp; Survey Vessels should be duly certified by an authorized certifying agency at the time of Bidding.</li> <li>Successful Contractor shall to produce the fitness certificate of the equipments like Tug Boats, Accommodation Boat duly certified by an authorized certifying agency at the time of</li> </ul> |   |   |                |   |          |           |  |                  |  |

**Tender Document for Digha-Majhaua (95 km)**  
**On Qty Based Dredging Contract**  
**27.02.2023**

Bidding.

**SCHEDULE D --- Contractor's Equipment**

Bidders shall provide<sup>13</sup> a list of the type and quantity of equipment needed to carry out on a timely basis the physical interventions detailed in the scope of requirements specified in Section VI. Choice in the type and quantity of equipment shall take into account the scope of the physical interventions required for the project waterways. In providing a list of type and quantity of equipment, Bidders shall specifically:

Demonstrate that any equipment selected for works on more than one waterways route must meet the works requirements of all specified routes on a timely basis, taking into account: equipment performance specifications; the geographical location of such other route or routes and time for internal movements (transport); IWT classification characteristics (i.e. channel depth and width); environmental and social mitigation needs; and any other limiting conditions, including but not limited to physical and weather limiting conditions;

Demonstrate that equipment selected is designed, built, constructed, manned, operated and certified for marine and environmental conditions that can be expected on each waterways route or parts thereof. For the avoidance of doubt, Bidders shall provide documentary evidence that all equipment is both licensed and classed to operate in the waterways (river) conditions, including but not limited to wind, wave, swell, current and tidal stream conditions where development and maintenance dredging, aid to navigation installation and maintenance, survey services and environmental monitoring are required. A separate Form shall be prepared for each item of equipment listed (with a current new purchase price exceeding US\$ 0.5 m)<sup>14</sup>, or for alternative equipment proposed by the Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (\*) shall be used for evaluation.

| <i>Sl.no</i>                            | <i>Name of dredger / Equipment /Machinery /plants</i> | <i>Qty.</i> | <i>Description, Size, Capacity</i> | <i>Date of Purchase / Age</i> | <i>Present Location</i>        |
|---|---|-------------|------------------------------------|-------------------------------|--------------------------------|
| <b><i>TO BE HIRED</i></b>               |   |             |                                    |                               |                                |
|   |   |             |                                    |                               |                                |
|   |   |             |                                    |                               |                                |
| <b><i>TO BE arranged through JV</i></b> |   |             |                                    |                               |                                |
|   |   |             |                                    |                               |                                |
| <b><i>TO BE PROCURED</i></b>            |   |             |                                    |                               |                                |
|   |   |             |                                    |                               |                                |
|   |   |             |                                    |                               | <i>Signature of the Bidder</i> |

<sup>13</sup> This is a SAMPLE taken from a specific project, and should be suitably modified as necessary

<sup>14</sup> Threshold of US\$ 0.5 m is only a Sample value, and should be modified as considered necessary

**Form EXP – 2.5****Details of Deployment of Manpower ( Main Bidder with CV's)**

| Bidder's Name   | <i>[insert full name]</i>                                  |                          |   |   |
|---|--|--------------------------|---|---|
| Date:   | <i>[insert day, month, year]</i>                           |                          |   |   |
| JV - Member Name  | <i>[insert full name]:</i>                                 |                          |   |   |
| NCB No. and title   | <i>[insert NCB number and title]</i>                       |                          |   |   |
| Page...   | <i>[insert page number] of [insert total number] pages</i> |                          |   |   |
| <b>To indicate the details of the Manpower to be deployed for carrying out the assignment along with their CV's</b> |  |                          |   |   |
| <i>Sl.no</i>  | <i>Position</i>  | <i>Experience in yrs</i> | <i>Details of Experience</i>  | <i>CV Yes/no</i>  |
| 1.  | Contract / Project Manager                                 | 7 years                  | Contract/Project Manager shall have a bachelor's degree in civil/mechanical engineering and an experience of minimum 10 years', out of which at least 7 years shall be in managing projects of similar nature. Personnel must have experience in executing dredging projects.<br>The desirable age of the personnel as on the date of bid submission shall not be more than 50 years, however, if the personnel above 50 years is proposed, then the specific health fitness certificate shall be submitted with the bid. | <b>MUST MEET REQUIREMENT</b><br><br><b>YES – To be submitted at the time of Bid Submission.</b> |
| 2   | Surveyor   | 3 years                  | Diploma in Civil Engineering / Surveying with 3 years experience in Hydrographic Survey or Survey Recorder I/II in Hydrographic Survey  |   |
| 3   | Crew   |                          | Must have inland vessel certification   |   |
| 4   | <b>Details of the Sub- Contracting Agencies</b>            |                          |   |   |
| 5.  | Dredge Master  | 7 years                  | Must have 7 years' of experience in dredging in rivers/canals/ports.  | <b>Desirable at the time of Bid Submission</b>  |
| 6.  | Social Specialist  | 3 years                  | Graduate or equivalent in social sciences with at least 3 years field experience.   |   |
| 7.  | Environmental Expert                                       | 3 years                  | Graduate in Environmental engineering/environmental sciences with at least 3 years field experience.  |   |
| 8.  | Health & Safety Specialist                                 | 3 years                  | Graduate in engineering/sciences with at least 3 years of experience in health and safety. Must have diploma/certification in health and safety.  |   |

|   |  |  |   |
|---|--|--|---|
| Resume of Proposed Personnel  |  |  |   |
| <b>Form EXP – 6.7 &amp; 6.8 Details of Deployment of Manpower ... contd...</b>  |  |  |   |
| <b>Position [#1]: [title of position from Form PER-1]</b>   |  |  |   |
| <b>Personnel information</b>  | <b>Name:</b>   |  | <b>Date of birth:</b>                               |
|   | <b>Address:</b>  |  | <b>E-mail:</b>                                      |
|   | <b>Professional qualifications:</b>  |  |   |
|   | <b>Academic qualifications:</b>  |  |   |
|   | <b>Language proficiency:</b> [language and levels of speaking, reading and writing skills]   |  |   |
|   | <b>Address of employer:</b>  |  |   |
|   | <b>Telephone:</b>  |  | <b>Contact (manager / personnel officer):</b>       |
|   | <b>Fax:</b>  |  |   |
|   | <b>Job title:</b>  |  | <b>Years with present employer:</b>                 |
|   | Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project. |  |   |
| <b>Project</b>  | <b>Role</b>  | <b>Duration of involvement</b>   | <b>Relevant experience</b>                          |
| [main project details]  | [role and responsibilities on the project]   | [time in role]   | [describe the experience relevant to this position] |
|   |  |  |   |
|   |  |  |   |
| <b>Declaration</b><br><i>I, the undersigned Key Personnel, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.</i><br><i>I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:</i> |  |  |   |
| <b>Commitment</b>   |  | <b>Details</b>   |   |
| <b>Commitment to duration of contract:</b>  |  | [insert period (start and end dates) for which this Key Personnel is available to work on this contract]                 |   |
| <b>Time commitment:</b>   |  | [insert the number of days/week/months/ that this Key Personnel will be engaged]   |   |
| I understand that any misrepresentation or omission in this Form may: <ul style="list-style-type: none"> <li>(a) be taken into consideration during Bid evaluation;</li> <li>(b) my disqualification from participating in the Bid;</li> <li>(c) my dismissal from the contract.</li> </ul>   |  |  |   |
| <b>Name of Key Personnel: [insert name]</b><br>Signature: _____<br>Date: (day month year): _____  |  | <b>Countersignature of authorized representative of the Bidder:</b><br>Signature: _____<br>Date: (day month year): _____ |   |

## Form EXP – 2.5 ... contd.

### Details of Sub- Contractors

|                           |  |
|---------------------------|--|
| Bidder's Name             | <i>[insert full name]</i>                                  |
| Date:                     | <i>[insert day, month, year]</i>                           |
| Joint Venture Member Name | <i>[insert full name]:</i>                                 |
| NCB No. and title         | <i>[insert NCB number and title]</i>                       |
| Page...                   | <i>[insert page number] of [insert total number] pages</i> |

**To indicate the details of the Sub-Contractors likely to be engaged for this work  
Please note.**

**Change of agency after Bid Submission & Opening date shall not be allowed.**

| Sl.no | Name of the proposed<br>Sub- Contractor | Years of<br>Experience | Name of the<br>Projects under taken<br>as contractor or sub-<br>contractor | Supporting<br>Documents<br>Order &<br>experience<br>copies |
|-------|---|------------------------|--|--|
| 1     |   |                        |  |  |
| 2     |   |                        |  |  |
| 3     |   |                        |  |  |
| 4     |   |                        |  |  |
| 5     |   |                        |  |  |

**Form CON – 3 ...****Environmental, Social, Health and Safety Management Strategies and Implementation Plans  
Performance Declaration - (ESHS-MSIP)**

*[The following table shall be filled in for the Bidder, and each member of a Joint Venture and each Specialized Subcontractor]*

|                           |  |
|---------------------------|--|
| Bidder's Name             | <i>[insert full name]</i>                                  |
| Date:                     | <i>[insert day, month, year]</i>                           |
| Joint Venture Member Name | <i>[insert full name]:</i>                                 |
| NCB No. and title         | <i>[insert NCB number and title]</i>                       |
| Page...                   | <i>[insert page number] of [insert total number] pages</i> |

The Bidder shall submit comprehensive and concise Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHS-MSIP) as required by ITB 11.2 (i) of the Bid Data Sheet. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

**In developing these strategies and plans, the Bidder shall have regard to the ESHS provisions of the contract including those as may be more fully described in the Works and Services Requirements described in Section VI.**

**Environmental, Social, Health, and Safety Performance Declaration**  
in accordance with Section III, Qualification Criteria, and Requirements

- ☐ **No suspension or termination of contract:** An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.5.
- ☐ **Declaration of suspension or termination of contract:** The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental, Social, Health, or Safety (ESHS) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.2.5. Details are described below:

| Year                 | Suspended or terminated portion of contract | Contract Identification  | Total Contract Amount (current value, currency, exchange rate and US\$ equivalent) |
|----------------------|---|--|--|
| <i>[insert year]</i> | <i>[insert amount and percentage]</i>       | Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i><br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Reason(s) for suspension or termination: <i>[indicate main reason(s) e.g. for GBV/ SEA breaches]</i> | <i>[insert amount]</i>   |
| ...                  | ...   | <i>[list all applicable contracts]</i>   | ...  |

**Performance Security called by an employer(s) for reasons related to ESHS performance**

| Year                 | Contract Identification  |                        |
|----------------------|--|------------------------|
| <i>[insert year]</i> | Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i><br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Reason(s) for suspension or termination: <i>[indicate main reason(s) e.g. for GBV/ SEA breaches]</i> | <i>[insert amount]</i> |

## Appendix to Technical Part

### Form EXP – 7.0

Forms for Personnel

| Item No. | Position/specialization required | Relevant academic qualifications  |         |
|----------|----------------------------------|---|---------|
|          |                                  | <i>Bidder to provide the details at the time of bid Submission</i>  |         |
|          |                                  | Minimum years of relevant work experience   |         |
| 1        | Contract / Project Manager       | Contract Manager shall have a bachelor's degree in civil engineering and an experience of minimum 10 years', out of which <b>at least 7 years'</b> shall be in managing projects of similar nature. Personnel must have experience in executing dredging projects. The age of the personnel as on the date of bid submission shall not be more than 50 years; | 7 years |

#### Details of other Suitable Manpower / experts in the following specializations Desirable at the time of bidding.

|   |                        |   |         |
|---|------------------------|---|---------|
| 2 | Surveyor               | Diploma in Hydrographic Survey  | 3 years |
| 3 | Dredger Master         | Dredging experience in River / Canal / Port   | 7 years |
| 4 | Social Expert          | Graduate or equivalent in social sciences   | 3 years |
| 5 | Environment Expert     | Graduate in Environmental Engineering / Environmental Sciences                                | 3 years |
| 6 | Health & Safety Expert | Graduate in Engineering / Sciences and must have Diploma / Certification in health and safety | 3 years |

### Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

| S. No. | Position                        | Name | Qualification | Years of Experience | Years of Experience in proposed position |                 |         |       |
|--------|---------------------------------|------|---------------|---------------------|--|-----------------|---------|-------|
|        |                                 |      |               |                     | Road * works                             | Building* works | Others* | Total |
|        | [Environmental Specialist#]     |      |               |                     |  |                 |         |       |
|        | [Health and Safety Specialist#] |      |               |                     |  |                 |         |       |
|        | [Social Specialist#]            |      |               |                     |  |                 |         |       |

|           |   |  |  |
|-----------|---|--|--|
| <b>1.</b> | <b><sup>15</sup>Title of position: ( Contractor's Representative)</b> |  |  |
|           | <b>Name of candidate:</b>   |  |  |
|           | <b>Duration of appointment:</b>                                       | [insert the whole period (start and end dates) for which this position will be engaged]    |  |
|           | <b>Time commitment: for this position:</b>                            | [insert the number of days/week/months/ that has been scheduled for this position]         |  |
|           | <b>Expected time schedule for this position:</b>                      | [insert the expected time schedule for this position (e.g. attach high level Gantt chart)] |  |

(\* Modify this as appropriate to suit the works for which bids are invited,  
# As listed in Section III)

<sup>15</sup> As listed in Section III (Evaluation and Qualification criteria).

## Appendix to Technical Part

### Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (\*) shall be used for evaluation.

**Position\***

|                              |                                    |  |
|------------------------------|------------------------------------|--|
| <b>Personnel information</b> | <b>Name *</b>                      | <b>Date of birth</b>                         |
|                              | <b>Professional qualifications</b> |  |
| <b>Present employment</b>    | <b>Name of Employer</b>            |  |
|                              | <b>Address of Employer</b>         |  |
|                              | <b>Telephone</b>                   | <b>Contact (manager / personnel officer)</b> |
|                              | <b>Fax</b>                         | <b>E-mail</b>                                |
|                              | <b>Job title</b>                   | <b>Years with present Employer</b>           |
|                              |                                    |  |

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

| From* | To* | Company, Project, Position, and Relevant Technical and Management Experience* |
|-------|-----|---|
|       |     |   |
|       |     |   |
|       |     |   |
|       |     |   |
|       |     |   |

### Declaration

I, the undersigned Key Personnel, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

| Commitment                                 | Details   |
|--|---|
| <b>Commitment to duration of contract:</b> | <i>[insert period (start and end dates) for which this Key Personnel is available to work on this contract]</i> |
| <b>Time commitment:</b>                    | <i>[insert the number of days/week/months/ that this Key Personnel will be engaged]</i>                         |

I understand that any misrepresentation or omission in this Form may:

- (a) be taken into consideration during Bid evaluation;
- (b) my disqualification from participating in the Bid;
- (c) my dismissal from the contract.

**Name of Key Personnel:** *[insert name]*

Signature: \_\_\_\_\_ Date: (day month year):----- .**Countersignature of authorized representative of the Bidder:**

Signature: \_\_\_\_\_ **Date: (day month year):** \_\_\_\_\_

**Form EXP – 7****Code of Conduct****Environmental, Social, Health and Safety (ESHS)**

|                           |  |
|---------------------------|--|
| Bidder's Name             | <i>[insert full name]</i>                                  |
| Date:                     | <i>[insert day, month, year]</i>                           |
| Joint Venture Member Name | <i>[insert full name]:</i>                                 |
| NCB No. and title         | <i>[insert NCB number and title]</i>                       |
| Page...                   | <i>[insert page number] of [insert total number] pages</i> |

The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors as required by ITB 11.2 (i) of the Bid Data Sheet. The Code of Conduct shall ensure compliance with the ESHS provisions of the contract, including those as may be more fully described in the Works and Services Requirements described in Section VI.

In addition, the Bidder shall submit an outline of how this Code of Conduct will be implemented. This will include: how it will be introduced into conditions of employment/engagement, what training will be provided, how it will be monitored and how the Contractor proposes to deal with any breaches.

**Appendix to Technical Part**

Form.....

(Name of the Project)

**(Declaration regarding tax/duty exemption for materials/construction equipment bought for the work)**

(Bidder's Name and Address)

To: .....

(Name of the Employer &amp; address)

Dear Sir:

Re: [Name of Work].....

Certificate for Import/Procurement of Goods/Construction Equipment  
Government Order/Circular Number under which tax/duty Exemption is being sought: ...

1. We confirm that we are solely responsible for obtaining tax/duty waivers which we have considered in our bid and in case of failure to receive such waivers for reasons whatsoever, the Employer will not compensate us.
2. We are furnishing below the information required by the Employer for issue of the necessary certificates in terms of the Government of India's relevant Notifications.
3. The goods/construction equipment for which certificates are required are as under:

| Items<br>(modify the list suitably for each specific work) | Make/<br>Brand<br>Name | Capacity<br>[where<br>applicable] | Quantity | Value | State whether it<br>will be procured<br>locally or imported<br>[if so from which<br>country] | Remarks regarding<br>justification for the<br>quantity and their<br>usage in works. |
|--|------------------------|-----------------------------------|----------|-------|--|---|
| <b>Dredging Equipment</b>                                  |                        |                                   |          |       |  |   |
|  |                        |                                   |          |       |  |   |
|  |                        |                                   |          |       |  |   |

4. We agree that no modification to the above list is permitted after bids are opened.
5. We agree that the certificate will be issued only to the extent considered reasonable by the Employer for the work, based on the Bill of Quantities and the construction program and methodology as furnished by us alongwith the bid.
6. We confirm that the above goods and construction equipment will be exclusively used for the construction of the above work and the construction equipment will not be sold or otherwise disposed of in any manner for a period of five years from the date of acquisition.

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

(Signature) \_\_\_\_\_

Place: \_\_\_\_\_

(Printed Name) \_\_\_\_\_

(Designation) \_\_\_\_\_

(Common Seal) \_\_\_\_\_

[This certificate will be issued within 60 days of signing of contract and no subsequent changes will be permitted.]

**\* Modify the above to suit the requirements given in Government of India's Notifications as current of date of bidding.**

## Appendix to Technical Part Form of Bid Security - Bank Guarantee

*[Guarantor letterhead or SWIFT identifier code]*

Bid Guarantee No.....*[insert guarantee reference number]*

Date.....*[insert date of issue of the guarantee]*

WHEREAS, \_\_\_\_\_ *[name of Bidder]*<sup>16</sup> (hereinafter called "the Bidder") has submitted his Bid dated \_\_\_\_\_ *[date]* or will submit his Bid for the construction of \_\_\_\_\_ *[name of Contract]* (hereinafter called "the Bid") under Invitations for Bids No.....*[insert number]* (hereinafter called "the IFB")

KNOW ALL PEOPLE by these presents that We \_\_\_\_\_ *[name of bank]* of \_\_\_\_\_ *[name of country]* having our registered office at \_\_\_\_\_ (hereinafter called "the Bank") are bound unto \_\_\_\_\_ *[name of Employer]* (hereinafter called "the Employer") in the sum of \_\_\_\_\_<sup>17</sup> for which payment well and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

THE CONDITIONS of this obligation are:

- (1) If after Bid opening the Bidder (a) withdraws his bid during the period of Bid validity specified in the Letter of Bid; or (b) does not accept the correction of the Bid Price pursuant to ITB 36; or
- (2) If the Bidder having been notified of the acceptance of his bid by the Employer during the period of Bid validity:
  - (a) fails or refuses to execute the Contract Agreement in accordance with the Instructions to Bidders, if required; or
  - (b) fails or refuses to furnish the Performance Security, and if required, the Environmental and Social (ES) Performance Security, in accordance with the Instruction to Bidders.

we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the four conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date \_\_\_\_\_<sup>18</sup> days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE \_\_\_\_\_ SIGNATURE OF THE BANK \_\_\_\_\_

WITNESS \_\_\_\_\_ SEAL \_\_\_\_\_

*[signature, name, and address]* *Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

<sup>16</sup> Insert name of the Bidder, which in the case of a joint venture shall be (a) the name of the joint venture that submits the bid if the JV has been constituted into a legally enforceable JV, or (b) the names of all future members of the JV as named in the letter of intent to execute the JV Agreement submitted by the bidder along with its bid.

<sup>17</sup> The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees. This figure should be the same as shown in Clause 19.1 of the Instructions to Bidders.

<sup>18</sup> 45 days after the end of the validity period of the Bid.

## Letter of Bid – Financial Part

|     |                            |
|-----|----------------------------|
| To, | Date .....                 |
|     | NCB No.....                |
|     | Invitation for Bid No..... |

**Subject :- Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1**

We, the undersigned, hereby submit the second part of our Bid, the Bid Price and Bill of Quantities. This accompanies the Letter of Technical Part, In submitting our Bid, we make the following additional declarations

- (a) Our bid shall be valid for a period of \_\_\_\_\_ [insert validity period as specified in ITB 18.1.] days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (b) The total price of our Bid, excluding any discounts offered in item (c) below is:
- In case of only one lot, total price of the Bid [insert the total price of the bid in words and figures];  
 -In case of multiple lots, total price of each lot [insert the total price of each lot in words and figures];  
 -In case of multiple lots, total price of all lots (sum of all lots) [insert the total price of all lots in words and figures];
- (c) The discounts offered and the methodology for their application are:
- (i) The discounts offered are: [Specify in detail each discount offered.]  
 (ii) The exact method of calculations to determine the net price after application of discounts is shown below: [Specify in detail the method that shall be used to apply the discounts];

**Table – 1**

**Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1** and dispose off the dredged material with all leads & lifts on river Bank / or at designated site by EIC or his representative in each year of the Contract Period.

**Lump Sum prices Quoted shall be inclusive of ESHS but excluding GST.**  
 ( % age of GST considered shall to be indicated separately )

| 1   | 2  | 3   | 4 | 5      | 6                     |
|---|--|---|---|--------|-----------------------|
| <b>Digha-Majhaua stretch (95km)</b><br><i>Dredging by Cutter Suction Dredgers of suitable size, type and capacity as per general &amp; special conditions, technical specification to provide</i><br><b>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1</b><br><i>for a period of 3 years The rate shall include the surveys (at all stages: pre and post dredging survey), mobilization and de-mobilization charges, shifting charges from shoal to shoal, dumping of dredged spoil up to minimum 300 m &amp; maximum 1000 m through pipelines or road transportation including leads- lifts &amp; Labour Welfare Cess @ 1% (but except GST) as prevailing and all other taxes / charge, expenditure etc. complete in all respect.</i> | Quantity in lakh cum<br><br>16,32,000.00 Cum | Quoted rate inclusive of 1% of Labour welfare cess<br>Figures & Words |   | Amount | Total Amount in Words |
| <b>Rate for disposal of dredging material additional 1 km ( excluding GST)</b>  |  |   |   |        |                       |

|                             |                          |  |  |  |
|-----------------------------|--------------------------|--|--|--|
| ( % age of GST considered ) |                          |  |  |  |
|                             | <b>Total for 3 years</b> |  |  |  |

We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:<sup>19</sup>*[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount of each such commission or gratuity]*

| Name of Recipient | Address | Reason | Amount |
|-------------------|---------|--------|--------|
|                   |         |        |        |
|                   |         |        |        |

(If none has been paid or is to be paid, indicate “none.”)

Name \_\_\_\_\_ In the capacity of \_\_\_\_\_

Signed \_\_\_\_\_

Duly authorized<sup>20</sup> to sign the bid for and on behalf of <sup>21</sup>\_\_\_\_\_

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

\*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

\*\*: Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

<sup>19</sup>*If none has been paid or is to be paid, indicate “none”.*

<sup>20</sup> Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid

<sup>21</sup> In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

## Appendix to Financial Part

### Bills of Quantities

The bid includes the following Bills of Quantities:

**The rates quoted are Yearwise Lump-sum prices Including ESHS towards Work for Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1 and dispose off the dredged material with all leads & lifts on river Bank / or at designated site by EIC or his representative in each year of the Contract Period.**

#### Preamble

- a. *The Bill of Quantities for e Lump-sum prices Including ESHS shall be read in conjunction with the Instructions to Bidders, Conditions of Contract, Specifications and the Drawings.*
- b. *This Bill of Quantities is the basis for payment of all payments to and from Employer's Country, set-up and site establishment.*
- c. *Payment shall be made in accordance with compliance to the actual program schedule for mobilization/ demobilization, set-up and establishment.*
- d. *The unit rates and prices bid in the priced Bill of Quantities shall, except in so far as is otherwise provided under the Contract, include all plant and equipment, transport and operation, labor, supervision, materials, erection, maintenance, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract and not provided for separately under details of Bill of Quantities. References to the relevant sections of the Contract documentation including the Technical Specifications shall be made before entering rates or prices against each item in the Bill of Quantities.*
- e. *The method of measurement of completed work for payment shall be in accordance with the measurement and payment provisions of the relevant section in the Specifications.*

| <b>Lump Sum prices Quoted shall be inclusive of ESHS but excluding GST.</b><br>( % age of GST considered shall to be indicated separately )  |                     |
|--|---------------------|
| <b>Digha-Majhaua stretch (95km)</b>  | <b>Quantity</b>     |
| <i>Dredging by Cutter Suction Dredgers of suitable size, type and capacity as per general &amp; special conditions, technical specification to provide</i><br><b>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) (172km) of National Waterway – 1</b><br><i>for a period of 3 years The rate shall include the surveys (at all stages: pre and post dredging survey), mobilization and de-mobilization charges, shifting charges from shoal to shoal, dumping of dredged spoil up to minimum 300 m &amp; maximum 1000 m through pipelines or road transportation including leads- lifts &amp; Labour Welfare Cess @ 1% (but except GST) as prevailing and all other taxes / charge, expenditure etc. complete in all respect.</i> | 16,32,000<br>Cum    |
| <b>Rate for disposal of dredging material additional 1 km ( excluding GST)</b>   |                     |
| ( % age of GST considered )  |                     |
| <b>Total for 3 years</b>   | 16,32,000.00<br>Cum |

#### Note:

1. *Item for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities (refer:ITB Clause 14.2 and GCC Clause 41.3)*
2. *Unit rates and prices shall be quoted by the bidder in Indian Rupees (refer: ITB Clause 14.1 and ITB Clause 15.1)*
3. *Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern(refer: ITB Clause 36).[Note: delete this point if the e-procurement system automatically calculates the total from the unit rate and quantity]*
4. *Where there is a discrepancy between the rate in figures and words, the rates in words will govern (refer: ITB Clause 36).[Note: delete this point if the e-procurement system automatically populates the amount in words from the amount in figures]*

## Finance Bid: Bill of Quantity ( for On-line Submission Schedule)

Validate

Print

Help

### Item Rate BoQ

**Tender Inviting Authority:** Jal Marg Vikas Project, Inland Waterways Authority of India, Noida.

**Work for Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1** and dispose off the dredged material with all leads & lifts on river Bank / or at designated site by EIC or his representative in each year of the Contract Period.

**Contract No:** IN-IWAI –..... -CW-RFB

Name of the Bidder / Firm  
/ Company:

### PRICE SCHEDULE

(This BOQ template should not be modified / replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

| Sl. No.              | Item Description  | Quantity      | Units  | RATE inclusive of 1% Labour Welfare Cess<br>Rs. P | AMOUNT<br>Rs. P | TOTAL AMOUNT<br>In Words |
|----------------------|---|---------------|--------|---|-----------------|--------------------------|
| 1                    | 2   | 3             | 4      | 5   | 6               | 7                        |
| <b>1.0</b>           | <b><u>Dredging in Digha-Majhaua stretch (95km)</u></b>  |               |        |   |                 |                          |
| 1.1                  | Dredging by Cutter Suction Dredgers of suitable size, type and capacity as per general & special conditions, technical specification to provide <b>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1</b> for a period of 3 years The rate shall include the surveys (at all stages: pre and post dredging survey), mobilization and demobilization charges, shifting charges from shoal to shoal, dumping of dredged spoil up to minimum 300 m & maximum 1000 m through pipelines or road transportation including leads- lifts & Labour Welfare Cess @ 1% (but except GST) as prevailing and all other taxes / charge, expenditure etc. complete in all respect. | 16,32,000     | Cu. m  |   | 0.00            | INR Zero Only            |
| 1.2                  | Rate for disposal of dredging material additional 1 km ( excluding GST)   | 1             | Per KM |   | 0.00            | INR Zero Only            |
| 1.3                  | (Value of GST considered )  | 1             | LS     |   | 0.00            | INR Zero Only            |
| Total in Figures     |   |               |        |   | 0.00            | INR Zero Only            |
| Quoted Rate in Words |   | INR Zero Only |        |   |                 |                          |

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

## Appendix to Financial Part: Schedules Form SC-Sub Contracting

### SCHEDULE OF SUBCONTRACTORS

| Item | Element of work | Approximate value of sub-contract | % of bid price | Name and address of sub-contractor | Qualification and experience of sub-contractor on similar works of the elements executed |
|------|-----------------|-----------------------------------|----------------|------------------------------------|--|
|      |                 |                                   |                |                                    |  |

The Bidder shall enter in this schedule a list of the major sections and appropriate value of the work for which he proposes to use subcontractors *[for those costing more than 10% of the bid price for each element]*, together with the names, addresses and experiences of the proposed subcontractors.

The capability of the sub-contractor will also be assessed (on the same lines as for the main Contractor) before according approval to him.

*(Work should not be split into small parts and sub-contracted; but, sub-contracting specialized elements of works is acceptable).*

## Appendix to Financial Part

### Appendix to Bid

#### Schedule of Adjustment Data

[In Tables A, B, and C, below, the Bidder shall (a) indicate its amount of local currency payment, (b) indicate its proposed source and base values of indices for the different foreign currency elements of cost, (c) derive its proposed weightings for local and foreign currency payment, and (d) list the exchange rates used in the currency conversion. In the case of very large and/or complex contracts, it may be necessary to specify several families of price adjustment formulae corresponding to the different works involved.]

**Table A. Local Currency**

| Index code*  | Index description*   | Source of index*   | Base value and date*                            | Bidder's related currency amount | Bidder's proposed weighting |
|--------------|--|--|---|----------------------------------|-----------------------------|
| NA<br>L      | Nonadjustable  | —  | —   | —                                | A: <u>0.222*</u>            |
| L            | Labour – All India Consumer Price Index (CPI) for industrial workers | Labour Bureau<br>Ministry of Labour & Employment<br>Government of India                  | CPI month preceding the bid submission date     |                                  | B: <u>0.272 to 0.35</u>     |
| F            | High Speed Diesel – All India Wholesale Price Index (WPI)            | Office of the Economic Advisor to the Govt of India<br>Ministry of Commerce and Industry | WPI of month preceding the bid submission date. |                                  | C : <u>0.428 to 0.526</u>   |
| <b>Total</b> |  |  |   |                                  | <b>1.00</b>                 |

[\* To be entered by the Employer. Whereas “A” should a fixed percentage (say around 15%), B, C, D and E should specify a range of values and the Bidder will be required to specify a value within the range such that the total weighting = 1.00]

### Format for the Affidavit

*(NOTE: This affidavit should be on a non-judicial stamp paper of Rs.10/- and shall be attested by Magistrate/ Sub-Judge/ Notary Public)*

*I, ..... (name of the authorised representative of the bidder) son/daughter of ..... resident of ..... (full address), aforesaid solemnly affirm and state as under:*

*1. I hereby certify that all the information and documents furnished with the bid submitted online in response to Invitation For Bid ..... dated ..... issued by ..... (Authority inviting bids) for ..... (name and identification of work) are true and correct.*

*2. I hereby certify that I have been authorised by ..... (Bidder) to sign on its behalf, the bid mentioned in paragraph 1 above.*

*Deponent*

*Place: .....*

*Date: .....*

## Section V - Eligible Countries

### Eligibility for the Provision of Goods, Works and Services in Bank-Financed Procurement

1. In reference to ITB 4.7, and 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this bidding process:

Under ITB 4.7 (a) and 5.1 : *None*

Under ITB 4.7 (b) and 5.1 : *None*

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

## Section VI. Bank Policy - Corrupt and Fraudulent Practices

(Section VI shall not be modified)

### Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011:

#### “Fraud and Corruption:

1.16 It is the Bank’s policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.<sup>22</sup> In pursuance of this policy, the Bank:

(a) defines, for the purposes of this provision, the terms set forth below as follows:

- (i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;<sup>23</sup>
- (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;<sup>24</sup>
- (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;<sup>25</sup>
- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;<sup>26</sup>
- (v) “obstructive practice” is
  - (aa) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
  - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 1.16(e) below.

<sup>22</sup>In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

<sup>23</sup> For the purpose of this sub-paragraph, “another party” refers to a public official acting in relation to the procurement process or contract execution. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

<sup>24</sup> For the purpose of this sub-paragraph, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

<sup>25</sup> For the purpose of this sub-paragraph, “parties” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other’s bid prices or other conditions.

<sup>26</sup> For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution.

- (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank's sanctions procedures,<sup>27</sup> including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated<sup>28</sup>;
- (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.”

---

<sup>27</sup> A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank's sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines.

<sup>28</sup> A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

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| <b>PART I – SCOPE OF WORK / Description of Services</b> |   |
|---|---|
| <b>1. Introduction</b>                                  | <p>Inland Waterways Authority of India (IWAI) is a statutory body set up in 1986 under the Ministry of Shipping, Road Transport &amp; Highway, Govt. of India. The Authority is entrusted with development, maintenance and management of National Waterways for shipping and navigation.</p> <p>Inland Waterways Authority of India (IWAI) is implementing Jal Marg Vikas Project (JMVP) for capacity augmentation of National Waterway - 1 between Varanasi - Haldia (1380 Km) with the technical assistance and financial support of the World Bank. The project is scheduled to be completed by December, 2023. The extension of this work shall be considered by IWAI through its resources.</p> <p>The Ganga-Bhagirathi-Hooghly river system for a length of 1620 km connecting Haldia (Sagar) - Kolkata - Bhagalpur –Sultanganj – Mahendrapur - Barh - Patna - . - Varanasi – Allahabad was declared as National Waterway 1 (NW-1) in the year 1986. There is considerable difference between flood and lean season discharges and water level.</p> <p>The targeted Least Available Depth (LAD) in various stretches of NW-1 is Haldia - Farakka -3.00 m ;Farakka –Barh 3.0 m; Barh - Ghazipur-2.50 m and Ghazipur –Varanasi – 2.20 m.</p> <p>To achieve the navigation of vessels in <b>Digha-Majhaua stretch (95km)</b> stretch of NW-1, IWAI intends engage agency for quantity based dredging for three years and extendable on yearly basis on satisfactory performance for another two years to tackle the shoals occurring in the river during the lean season or as per the requirement.</p> |
| <b>2. Objective</b>                                     | <p><b><i>The Objective of the Works &amp; Services is to Dredge the Shoals for Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1 through Quantity Based Dredging and dispose off the dredged material with all leads &amp; lifts on river Bank / or at designated site by EIC or his representative in each year of the Contract Period upto Three ( 3) Years.</i></b></p>  |
| <b>3. Scope of Work</b>                                 | <p>IWAI plans to Provide fairway of Width of 30m and depth of 2.5m for Fairway Maintenance between Digha - Majhaua stretch of NW-1.</p> <p><i>Accordingly under this tender it is proposed to undertake the Dredging using Cutter Suction Dredgers of suitable size, type and capacity as per general &amp; special conditions, technical specification to provide <b>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1 for a period of up to Three ( 3) Years</b></i></p> <p><i>The rate shall include the surveys (at all stages: pre and post dredging survey), mobilization and de-mobilization charges, shifting charges from shoal to shoal, dumping of dredged spoil up to minimum 300 m &amp; maximum 1000 m through pipelines or road transportation including Labour Welfare Cess @ 1% (but except GST) as prevailing and all other taxes / charge, expenditure etc. complete in all respect.</i></p> <p>For developing/ maintaining such design channels it has been estimated the quantity of 16.32 Lakh M<sup>3</sup> to be dredged out in a period of 36 months (Including Monsoon period and mobilization period of 45 days)</p> <p>The bidder / service provider / bidder shall take into account tolerance of + 1 m</p>  |

from each edge of the channel and tolerance of +10 cm on the depth. There is however, no restriction on maximum width of the channel which may naturally be available. And no additional payments shall be admissible to this effect.

The dredging material consists of sand, silt, clay, soft deposited material (pebbles / boulders) and hard material (rock) and the material can vary. The estimated quantities may vary +/- 20 % for which no change in unit rate / amount for dredging will be admissible. For any variations beyond the above, additional financial implication, if any, on the unit rate / amount shall be mutually agreed between Contractor and the Employer based on Engineer's recommendation.

Accordingly under this tender, it is proposed to undertake the dredging during non-flood season using the Cutter Suction Dredger (CSD) as specified, for a ***period of 36 months*** ( Inclusive of Monsoon period).

.For fairway development, the successful Bidder shall deploy, operate, maintain and manage Equipment / Cutter Suction Dredgers (CSD) of desired capacity and number along with their allied vessels and undertake dredging for navigation of vessels in the channel.

The Contractor's scope will also include to providing of vessels, and equipment and surveying related manpower for joint surveys during the Quantity based dredging for pre & post dredging shall also be the Basis for regulating / processing the contractor's monthly payments.

Dredging operations will generally be carried out during the day light hours. In case the depth falls below the targeted levels, the contractor will be at liberty to extend the dredging hours even during hours of darkness as per Govt rules & regulations and Local Authorities.

No additional payment will be made for deployment of the dredger in excess of average 8 hours daily operation.

It is clarified that the CSDs can either be non-propelled or self-propelled. In case of non- propelled dredgers, complementary Tug / Workboat will also have to be deployed. All the supporting vessels for smooth and hassle free dredging operations as well as swift movement of dredges from one shoal to another will also be supplied.

Location of the shoals shall be provided by the representative of Engineer in Charge (EIC) from time to time on regular basis.

The detail for dredging ***from Digha-Majhaua stretch (95km) stretch with***

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|  | <p><b><i>approximate Annual dredging quantity of 16.32 lakh Cum. The contract period is for a duration of 36 months including the monsoon period.</i></b></p> <p>The detailed scope of work for carrying out the Dredging works also includes:</p>  |
| <b><i>4. Dredging Equipment requirements</i></b> | <p>The dredging may be carried out by deployment of suitable Cutter Suction Dredger (CSD), or any other equipment in any combination along with Survey vessel with suitable equipment for achieving the deliverable of the contract.</p> <p>The CSDs having pumping capacity of 250 – 650 m<sup>3</sup> solids per hour, can either be non-propelled or self-propelled. In case of non- propelled dredgers, complementary Tug / Workboat will also have to be deployed. All the supporting vessels for smooth and hassle-free dredging operations as well as swift movement of dredges shall be ensured.</p> <p>The Equipment / Dredgers must have valid statutory certificate, under either Inland Vessels Act or under Merchant Shipping Act.</p> <p>The Contractor shall furnish the valid fitness / survey certificates and all other necessary vessel approvals for all the dredgers and vessels to be deployed by the competent Statutory Authority under the Inland Vessels Act, 1917 (1 of 1917), at the time of the bid submission.</p> <p>The Contractor shall also submit the valid necessary documents required under the Inland Vessels Act, 1917 (1 of 1917) before actual deployment of the Equipment at site which would be jointly surveyed and approved by the Engineer-in-charge <b><i>and these shall remain valid during the course of the Contract.</i></b> Moreover, IWAI may ask the Contractor to replace the dredger or any other vessel / equipment during operation, if desired output is not achieved.</p> <p>a. The Contractor shall submit the deployment plan for mobilization of dredgers, supporting vessels and equipment and for approval by the Engineer-in Charge during the execution of the work in the field.</p> <ul style="list-style-type: none"> <li>• The Contractor is free to deploy dredgers for the entire contract period with equal / higher design capacity as per direction from Engineer-in-Charge, if so required for achieving the progress of dredging as envisaged in the contract.</li> <li>• All dredging units as envisaged in bid with all accessories, supporting vessels &amp; equipment as stipulated here under, shall be deployed at the site and it shall be approved by the Engineer-In-Charge in accordance with the proposed methodology</li> </ul> |

| Sr. No. | Equipment type and characteristics            |  | Minimum number required  |
|---------|---|--|--|
|         | Equipment                                     | Minimum Capacity   |  |
| 1       | Cutter Suction Dredger                        | Each having capacity of 250 - 650 cum / hr of solids               | Minimum As defined at Section-III Equipment 2.6.0 & additional as per requirement. |
| 2       | Work Boats / Tugs                             | For towing dredging unit / anchor shifting etc.                    |  |
| 3       | Vessel and equipment for survey works         | As required  |  |
| 4       | Accommodation Boats (if required)             | To accommodate crew and supervisory staff separately (if required) |  |
| 5       | Any other vessel                              | As required  | As required  |
| 6       | Suitable discharge pipe line up to 1km length | Minimum 1 km length  |  |

**Note:**

a. One cutter suction dredger unit for efficient dredging operations as one complete unit to be deployed shall necessarily include :-

- one work boat / tug,
- accommodation boat,
- anchoring boat with anchor pontoon,
- survey vessel/boat and any other support vessel (if required)

b. Technology Solution for cutter suction dredge system that should be able to provide absolute position of the dredge head in relation to the surveyed and any number of design surface. The working surface should be updated with the dredged depth in real time and displayed in plan, profile and 3D views. This information should be able to be relayed back to office and a digital record is recorded as dredging proceeds and volume dredged can be determined on the dredge or back in the office.

This solution should consist of all below items from a single manufacturer and should be delivered from a single source:

- Inclinometer sensor to measure cutter suction dredge ladder angle and cutter head position
- Dual-axis inclinometer sensor to measure the attitude of the dredge vessel
- GNSS heading system with Internal UHF Radio, RTK, cm accuracy, beacon capability to measure cutter suction dredge position, heading and rotation
- Dedicated computer display running Marine Construction

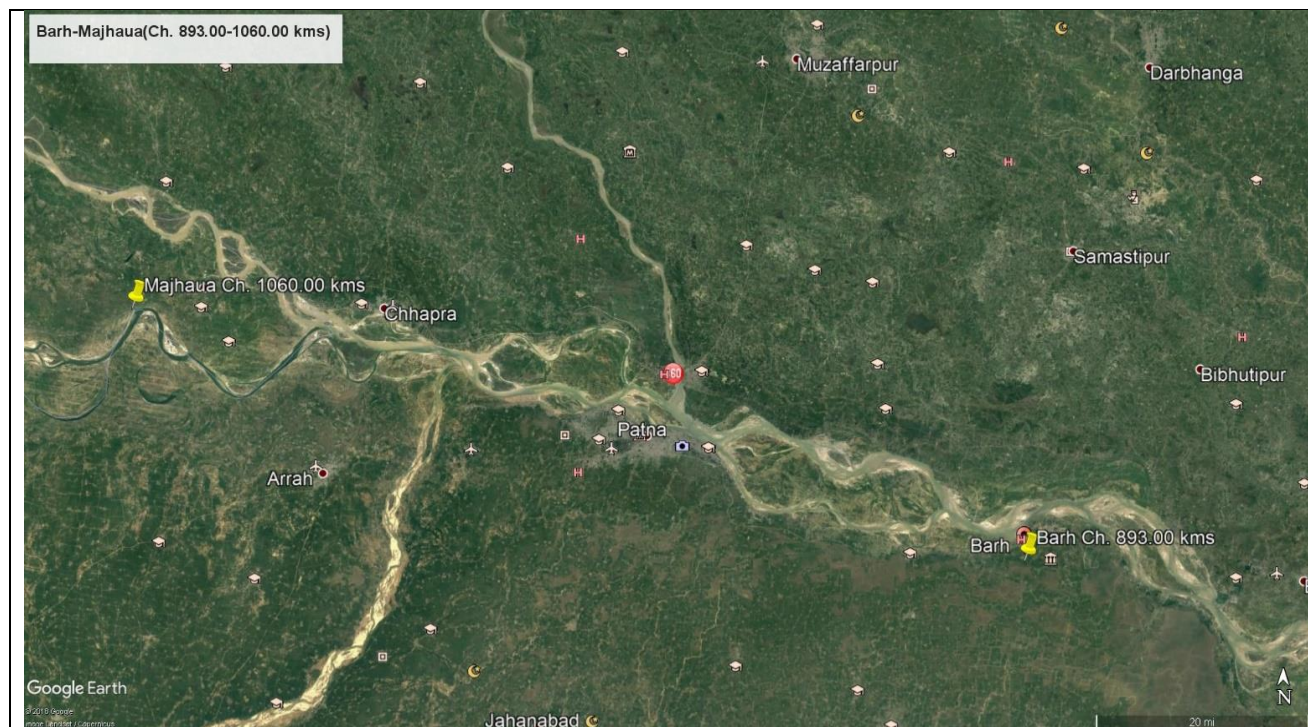
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|                                      | <p style="text-align: center;"><i>software</i></p> <p>c. In case of self-propelled cutter suction dredger, work boat may be required for crew movement and tug may not be necessary but the dredger and the allied vessels/equipment (as deemed fit by the contractor) should be able to efficiently perform dredging operation as well as shoal to shoal movement of the vessels / equipment. This has to be explained adequately in work plan and methodology statement.</p> <p>d. In case the deployed hardware is observed to be not performing to the required capacity, the bidder has to substitute the same with hardware of minimum capacity indicated in the bid at his own cost and risk. No extra time will be allowed for the same</p>  |
| <b>5. Preliminary Works</b>          | <p>a) The Contractor shall review the available data &amp; reports pertaining to works and shall carry out all the Surveys as detailed in Clause 6 of Part II – <i>Technical specifications</i>.</p> <p>b) The Contractor shall also make a detailed analysis of the River length, available depth for fairway development and update the plan for dredging works for Channel width of 30 m from as stipulated in BOQ.</p> <p>c) The Contractor based upon the surveys and detailed analysis shall submit periodically Work plan / methodology for carrying out the execution of Work to the Engineer in Charge (EIC) or his representative for this approval. The contractor shall bear all the cost arising out of surveys and detailed analysis.</p> <p>d) The Work Plan to be submitted by the Contractor shall include:</p> <ul style="list-style-type: none"> <li>• The Work Program</li> <li>• Health &amp; Safety Plan</li> <li>• Environment Management Plan (EMP)</li> </ul> |
| <b>6. Procurement &amp; Delivery</b> | <p>(a) The Contractor shall procure and supply all the necessary material, machinery and related necessary items well in advance adhering to the timelines of the contract.</p> <p>(b) The Contractor shall make its own arrangement for storage and handling of material &amp; machinery procured at site. The Contractor shall make stock of the material, machinery and supply the same at site without delaying the Work.</p> <p>(c) The Contractor shall be liable to maintain the standards (as detailed in clause 66 of SCC) in terms of quality for all the materials, machinery and related items procured as per the industry norms and terms and conditions set forth in Part II - Technical Specifications of ToR.</p>   |

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|  | <p>(d) The CSD units are to be kept ready for operation during lean season (working season) from 15<sup>th</sup> October* to 15<sup>th</sup> June of the succeeding year. All major repairs to be completed in the flood season from 16<sup>th</sup> June to 14<sup>th</sup> October.</p> <p>The statutory manpower shall be deployed on board CSD and allied vessels for operation of the dredgers in working season as per the directions of EIC. Deployment of equipment, manpower, machinery during Non-working season for conducting dredging activities shall be allowed by EIC on case to case basis.</p> <p>The works of dredging shall commence as per the directions of the EIC.</p> <p>* The dates mentioned for Monsoon &amp; Non-Working Monsoon Period are notional &amp; actual will depend upon site conditions.</p> <p>(e) All defects as and when arise are to be quickly attended to by the Contractor, to ensure that any of the dredger(s) do not remain idle for more than 72 hours during the lean season (i.e. working season).</p> |
| <b>7. Mobilization &amp; De-Mobilization</b> | <p>a. Mobilization Period: On placement of letter of Intent, the dredgers &amp; equipment are to be mobilized at Digha –Majhaua Stretch and commence dredging within 45 days from date of signing of contract.</p> <p>b. Mobilization &amp; De-mobilization Charges: No Mobilization &amp; De-mobilization charges will be payable to the contractor separately. Such costs should be included in the dredging Charges</p> <p><b>c. Penalty for delay in mobilization: Delay in complete mobilization of the equipment as per accepted dredging plan will attract a penalty of @ 0.5% of contract value per week, subject to maximum of 5% of the contract value.</b></p> <p>d. Demobilization Period: Demobilization is to be completed within 45 days of completion of the contract period.</p>   |
| <b>8. Timelines</b>                          | <p>a) The Contractor shall mobilize all the dredgers, allied vessels, equipment and manpower at site, within 45 days from the date of Letter of Award. The Contractor is required to mobilize the desired equipment and manpower within this time frame to start the dredging operations in full capacity</p> <p>b) The Contractor, within 15 days from the date of issue of Letter of Award, should submit detailed Schedule of activities including</p>   |

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|                                   | <p>mobilization, method statements, QC manual including all data and reporting formats, for comment from EIC and should include all comments and observations to get the same approved by EIC.</p> <p>c) The Contract duration for the entire scope of work shall be 36 months from the date of issue of Letter of Award (Including non-working monsoon period &amp; mobilization period of 45 days).</p> <p>d) The Contractor shall submit a detailed work plan indicating the timelines for Dredging Activities and other miscellaneous activities to the Engineer-in Charge for approval including dredger mobilization plan.</p> <p>e) The Contractor shall abide with the timelines as scheduled in the Work Plan for Dredging activities.</p> <p>f) The Contractor, in the course of the work, after deliberations with the EIC, shall agree and incorporate the necessary changes in dredging and navigational activities within timelines. The Contractor shall get the macro<br/><br/>and micro level activity plan and methodology statement(s) approved by EIC.</p> <p>g) No idle time charges on any account shall be paid to the contractor during the contract period.</p> <p>h) If the dredged channel for the <b>LAD of 2.50m</b> gets silted in due course of time within the working season requiring re-dredging for navigational requirement, the same shall be carried out by the Contractor by mobilizing the dredger within stipulated period as instructed by EIC.</p> <p>i) <b><i>Re-dredging quantity would be eligible for payment as terms of contract.</i></b></p> |
| <p><b>9.Dredge Tolerances</b></p> | <p>The dredge level in the navigation channel shall not exceed an upper tolerance of (+) 0 mm and a lower tolerance of - 200 mm, where (+) indicates a height above the design dredge level and (-) indicates a depth below the design dredge level. No ridges or pinnacles above the design dredge level shall be accepted. Horizontal tolerances for dredging in the navigation channel shall be (-) 0 mm and (+) 1000 mm on both sides, where - indicates a deviation of the toe of the dredged slope (towards the channel) from the location specified in the contract drawings and (+) indicates a deviation of the toe of the dredged slope (away from the channel) from the location specified in the contract drawings.</p> <p><b><i>The Contractor will not be paid for the extra quantities, beyond</i></b></p>   |

|                                    |   |                                      |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
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|                                    | <i>tolerances as specified.</i> However, payment of tolerances will be made within the limits of tolerances as stipulated in RFP.   |                                      |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
| <b>10.Equipment to be deployed</b> | <p>The successful bidder shall deploy suitable equipment like CSDs or other types of dredgers in any combination with barges for disposal of dredged material for meeting the work requirement. However the additional deployment shall be as per site requirement. Desirable equipment are as following</p> <p>The Equipment / Dredgers must have Valid Statutory Certificates under either Inland Vessels Act or under Merchant Shipping Act.</p> <p>CSDs having pumping capacity of 250 – 650 Cum solids per Hr. along with associated disposal pipe lines or dumb hopper Barges / Bottom Door Opening Barges of 1000 cum Hopper capacity with Tug Setup for disposal of dredged material at designated places..</p>   |                                      |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
| <b>11. Volume of Work</b>          | <p>To Provide fairway of Width of 30m and depth of 2.5m for Fairway Maintenance between Digha – Majhaua stretch of NW-1, through Maintenance <i>Dredging using Cutter Suction Dredgers of suitable size, type and capacity as per general &amp; special conditions, technical specification to provide <b>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1 for a period Up to Three ( 3) Years</b></i></p> <table><tr><td>1</td><td>Channel Depth</td><td><b>Least Available Depth of 2.5m</b></td></tr><tr><td>2</td><td><b>Channel Width</b></td><td><b>30 m</b></td></tr><tr><td>3</td><td><b>Dredging Quantity</b></td><td>16.32 Lac Cum</td></tr><tr><td>4</td><td>Period of contract</td><td>Three ( 3) Years</td></tr></table> <p>a) The Contractor shall carry out the dredging works, as identified and described (but not limited to), in Part II – Technical Specifications of ToR which shall also include loading / unloading of dredged material for disposal as per direction of EIC.</p> <p>b) The Contractor shall be liable for correctness / quality of dredging works.</p> <p>c) Work can be executed with CSDs, Backhoe dredgers or any other methods including dry excavations suitable to meet the requirement of above work.</p> | 1                                    | Channel Depth | <b>Least Available Depth of 2.5m</b> | 2 | <b>Channel Width</b> | <b>30 m</b> | 3 | <b>Dredging Quantity</b> | 16.32 Lac Cum | 4 | Period of contract | Three ( 3) Years |
| 1                                  | Channel Depth   | <b>Least Available Depth of 2.5m</b> |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
| 2                                  | <b>Channel Width</b>  | <b>30 m</b>                          |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
| 3                                  | <b>Dredging Quantity</b>  | 16.32 Lac Cum                        |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
| 4                                  | Period of contract  | Three ( 3) Years                     |               |                                      |   |                      |             |   |                          |               |   |                    |                  |
| <b>12. Quality Control</b>         | <p><b>Quality Control System</b></p> <p>The Contractor shall prepare and submit for the Engineer's approval, not later than 15 days prior to the commencement of dredging and reclamation, his detailed proposals for a quality control system for the Dredging Works. The Engineer's written approval of the system shall</p>  |                                      |               |                                      |   |                      |             |   |                          |               |   |                    |                  |

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|                                   | <p>be obtained prior to commencement of work and the system shall not be altered by the Contractor without the written permission of the Engineer.</p> <p>The quality control system shall clearly indicate, inter alia:</p> <ul style="list-style-type: none"> <li>- <i>Contractor's personnel responsible for quality control and site organization chart;</i></li> <li>- <i>Work log, Data collection and report submission formats</i></li> <li>- <i>Method of monitoring and determining the type of material being dredged;</i></li> <li>- <i>Method of determining whether dredged material is suitable for sand fills;</i></li> <li>- <i>System for obtaining approval from the Engineer's Representative for pumping sand into the sand reclamation areas and clay into the disposal area;</i></li> <li>- <i>Method for monitoring the amount of fines being discharged from on-land reclamation sites;</i></li> <li>- <i>System for controlling the amount of fines being discharged from the on-land reclamation sites.</i></li> </ul>  |
| <b>13.Dredging Quantity &amp;</b> | <p><b>Joint Survey - Dredging Quantity</b></p> <p>The Dredging quantity will be measured based on <i>joint pre-dredge and post dredge surveys for various shoals</i> which will be given by EIC / his representative regularly during working season. EIC will try to give one shoal for dredging in advance while dredging of the previous shoal is under progress in order to avoid idling of dredger, provided pre-dredge survey is not delayed on account of contractor.</p> <p>However, the actual location of the Shoals to be taken up for Dredging shall be identified through a joint Pre-dredged Survey by the Contractor, Representative of the EIC &amp; TSSC cum PMC . The shoal details gathered from the joint survey shall be submitted to EIC / TSSC cum PMC</p> <p>EIC / TSSC cum PMC shall inform the priority / order for taking up the clearance / dredging of shoals</p> <p>Further, if the Contractor has been offered the quantity and contractor is unable to dredge the stipulated quantity, liquidated damages shall be applicable, as defined in Clause 47.1 of GCC.</p> |

**11.2 Shoal Co-ordinates .. The Tentative Shoal details for the stretches are as under :---**

|   |         |                        |     |
|---|---------|------------------------|-----|
| <b>Digha – Majhaua</b><br>965 – 1060<br>(95 km) | 977.00  | Ganghara               | 360 |
|   | 989.00  | Ratan Tola             | 210 |
|   | 991.00  | Haldi Chhapra          | 175 |
|   | 995.00  | Sone Confluence        | 250 |
|   | 1000.00 | Doriganj               | 600 |
|   | 1003.00 | D/s Kutubpur           | 220 |
|   | 1004.50 | U/s Kutubpur           | 285 |
|   | 1007.50 | U/s Kutubpur           | 170 |
|   | 1012.00 | U/s Kutubpur           | 180 |
|   | 1014.00 | D/s Ghaghra Confluence | 310 |
|   | 1021.50 | D/s Ghaghra Confluence | 200 |
|   | 1028.00 | Jai Prakash nagar      | 370 |
|   | 1043.00 | D/s Bara Singha        | 590 |
|   | 1050.00 | Bhusola Ghat           | 600 |
|   | 1053.00 | Nauranga               | 300 |
|   | 1060.00 | Majhaua                | 350 |
|   |         |                        |     |

*Note:-*

- The above mentioned figures are indicative, actual quantity may vary as per the actual site condition.*
- The above mentioned number for dredgers are the minimum to be supplied by the contractor, Iwai may ask for additional dredgers as per the requirement of the site condition.*

***Tender Document for Digha-Majhaua (95 km)***  
***On Qty Based Dredging Contract***  
***27.02.2023***

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|                              | <p>c) <i>Technology Solution for cutter suction dredge system that should be able to provide absolute position of the dredge head in relation to the surveyed and any number of design surface. The working surface should be updated with the dredged depth in real time and displayed in plan, profile and 3D views.</i></p> <p>d) <i>This information should be able to be relayed back to office and a digital record is recorded as dredging proceeds and volume dredged can be determined on the dredge or back in the office.</i></p> <p><i>This solution should consist of all below items from a single manufacturer and should be delivered from a single source:</i></p> <ol style="list-style-type: none"> <li><i>1. Inclinator sensor to measure cutter suction dredge ladder angle and cutter head position</i></li> <li><i>2. Dual-axis inclinometer sensor to measure the attitude of the dredge vessel</i></li> <li><i>3. GNSS heading system with Internal UHF Radio, RTK, cm accuracy, beacon capability to measure cutter suction dredge position, heading and rotation</i></li> <li><i>4. Dedicated computer display running Marine Construction software</i></li> </ol>                                   |
| <b>14. Site Organization</b> | <p>The selected Contractor shall depute well-qualified officers / team having sufficient experience in execution of works as indicated in this Tender Document. If the progress of work is found unsatisfactory during the currency of the contract. The Contractor shall promptly mobilize additional personnel / resources for ensuring satisfactory progress and timely completion of the proposed work, as per direction and to the satisfaction of Engineer-in-Charge and necessary clearances under the contract without any extra cost to IWAI.</p>  |
| <b>13. Manpower</b>          | <p>The Contractor shall deploy experienced and competent manpower on board the dredger and comply with the requisite competency certificates (preferably by National Inland Navigation Institute (NINI)) in accordance with Inland Vessels Act 1917. Or Equivalent. Requirements of crew for all the supporting / allied vessels will also be met at all the time. The list of all the personnel engaged in the Contract will be given to EIC before commencement of work. Personnel will be changed only after approval of EIC.</p> <p>Sufficient number of manpower should be deployed by the contractor on the dredgers and on other works throughout the contract period at his cost.</p> <p>The Contractor shall deploy the (minimum) manpower namely</p> <ol style="list-style-type: none"> <li>a. <i>Dredge Master,</i></li> <li>b. <i>Dredger Control Operator (DCO),</i></li> <li>c. <i>Licensed Engine Driver,</i></li> <li>d. <i>Driver 1<sup>st</sup> class, Greaser,</i></li> <li>e. <i>Lascar,</i></li> <li>f. <i>Pipeline in-charge,</i></li> <li>g. <i>Pipeline Assistant &amp; Labourer etc.</i></li> </ol> <p><b>Note-</b></p> <p>(a) The above list need not be exhaustive. The Contractor shall however</p> |

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|                    | <p>undertake that during the execution of the contract, all the required number of personnel necessary for efficient execution of the contract and as required by applicable law would be deployed at site.</p> <p>(b) Statutory requirements of crew for all the supporting / allied vessels will also be met at all the time.</p> <p>The list of all the personnel engaged in the Contract will be given to EIC before commencement of work. Personnel will be changed only after approval of EIC.</p>   |
| <b>16. Manning</b> | <p>16.1 For operating the dredging unit, the contractor has to ensure that qualified / trained, competency certificate holders, personnel with adequate experience in the relevant field are deployed for the nature of work and the crew along with other members are as per the statutory requirement of Inland Vessels Act, 1917 (1 of 1917), Viz,</p> <ul style="list-style-type: none"> <li>a. <i>Dredge Master (DM) / Dredge Supervisor,</i></li> <li>b. <i>Dredge Control Officer (DCO),</i></li> <li>c. <i>Dredging Engineer,</i></li> <li>d. <i>Masters,</i></li> <li>e. <i>Drivers,</i></li> <li>f. <i>Greasers, and crew as per statutory requirements of the Act &amp; nature of work.</i></li> </ul> <p>The contractor shall carry out the dredging operation as per the directives of the Engineer-in-charge (EIC) or his representative.</p>  |
|                    | <p>16.2 The contractors should maintain adequate number of crew as reserve in their pay roll so that weekly, Gazetted leave and other leaves and exigencies can be accommodated by the Contractor. All the Crew particularly Master, Driver shall have valid certificates of competency issued by the Statutory Body / MMD as the case may be. The NINI trained Greasers, Lascars, Secunny or with adequate experience of minimum five years from reputed operators can also be deployed. The contractor shall comply with the provision of Statutory Authority applicable in relation to execution of works by the Crew.</p> <p>16.3 The Contractor shall assign a person who is the overall in-charge of the dredging unit and will also be responsible to act as a Liaison Officer for interacting / communicating between IWAI (Engineer In-charge / Engineers representative and any other Supervisor or Officer connected with the Dredging activity). The Liaison Officer shall have independent means of communication (mobile / fax / telephone / email facility) to enable to be contacted even during emergency situations.</p> |

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|  | <p>16.4 Effective supervision and monitoring mechanism should be in place for recording the details of the dredging i.e. commencement and completion of dredging, no. of anchor shifting, assembling and shifting of pipelines, no. of spud hoisting and lowering, advancement of the dredger every hour to be recorded and maintained by the supervisors posted by IWAI on the dredger.</p> <p>16.5 The manning pattern usually deployed for a dredging unit is indicated below. However, the additional man power for effective repair, maintenance, spare part management, dredging operation etc. the bidder is free to deploy additional manpower. Compliance of IV Act and Rules applicable to be strictly followed.</p> <p>1) <b>Dredger</b> : a) Dredger Master ; b) DCO; c) Licensed Engine Driver; d) Driver 1<sup>st</sup> Class; e) Greaser; f) Lascar- 2nos ; g) Pipeline in-charge; h) Pipeline Assistant ,</p> <p>2) <b>Workboat</b> : a) Master 2<sup>nd</sup> Class; b) Driver 1<sup>st</sup> Class ; c) Greaser ; d) Lascar; e) Cook ,</p> <p>3) <b>Accommodation boat &amp; Anchor Pontoon</b>: a) Greaser; b) Lascar ; c) Lascar; d) Cook</p>   |
| <p><b>17. Material to be dredged</b></p> | <p>The material to be dredged is sand, silt, soft clay or a mixture of these materials, compact and sediment clay. If the dredger meets any strata such as boulders, ropes, sand stone, stone debris, wooden logs etc., such patches will also continue to be tackled with a modified cutter or cutter teeth like serrated etc. capable for dredging such materials for a length of up to 20 m. Further steps to be taken, should be decided mutually between the Contractor and the Engineer-in-charge, if hard strata exists beyond 20 m.</p> <p>All the materials to be dredged in the channel comprise of sand, silt, clay, soft deposited material (pebbles/ boulders) and mixer of above materials. During the course of dredging, if the Contractor encounters any hard strata, he shall try to continue the dredging for further advancement i.e., up to 100 m. If the situation persists, he should report the matter to the Engineer and stop the work for that location.</p> <p>The Contractor shall assess the limit of such hard strata location in the presence of Engineer's representative and continue the dredging work in the portion immediately after the limit of such hard matter expeditiously. Simultaneously the contractor shall arrange collection of hard strata sample and its testing to substantiate his claim about the hard strata and submit report within fourteen (14) days to the Engineer-in charge at his cost.</p> <p>The method of dredging to be adopted for such locations shall be decided by the Engineer-in charge and the suitability of equipment to be deployed and rates applicable for such dredging would also be mutually decided upon, by the Contractor and IWAI as per decision of competent authority of IWAI</p> |

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| <b>18. Material Obtained from Excavation and Treasure, Trove, Fossils Etc</b> | <p><b>Material Obtained from Excavation and Treasure, Trove, Fossils Etc</b></p> <p>.1Material of any Kind obtained from excavation on the site shall remain the property of the Authority and shall be disposed off as directed by the Engineer-in-Charge.</p> <p>However If any of the materials thus obtained from excavation on the site is such as can be used in the execution of work under the contract, the contractor will be allowed to use the same free of cost (except that any amount of royalty paid for in this regard by the Authority shall be recoverable from the contractor) for the aforesaid purpose provide the same is found suitable and is approved by the Engineer-in-Charge.</p> <p>Fossils, coins, articles of value, structures and other remains of things of geological or archeological interest discovered on the site shall be the absolute property of the Authority. The contractor shall take reasonable precautions to prevent is labour or any other person from removing or damaging any such article or things and shall acquaint the Engineer-in-Charge with such discovery and carryout the Engineer-in-Charge’s directions as to the disposal of the same at the expense of the Authority.</p> |
| <b>19. Sedimentation in Dredged Area</b>                                      | <p>The Contractor shall take all necessary precautions to avoid any flow of the dredged material back in to the river channel and to minimize any sedimentation in the channel consequent to disposal of dredged material in an improper way, not approved by the Engineer.</p>   |
| <b>20. Over dredging</b>  | <p>The Contractor shall not be permitted for over dredging in ordinary circumstances. Should the Contractor wish to perform over dredging in a dredge area to allow for extra sedimentation arising from his own operations, he shall request the approval of the Engineer's representative for such over dredging. Approval will not be given unless the Contractor can prove, to the full satisfaction of the Engineer, that the over dredging in question will not endanger the channel slope stability.</p> <p><i>The Contractor will not be entitled to payment for the extra material dredged. For the purpose of payment, channel bottom width of 30m and depth of 2.50 m where ever dredging is carried out for a period Up to Three ( 3) Years along with + 1 mt horizontal tolerance on either side and 10 cm beyond the specified depth is considered.</i></p>   |
| <b>21.Survey Data</b>   | <p>Survey data cum Survey Charts carried out by IWAI are attached to this document</p>  |
| <b>22.Additional</b>  | <p>In case of slow progress of work, the Engineer-in-charge may direct Contractor to deploy additional dredgers for completion of the work in time.</p>   |

**Tender Document for Digha-Majhaua (95 km)**  
**On Qty Based Dredging Contract**  
**27.02.2023**

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| <b><i>Dredgers</i></b>                          | If the dredger goes out of order, the Contractor shall arrange for its replacement with a suitable dredger.  |
| <b><i>23. Monitoring</i></b>                    | Monitoring shall be undertaken by the Employer. This shall be done directly and through an appointed Supervision Consultant (TSSC-III). This may also include monitoring by placing survey sounders on select merchant ships passing through the part of the route. Any supervision and monitoring shall not relieve the Contractor of his obligations under the Contract, including his duty to make his own surveys.   |
| <b><i>24. Method of Measurement</i></b>         | <p>The final quantities to be used for establishing the value of the work for dredging material from the Navigation Channel and disposing of it at the river banks shall be the in-situ volume calculated from a pre-dredge and post-dredge survey of the Navigation channel and executed in accordance with the Contract.</p> <p>The area shall be calculated based on Simpson's Rule and the volume shall be calculated based on Trapezoidal Rule. Wherever Simpson's Rule is not applicable, average area method shall be adopted.</p> <p>The Contractor shall also maintain a daily dredging log and get it verified from EIC or his representative periodically.</p>  |
| <b><i>25. Disposal of Dredged Materials</i></b> | <p>A total of approximately total quantity of 16.32 lakh m<sup>3</sup> of material shall be excavated / dredged / removed from the navigation channel. Disposal of dredged materials would be effected into the free-stream of the river, at a distance of 300-1000 m from the channel. The disposal locations should be positioned to avoid material working its way back into the dredged channel by taking such precautions as, disposing into faster flowing water, downstream and to the side of the working dredger.</p> <p>Disposal of material into secondary and redundant channels could also be considered as this provides a location where material is less likely to be remobilized</p> <p>Materials dredged may also be disposed on to the banks of the waterway or onto the low-lying area ashore in case of narrow stretch of the river / channel. In wider stretches, it shall be disposed off at least 300 to 1000 meters away from the navigational channel and in case the dredged material has a tendency to come back to channel, then its disposal distance shall be increased suitably to avoid repeated work.</p> <p>In case the Contractor intends to dispose of the dredged materials on private lands, it shall identify the disposal sites, obtain necessary permission from Engineer-in-charge and also permissions from the land owner(s) for dumping the material on their lands.</p> <p>Expenditure involved in such disposal including payment to the land owner(s) for dumping the material on their lands shall be borne by the Contractor.</p> |

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|                   | <p>The entire responsibility of disposal of dredged material, including identification and procurement of disposal land lies with the Contractor. However, IWAI would facilitate for getting land and related approvals, if required.</p>   |
| <b>26.Payment</b> | <p>a. The total Contract Price payable under the Contract shall be stipulated in the Letter of Award and there upon shall become part of this Contract and be paid in accordance with the terms hereon. The price quoted will squarely and totally include all the charges to be paid to the contractor by the Employer.</p> <p>b. Payment for Dredging Works along the waterway for fairway development &amp; maintenance.</p> <p>c. <i>Total Contract Price shall be firm and fixed and shall not be subject to any escalation during the period of the Contract except for any adjustment in accordance with the terms of the Contract.</i></p> <p>d. <i>However, escalation for diesel, based on the price indices, component weightage and as stipulated in Clause 45 of SCC of the Contract Agreement is permissible.</i></p> <p>e. The Contractor shall submit monthly Running Account Bills (RA Bills) on or before the dates fixed by Engineer-In-Charge (EIC) for the quantity and / or work executed for the month. The Contractor shall be paid monthly as per the RA Bills submitted for the quantity dredged within one month from submission of correct claim of bill.</p> <p>f. The contractor will submit the RA Bill in triplicate for shoal dredged corresponding to a length and quantity to the Engineer-in-Charge, which could be decided after the pre and post dredging survey depending on length of each shoal to be dredged.</p> <p><i>The running bills to be submitted to TSSC for dredging, shall be accompanied with 3 sets each of pre and post dredging survey charts and also detailed calculations of dredging quantity (both area of shoal and volume dredged also including the width of the channel and the depth).</i></p> <p>g. The Contractor shall submit the compiled daily dredging log certified by EIC, along with the monthly RA bill for payment.</p> |

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|  | <p>The daily log shall contain the following information:</p> <ul style="list-style-type: none"> <li>• <i>Date of Dredging.</i></li> <li>• <i>Dredge Area along with channel width.</i></li> <li>• <i>Start and stop timings of dredging operation.</i></li> <li>• <i>Dredging done (in terms of approximate quantity).</i></li> </ul>  |
| <b>27. Duties &amp; Responsibilities of the Contractor</b> | <p>a. The primary responsibility of the Contractor is to undertake dredging in the specified length as per terms and conditions of this tender and directions of EIC during the entire period of the contract.</p> <p>b. The Contractor is to provide adequate manning in compliance of the statutory requirement of Inland Vessels Act, 1917 (1 of 1917), in the entire dredging unit, provide POL and consumables as required for operation of the dredging unit, carry out all repairs including minor repairs, breakdown repairs and statutory annual repairs, dry docking repairs for validation of the survey certificate as required under I.V. Act, 1917.</p> <p>c. The cost related to the dredging and other cost incidental thereto including the operation of the vessels during shoal to shoal movement shall be borne by the contractor.</p> <p>d. The Contractor in addition to details required in daily log, shall maintain the following records: (For record only, not for claim purpose)</p> <ol style="list-style-type: none"> <li>1. <i>Daily deck log of each vessel of the dredging unit.</i></li> <li>2. <i>Daily engine log of each vessel of the dredging unit.</i></li> <li>3. <i>Consumables supplied on board each vessel of the dredging unit and consumed during the month.</i></li> <li>4. <i>Detail of the repairs undertaken during the month on each vessel of the dredging unit.</i></li> <li>5. <i>Attendance register of the manpower deployed on each vessel of the dredging unit.</i></li> <li>6. <i>Hindrance Register</i></li> </ol> <p>e. The above records maintained by the contractor are to be made available during the inspection of Engineer in-charge or his representative for verification.</p> <p>f. The contractor may also be required to submit a copy of the same to the Engineer in-charge every month, ( Along with the RA – Bill of the Month)</p> <p>g. Normal barge and vessels / crafts movement in the channel shall not be interrupted by the dredging operation. The hindrance to movement of barges to be minimized as much as feasible during dredging operation in consultation with EIC</p> <p>h. The contractor shall arrange the transits, buoys, lights, mooring etc. at their own cost as required for dredging and for cautioning other vessels in the waterway.</p> |

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| <p><b>28. Other Conditions</b></p> | <p>Mobilization / Demobilization charges for the dredgers and its accessories and other logistics for survey/inspection/works etc. should be inbuilt in the bid by the Contractor. No additional payment/ claim in this regard will be considered.</p> <ol style="list-style-type: none"> <li>Normal barge and vessels/crafts movement in the channel shall not be interrupted by the dredging operation.</li> <li>No idle time charges shall be payable to the Contractor on any account during the contract period.</li> <li>The Contractor shall arrange at its own cost the transits, buoys, lights, mooring etc. as required for dredging and also for cautioning other vessels in the waterway.</li> <li>The Engineer-in-charge or his representative will inspect, co-ordinate and measure the work as per the contract condition. He has the right to inspect at any time during the contract period besides the specified schedule of inspections.</li> <li>The Contractor shall provide the Engineer-in-Charge or his representative boat/ survey launch from shore to dredger and back to shore and movement in the stretch for inspection &amp; supervision.</li> <li>The Contractor may execute the work round the clock and on all days including Sundays and Public Holidays with the permission of the Engineer-in-charge in writing excepting National Holidays and subject to such restrictions as may be imposed by State Govt./local body.</li> <li>If the Contractor's personnel or any outside labour employed to work during execution of contract, breaks or damages/destroys any vessel, craft, net, fishing stakes etc. building, road, kerb, water pipe, fence, bund, wires, trees, crop, fruit or cultivated ground etc. during the period of agreement, the same shall be made good by the Contractor at his own expenses or in default the Employer may cause the same to be made good by other sources and deduct the expenses from any sums that may be then or at any time thereafter may become due to the Contractor.</li> <li>Any dispute with the local fishermen, for removal of fishing nets, stakes, from the channel to be dredged shall be solved by the Contractor</li> <li>However, on request the Employer may extend the assistance for solving the issues only through the concerned official/ dept. of the state or local bodies.</li> <li>Contractor shall pay special attention for identification of disposal sites with a view to ensure uninterrupted dredging operation and plan in advance disposal details ahead of location of dredger. In the event of non-availability of dumping site, Employer shall not be responsible for delays caused in in the dredging operation/ maintenance of navigational channel.</li> </ol> |
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|  | <ul style="list-style-type: none"> <li>k. In case obstructions like concrete piles, structures of fishing nets, plastic debris, fallen trees, etc. are to be removed by the Contractor, no extra payment on this account shall be admissible to the Contractor.</li> <li>l. In case of any local objections against dredging or disposal of dredged spoils, it has to be settled by the Contractor. However, on request, Employer will extend liaison/ help to the Contractor to approach concerned officials of State Administration.</li> <li>m. If the maintenance of navigational channel is stopped continuously for more than 3 days due to law and order, Contractor has to report to the same to the Engineer-in-charge and take actions mutually in accordance with prevailing local laws for removal of such problem and proceeding further with the work. In case of delay in work, the Engineer-in-charge may take suitable decision without affecting the main objective of the project.</li> <li>n. The Contractor shall adopt adequate precaution and measures such as construction of temporary protection etc. during the dredging operation, to avoid any collapse/ damages to the existing bank. Protection work of the dredged area shall be at its own cost.</li> <li>o. The Contractor shall forthwith dispatch, raise and remove any plant (floating or otherwise) belonging to him or to any person employed by him which may be sunk in the course of execution and completion of the works or otherwise deal with the same as the Engineer-in-charge or his representative may direct. Until the same shall be raised and removed, the Contractor shall display at night search lights and do all such things for the safe navigation as may be directed by the Engineer-in-charge. In the event of the Contractor not carrying out the obligations imposed upon him by this clause, the Engineer-in-charge shall raise and remove the same (without prejudice to the right of the Employer to hold the Contractor liable) and the Contractor shall pay to the Employer all costs incurred in connection therewith. The fact that sunken vessel, craft or plant is insured or has been declared a total loss, shall not absolve the Contractor from his obligation under this clause to raise and remove the same.</li> <li>p. During execution of the work if any environmental degradation occurs, consequent on dumping of dredged material or any other reason the same shall be undone or necessary mitigation measures to the satisfaction of Engineer-in-charge by the Contractor at his cost, without claiming any additional payment from Employer.</li> <li>q. Any changes incurred on testing of the dredged material, testing/ analyzing the quality of water for adopting environmental safeguards, minimizing detrimental impacts, enhancing the beneficial aspects of the project and for effective management of the environmental resources affected by the project shall be met by the Contractor. No additional charges on any such account shall be payable by the</li> </ul> |
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|                                      | Employer.  |
| <b>29.Repair &amp; Maintenance</b>   | <p>The defects arising in the machinery, equipment, outfit etc. or in the vessel are to be attended immediately by the contractor. All minor repairs to be attended immediately as and when noticed. The contractor has to undertake all repairs at his own cost. The routine maintenance of the machineries shall be carried out as per the marine standard practice in consultation with mechanical supervisor of IWAI, if required.</p> <p>The contractor may execute the dredging work on all working days except National Holidays subject to such restriction as may be imposed by State Govt. / local body</p>  |
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| <b>Technical Specification</b>       |  |
| <b>30.Brief description of Works</b> | <p><i>Dredging by Cutter Suction Dredgers of suitable size, type and capacity as per general &amp; special conditions, technical specification to provide</i><br/> <b><i>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1 for a period Up to Three ( 3) Years</i></b></p> <p>The channel shall be dredged for a bottom width of 30 m (excluding tolerances) with a depth of <i>with a depth of 2.50 m where ever dredging is carried out for a period</i> Up to Three ( 3) Years, <i>at</i> the time of post-dredging survey, at shoals identified by the Engineer-in charge (EIC) through entire length along the specified river length. The side slopes of dredged channel shall be naturally formed. The Contractor shall submit a detailed method statement of his proposed dredging activities and obtain approval of Engineer prior to commencement of works.</p> <p>Payment shall only be released for depth of cut of 2.5m and channel bottom width of 30m along with the specified tolerances and no further additional payment / claim shall be considered.</p> <p>The Bidder shall inspect and ascertain himself details of horizontal &amp; vertical clearances available at bridges / locks etc. within the National Waterway from the view point of safe mobilization / demobilization of their various equipment to the specified dredging locations. Available information in this regard will be provided to the Bidder by the Authority on request. The contractor shall be liable to bear the expenditure of all manpower, material and equipment required for the work at his cost.</p> <p>Contractor must, therefore, have thorough knowledge about the work prior to submission of his rates. No extra claim in this regard shall be entertained once the contract has been awarded.</p> <p>On completion of Pre-dredging survey of the shoal area, the Contractor has to calculate the dredging quantity w.r.t design channel and also with</p> |

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|  | <p>respect to (w.r.t) tolerances by using Simpson's Rule for area calculation and the volume shall be calculated based on Trapezoidal Rule and same is to be submitted to Engineer in 3 sets, for the area &amp; Volume of dredged work following shall be followed,</p> <ul style="list-style-type: none"> <li>➤ Simpson's Rule for area calculation and</li> <li>➤ Trapezoidal Rule for volume calculation</li> </ul> <p>The Pre-Dredging survey chart (5 copies) along with estimated quantity of dredging shall be submitted to Engineer within 7 days of completion of field survey work and obtain approval of Engineer for the dredging alignment and levels before commencement of dredging at each shoal.</p>   |
| <p><b>31. Disposal / Reclamation of Dredged Material</b></p> | <p><b>On land disposal</b></p> <p><b>31.1 Brief Description of Work</b></p> <p>An on land confined disposal area shall be created at different dredge locations for the disposal of dredged material from the navigational channel, which shall be identified based on the initial pre-surveys. The lead distances for disposal is minimum of 300 m away from the navigation channel, which can be extendable up to 1000 m as per the directives of EIC. Regarding disposal locations decision of Engineer in Charge shall be final and binding on the contractor.</p> <p><b>31.2 Working Method</b></p> <p>Dredged material placed by hydraulic means shall be placed in layer thickness appropriate to achieving the maximum amount of de-watering of the fill before subsequent layers are placed on top. Fill heights should not exceed 1.0 m in any one lift. Excess water above the clay layer should be removed in order to promote natural de-watering.</p> <p><b>31.3 Drainage</b></p> <p>All the equipment, structures and devices the Contractor intended to use for water management in and around the on-land disposal sites require the approval of the Engineer in Charge. Drainage of excess dredge water from the disposal sites shall be facilitated by the placement of suitable adjustable weir overflows.</p> <p>Suitable measures should be taken, to the satisfaction of the Engineer in Charge, to ensure the discharge of dredge water to artificial or natural waterways. This does not however, relieve the Contractor of his obligation to ensure that drainage of dredge water does not cause problems with flooding or sedimentation in areas adjacent or further downstream of the reclamation sites.</p> <p>The Contractor will be responsible for any costs related to damage, loss</p> |

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|  | <p>of property, or inconvenience to third parties caused by the drainage of dredge water. In addition, the Contractor shall take suitable corrective action to remedy the aforementioned problems at his own cost.</p> <p>Any water discharged from confined reclamation areas, into natural or artificial water courses in connection with the reclamation works, shall not contain excessive soil material to cause siltation along the drain path.</p> <p><b>31.3.1 Drainage of surface water</b></p> <p>On land reclamation / disposal sites shall not affect the natural drainage of surface water of the surrounding land. All costs relating to the control and regulation of surface water drainage, or the adoption of measures or methods to ensure continued surface water drainage, are deemed to be included in the Contractor's rates and prices.</p> <p><b>31.4 Method Statement / Work Plan</b></p> <p>Notwithstanding the requirement to submit method statement as part of the Tender, the Contractor shall submit details of working methods, including details of equipment and survey and positioning equipment involved, to the Engineer within 15 days after receipt of the Order to Commence. Approval of the Contractor's work plan will only be given after the Contractor has demonstrated to the satisfaction of the Engineer that minimum requirements of the Specifications can be met. Dredging operations shall not commence until this approval has been obtained in writing from the Engineer.</p> |
| <p><b>32.Measurement of Water levels</b></p> | <p><b>Measurement of Water levels</b></p> <p><b>Water Level Gauges</b></p> <p>The Contractor shall install and maintain suitable automatic water level gauge at an approved location close to the Works. This gauge shall be placed and calibrated at least 30 days before commencement of the construction of the Works. The water level gauge should be connected to an established bench mark (30 cm x 30 cm RCC pillar with 30 cm height above ground level) to be erected in the vicinity (within 5 km of the dredging site) by the Contractor, which should be having Reduced Level (RL) with respect to Mean Sea Level (MSL) and Geo Co-ordinates.</p> <p>The RL should be established by transfer of level from a known GTS bench mark by proper levelling. The zero of the established gauge is to</p>  |

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|                     | <p>be connected w.r.to MSL by proper levelling. Cost of construction of Bench mark, Levelling, Erection of Automatic Water Level gauge and collection of Gauge Readings are to be borne by the Contractor.</p> <p>During Echo sounding, water levels shall be recorded continuously.</p> <p><b>Reduction of sounded depth</b></p> <p>The Contractor shall place special stress on the accurate reduction of sounded depth in relation to the prevailing water levels, by adopting standard procedure.</p>  |
| <b>33.Surveying</b> | <p><b>Surveying</b></p> <p><b>33.1 General</b></p> <p>The Contractor shall perform all necessary survey work jointly with EIC's representatives, required to be executed by him as laid down in the terms of the contract and as directed by the Engineer in charge. For this purpose, he shall furnish and employ all the personnel, services, equipment and supplies needed to perform the surveys and all the incidental work required for:</p> <ul style="list-style-type: none"> <li>➤ <i>Setting out;</i></li> <li>➤ <i>Registration of water levels;</i></li> <li>➤ <i>Pre dredging surveys and charts;</i></li> <li>➤ <i>Progress surveys and charts;</i></li> <li>➤ <i>Post dredging surveys and charts.</i></li> </ul> <p>Field measurements and processing of data shall be executed to a degree of accuracy in both the horizontal and vertical plane and drawn to scales to the full satisfaction of the Engineer.</p> <p>The Contractor shall allow the Engineer's Representative to be present during any surveys, calibrations or any connected activities. He shall give ample prior information's of plans of work in this respect and provide the Engineer's Representative with every assistance to fulfil his duties.</p> <p>The Joint surveys shall be carried out in accordance with schedules to be approved by the Engineer – in- Charge</p> <p><b>33.2 Topographic Survey</b></p> <p>Topographic survey to transfer the Bench Mark (B.M.) value from nearest known location within the few important stations along the river (based on his judgement) and also to the locations within 5 Km range of dredging site will have to be undertaken as a primary activity before any dredging work can be started because the B.M will act as control points for dredging depths.</p> |

This survey is to be undertaken by the Contractor, the cost of such survey and erection of bench marks shall be included in the cost of dredging activity and is not to be considered as an additional activity having separate cost.

### **33.3 Preparatory Works**

#### **33.3.1 Setting Out**

The Contractor shall do setting out of the Works on such dates as to permit timely commencement of the work. The Contractor shall furnish, install and maintain all markers, buoys, shore beacons and other items necessary to define the Works and facilitate the inspection and measurement thereof.

It shall be the responsibility of the Contractor to obtain all licenses, permits and permissions for the use of marine radios, walkie-talkies, radio positioning systems, satellite phones for the placing of onshore, offshore and underwater beacons and marker buoys, and for giving the proper statutory notices for all maritime operators. The costs of such licenses, permits and notices are to be borne by the Contractor, and shall be deemed to be covered by the rates and prices quoted in the Tender.

Engineer in Charge will extend every feasible assistance to Contractor to obtain and renew such permissions required from statutory authorities.

The Contractor, with the Engineer's Representative in attendance, shall execute the setting out of the Works under the Contract.

#### **33.3.2 Checking of setting out**

The Contractor shall provide the EIC - Engineer's Representative with sufficient equipment, duly calibrated in the field, labour and materials to enable the Engineer's Representative to check the Contractor's setting out, at any time the Engineer's Representative may reasonably direct.

#### **33.3.3 Survey Charts and Scale of Survey Charts**

*The survey charts to be produced by the Contractor shall be reduced to a chart datum / water level as directed by the Engineer in Charge (EIC). Decision of EIC in this regard shall be final.*

The charts are to be prepared in 1:1200 scale for Pre / Post dredging surveys and 1:5000 scale for River disposal surveys and presented to

the Engineer in 120 gsm good quality paper (5 copies) and also in soft copy form in CD / DVD (2 sets).

Furthermore, the charts shall incorporate all reference points, buoys, beacons, markers, gauges and benchmarks, together with the location and nature of obstructions, structures and facilities. Particular items of interest shall also be indicated on the Charts.

The survey is required to be referred to WGS-84 datum and the fair sheet is to be plotted on Universal transverse Mercator projection (UTM). Contours are to be indicated on the chart. .... To be submitted along with the RA bills

***The sounding charts are to be submitted on completion of Pre & Post Surveys of the shoal and also to be submitted along with the RA bills as a supporting document.***

All prominent shore features and other conspicuous objects are to be fixed and indicated on the chart.

### **33.4 Hydrographic Surveys**

#### **33. 4.1 Working Methods**

Soundings are to be done using Automated Hydrographic Survey logging System of any accredited / IHO approved hydrographic survey software. Digital echo sounder (having accuracy of not less than 0.1 m) shall be used for sounding purpose and Differential Global Positioning System (DGPS) / Real time Kinematic System RTKS DGPS (having not less than sub-metre accuracy) shall be used for position fixing.

These surveys shall only be carried out if weather and river conditions, condition of equipment and methods of execution and interpretation are, in the opinion of the Engineer, satisfactory for this purpose.

The EIC - Engineer's Representative may resolve to check echo soundings by means of other methods to measure water depths, such as sounding poles, bar check or lead lines. The Engineers Representative may also order calibration checks of the equipment as and when considered necessary. The Contractor shall cooperate in this respect and supply any manpower, boats and equipment that may be reasonably required for this verification.

The Current velocity at every shoal (i.e. at least 3 locations, Starting / Middle / End of the survey area) at 1 m depth from the surface and 1 m above bed level shall be carried out once during the survey period.

The Float Observation at every shoal (i.e. 3 tracks are to be observed, one on both the side and one at middle of the channel of the survey

area) shall be carried out once during the survey period.

Water and Bottom samples are to be collected at two locations (one at the Downstream and other at Upstream of the shoal area) and get it tested for finding the characteristics of the soil and the water.

### **33.5 Calibration of Sounding Equipment**

Echo sounding equipment shall be checked and calibrated daily before and after use, by means of a bar or plate suspended at known distances below the water surface. Checking shall be performed at the actual location of the survey and the EIC - Engineer's Representative may require additional checks during surveying. Adjustments to the recordings / readings taken shall be made accordingly.

Records of bar checks shall be performed at starting and ending of the day's survey work. The echo sounder should maintain a repeatable accuracy of better than 10 cm.

### **33.6 Field books**

All field books, calculations, maps, original records, survey tracks, as-run plots, soft copies of soundings with positions (raw data as well as edited / sorted data), soft copy of water level / tidal data etc. of all survey activities shall be kept on site available for the EIC - Engineer's Representative's study or checking for the duration of the Contract.

Soft copies of Sounding with Positions (Raw, Edit, Sort) Water level / Tidal data, Levelling, Calculations, Charts etc. pertaining to that particular activity / survey work are to be copied in CD / DVD form (2 sets) and submitted to Engineer on completion of field work.

### **33.7 Accuracy of surveys**

The accuracy of surveys in the horizontal plane, related to the relevant benchmarks for the project should be within 1.0 m. The accuracy of surveys in the vertical plane includes:

- The echo sounder which should maintain a repeatable accuracy of better than 10 cm for measurements of distances between riverbed and survey vessel waterline.
- The registration of water levels by means of automatic water level gauges which should be within 5 cm. wherever erection of automatic water level gauge is not found feasible, manual water level gauge shall be erected with prior approval of EIC - Engineer's representative.

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|                               | <p>- The water level plane between the tide gauges and the survey location can be assumed horizontal. Survey lines on consecutive surveys should be sailed in the same direction.</p>   |
| <b>34.Pre-Dredging Survey</b> | <p><b>Pre-Dredging Survey</b></p> <p>The Contractor, with the EIC - Engineer's Representative in attendance, shall survey the following areas and commence dredging work as per Engineer-in-charge directives.</p> <ul style="list-style-type: none"> <li>• <i>Survey of Dredging Area</i></li> <li>• <i>Navigation channel between <b>Digha-Majhaua stretch (95km)</b></i></li> <li>• <i>Survey of Disposal area</i></li> <li>• <i>Disposal area identified along / or around in River.</i></li> </ul> <p>The shoal(s) to be dredged shall be informed to the Contractor by Engineer- in-Charge (EIC) or his representative in writing based on the identification of such locations through fortnightly Thalweg surveys, report from waterway users or any other inputs received by the EIC.</p> <p><b>Method of Survey</b></p> <p><b>Navigation channel along the River</b></p> <p>Survey lines shall run perpendicular to the baseline to be established on the shore. Cross-section sounding lines to be run @ 25 m interval. Continuous soundings are to be taken on the cross-section and plotted @ 4 m apart on the cross-section lines. Cross-section lines shall run for a width of minimum 200 m (approximately 100 m on either side of the centre line of the navigation channel). If the width of the river is less than 200 m, then the lines shall run from bank to bank (between Low water lines). The Scale of survey chart is 1:1200</p> <p><b>Pre-Dredging Survey Charts</b></p> <p>On completion of the Survey of Dredging / Disposal, the Contractor shall prepare survey charts on the specified scale mentioned above showing cross-sections of the full results of the survey within two weeks. On completion and agreement of the contents of the drawings, the Contractor and the Engineer's Representative shall both sign the drawings, which shall then acquire the status of "Pre-Dredging survey / Pre-Disposal survey" chart and form the basis for all further measurement work undertaken in the course of the Contract.</p> <p><b>PROGRESS SURVEYS</b></p> <p>The Contractor, with the Engineer's Representative in attendance shall carry out interim surveys, if required, in order to monitor the progress of the Works. The method of survey shall be at par with that of pre-</p> |

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|  | <p>dredging surveys conducted in the respective location. However, decision of the Engineer shall be final on conducting the progress surveys and the contractor has to make all necessary arrangements for conducting such surveys</p>  |
| <p><b>35. POST-DREDGING SURVEY</b></p> | <p><b>POST-DREDGING SURVEY</b></p> <p><b>Execution of surveys</b></p> <p>Requirements with regard to the system, spacing's, etc. for the Post-Dredging / Post- disposal survey shall be identical to those indicated for the pre-dredging surveys.</p> <p>The IWAI / EIC may commission an independent organization to carry out an independent post dredge survey of any particular shoal(s), if required. The cost of such an independent survey will not be met by the Contractor.</p> <p>However, the Contractor will make available free of charges survey launch and all survey equipment to facilitate such survey without adversely affecting his survey schedules.</p> <p><b>Surveys of dredge areas</b></p> <p>Upon the completion of each dredging shoal (LAD 2.0 / 2.25 / 2.50m ) or at a time to be mutually agreed upon between the Contractor and the Engineer's Representative, the Contractor, with the Engineer's Representative in attendance, shall survey the appropriate area with a view to checking whether the dredged areas comply with the requirement as stipulated in Scope of Work, Technical Specifications or in any other part of the contract and for determining payments for dredging works carried out. This area includes: Navigation channel along the River.</p> <p><b>Survey of disposal areas</b></p> <p>Upon the completion of each Dredging and / or Reclamation Works, or at a time to be mutually agreed upon between the Contractor and the EIC - Engineer's Representative, the Contractor, with the EIC - Engineer's Representative in attendance, shall survey the appropriate areas with a view to checking whether the works comply with the technical specifications.</p> <p>These areas are: Nominated Disposal area in River.</p> <p><b>Post – Dredging Survey Charts</b></p> <p>On completion of the survey the Contractor shall prepare survey charts</p> |

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|                                     | <p>on the specified scale mentioned above showing cross-sections of the full results of the survey. On completion and agreement on the contents of the drawings and if the EIC - Engineer's Representative has satisfied himself that the Works have been executed according to the Contract, the Contractor and the Engineer's Representative shall sign the drawings, which shall then acquire the status of "Post-dredging survey / Post-Disposal survey" chart.</p> <p>On completion of Post – Dredging survey, the quantity actually dredged with reference to the specifications and tolerance applicable to the channel shall be calculated by the Contractor by using Simpson's Rule for area calculation and the volume shall be calculated based on Trapezoidal Rule and such calculations together with the copy of Pre and Post Dredging Survey charts shall be furnished in 5 sets together with monthly bills.</p> <p>The Post- Dredging Survey shall be conducted upon completion of dredging for a length of 500 m of shoal or the entire shoal length, whichever is less, or as per the instruction of the EIC.</p> <p><b>Rectification of Works</b></p> <p>In case the survey specified in the above proves that the Works have not been completed according to the Contract, the EIC - Engineer's Representative shall instruct the Contractor to rectify the Works. Upon the completion of these rectifying Works, the survey and charting as specified in shall again be carried out at no extra cost to the Employer.</p> |
| <b><u>36. SURVEY EQUIPMENTS</u></b> | <p><b>SURVEY EQUIPMENTS</b></p> <p><b>Hydrographic Survey Vessel</b></p> <p><u>Provision and Operation of Mechanical Country Boat for Survey Works</u></p> <p>The Contractor shall provide and operate to the satisfaction of the EIC - Engineer's representative a fully equipped mechanized boat for carrying out hydrographic survey / accurate echo sounding at the work sites, and all such other equipment as required for undertaking the hydrographic surveys, including pre-dredge and post-dredge survey. Printing / plotting of charts, can be done on shore separately.</p>   |
| <b><u>37. Survey Vessel</u></b>     | <p><b><u>Specification of Survey Vessel</u></b></p> <p>The survey vessel shall have:</p> <ul style="list-style-type: none"> <li>- <i>Sufficient size and stability to safely and properly carry out the survey work under the prevailing site conditions;</i></li> <li>- <i>Good maneuverability, even at low speeds of 1 to 2 knots</i></li> <li>- <i>Ample space for instruments, recorders, etc;</i></li> <li>- <i>Day accommodation for two men of the EIC - Engineer's staff,</i></li> </ul>   |

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|  | <p><i>besides the normal crew and Contractor's own surveyors;</i></p> <ul style="list-style-type: none"> <li>- <i>A helmsman experienced in survey work;</i></li> <li>- <i>Adequate radio communication between all persons concerned in the surveys;</i></li> <li>- <i>A suitable shallow draught vessel to assist in the surveys of slopes close to the surface;</i></li> <li>- <i>Facility for operation of Automated Hydrographic Survey System (AHSS)</i></li> </ul>  |
| <b>38.Echo Sounder</b>                 | <p><b>Echo Sounder</b></p> <p>The digital echo sounder for hydrographic surveys shall in principle be operated in the 210 kilo Hertz range (narrow beam transducer). It shall not be permitted for any reason to use a lower operational frequency of the echo sounder for the Post-dredging survey than that has been used for the Pre-dredging survey. The digital echo sounder shall have an accuracy of not less than 0.1 m.</p> <p>At the start of each hydrographic survey, the AHSS is to be calibrated to the specified accuracy. To this effect, the Contractor shall establish a fixed point (or fixed points) with known coordinates such that the survey boat can easily be positioned with the transducer of the echo-sounder always in the same position relative to the calibration point.</p>  |
| <b>39.Position Fixing System (PFS)</b> | <p><b>Position Fixing System (PFS)</b></p> <p>It shall be in the form of Differential Global Positioning system (DGPS) or Real time Kinematic System (RTKS) based DGPS system of accredited / IHO approved make providing sub-metre accuracy in position fixing.</p> <p>The system shall be established in such a manner that it shall fully cover the site of the Works and be constantly in operation during the course of the dredging works. The system shall consist of ship borne masters or receivers (one for each dredger and one for each survey launch), distance measuring units, the requisite number of shore stations, interfaces, track plotters, data storage facilities and sufficient spares to enable uninterrupted operation of the system, to the accuracy specified and on board computer and printer and suitable navigational software.</p> <p><b><u>Installation and Testing</u></b></p> <p>The system shall be installed, tested and set to work for continuous operation during all dredging and survey operations. The system shall be fully operational, a minimum of 7 days before surveying operations commence including Field Calibration and base line check.</p> |

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|                                       | <p>Once operational the system shall remain in continuous operation until the last Post-Dredging survey is completed and the last Post-dredging survey drawings have been signed and have been accepted by the EIC - Engineer's Representative.</p> <p>The PFS should have hundred percent in-built standby equipment to cater for the failure of any individual components. The PFS shall at all times maintain a repeatable accuracy, for any point within the Work site of plus or minus 1.0 m in the horizontal plane.</p> <p><b><u>Giving Notice of any Irregularities</u></b></p> <p>The Contractor shall inform the EIC - Engineer's Representative forthwith of any breakdown irregularities or otherwise, affecting the positioning of his vessels or other equipment. Delays incurred in the dredging operation due to malfunctioning of the PFS/ AHSS shall not be reimbursed under the Contract and will not entitle the Contractor to an extension of time for completion.</p> <p><b>Hydrographic survey software</b></p> <p>The Contractor shall use Automated Hydrographic Survey logging System (AHSS) of any accredited / IHO approved Hydrographic survey software which is compatible in logging depth (using digital echo sounder) and position (using position fixing system) simultaneously. The make and type of the hydrographic survey software and method to be adopted for survey work shall got approved in writing from the Engineer's representative prior to commencement of the survey work.</p> |
| <p><b>40.OTHER SURVEY METHOD</b></p>  | <p><b>OTHER SURVEY METHOD</b></p> <p>Clauses No 6 above set minimum standards for accuracy and methods of survey. If the Contractor wishes to use equipment and methods different from those specified, he shall submit his proposals in detail to the EIC - Engineer, who shall satisfy himself of their adequacy before giving approval or comment. Should methods proposed by the Contractor and approved by the EIC - Engineer fail to produce the results specified, the EIC - Engineer may withdraw his approval and instruct the Contractor to carry out surveys in accordance with the Technical Specification.</p> <p>The Contractor shall comply with such instruction at no extra cost to the Employer.</p>   |
| <p><b>41. Plant and Equipment</b></p> | <p><b>Plant and Equipment</b></p> <p>a. The contractor shall arrange surveying equipment including boats, sounding devices etc. required for undertaking pre and</p>   |

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|             | <p>post-dredging surveys.</p> <p>No additional cost will be paid to the contractor for the same.</p> <p>b. No separate mobilization and demobilization charges will be paid to the Contractor for the extra equipment and dredgers to be deployed by the Contractor for the work.</p> <p>c. The rate of dredging quoted per cum will include all the charges to be paid to the Contractor by the Employer.</p> <p>d. The Contractor shall not change the type, number, size and make of dredgers indicated in the contract without written approval of IWAI / EIC . If the dredger breaks down, the Contractor should arrange for replacement of the same with an equivalent capacity suitable dredger with prior approval of IWAI / EIC .</p> <p>This shall not relieve Contactor from obligations under the Contract Agreement and no additional cost and time will be allowed.</p> <p>e. The Contractor shall be responsible for obtaining specific approvals, License's and for the payment of any fees relating to the execution of the works and to the process adopted by the Contractor, e.g., Right of way for discharge pipes, temporary works for pump out points, local authority approvals, License's and approvals from concerned authority.</p> |
| 42 Schedule | <p><b>Schedule of Payments and Reporting Requirements</b></p> <p><b>As per details attached at Appendix-B</b></p>  |

## **Appendix B**

### **Schedule of Payments and Reporting Requirements**

Schedule of Payments for the specified services are provided in PC 49.1

Services provided by the Contractor shall be checked through a Joint Survey by Engineer-in-Charge / Employer's Representative, TSSC-III and Contractor in the manner stated below:

#### **Surveying - General**

The Contractor shall perform all necessary survey work jointly with EIC's representatives, required to be executed by him as laid down in the terms of the contract and as directed by the Engineer incharge. For this purpose, he shall furnish and employ all the personnel, services, equipment and supplies needed to perform the surveys and all the incidental work required for:

- Setting out;
- Registration of water levels;
- Pre dredging surveys and charts;
- Progress surveys and charts;
- Post dredging surveys and charts.

Field measurements and processing of data shall be executed to a degree of accuracy in both the horizontal and vertical plane and drawn to scales to the full satisfaction of the Engineer.

The Contractor shall allow the Engineer's Representative to be present during any surveys, calibrations or any connected activities. He shall give ample prior information of plans of work in this respect and provide the Engineer's Representative with every assistance to fulfil his duties.

The Joint surveys shall be carried out in accordance with schedules to be approved by the Engineer – in- Charge

#### **Joint Survey, Dredging Quantity & Milestones**

The Dredging quantity will be measured based on joint pre-dredge and post dredge surveys. Joint pre & Post dredging surveys will be attended by Employer's representative, TSSC-III and Contractor's Representative.

#### **Payment for Dredging Works:**

The Contractor shall submit monthly Running Account Bills (RA Bills) on or before the dates fixed by Engineer-In-Charge (EIC) for the quantity and / or work executed for the month. The Contractor shall be paid monthly as per the RA Bills submitted for the quantity dredged within one month from submission of correct claim of bill. The contractor will submit the RA Bill in triplicate for shoal dredged corresponding to a length and quantity to the Engineer-in-Charge, which could be decided after the pre and post dredging survey depending on length of each shoal to be dredged.

The running bills for dredging shall be accompanied with 3 sets each of pre and post dredging survey charts and also detailed calculations of dredging quantity (both area of shoal and volume dredged).

## **Environmental, Social, Health and Safety Requirements**

### **SUGGESTED CONTENT FOR AN ENVIRONMENTAL AND SOCIAL POLICY**

*The Works' policy goal, as a minimum, should be stated to integrate environmental protection, occupational and community health and safety, gender, equality, child protection, vulnerable people (including those with disabilities), gender-based violence (GBV), HIV/AIDS awareness and prevention and wide stakeholder engagement in the planning processes, programs, and activities of the parties involved in the execution of the Works. The Employer is advised to consult with the World Bank to agree the issues to be included which may also address: climate adaptation, land acquisition and resettlement, indigenous people, etc. The policy should set the frame for monitoring, continuously improving processes and activities and for reporting on the compliance with the policy.*

*The policy should, as far as possible, be brief but specific and explicit, and measurable, to enable reporting of compliance with the policy in accordance with the Particular Conditions of the Contract Sub-Clause 3.6 of Special Conditions of Contract.*

*As a minimum, the policy is set out to the commitments to:*

- 1. apply good international industry practice to protect and conserve the natural environment and to minimize unavoidable impacts;*
- 2. provide and maintain a healthy and safe work environment and safe systems of work;*
- 3. protect the health and safety of local communities and users, with particular concern for those who are disabled, elderly, or otherwise vulnerable;*
- 4. ensure that terms of employment and working conditions of all workers engaged in the Works meet the requirements of the major labour and other laws that are applicable to construction industry in India;*
- 5. be intolerant of, and enforce disciplinary measures for illegal activities. To be intolerant of, and enforce disciplinary measures for GBV, child sacrifice, child defilement, and sexual harassment;*
- 6. incorporate a gender perspective and provide an enabling environment where women and men have equal opportunity to participate in, and benefit from, planning and development of the Works; and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- 7. relevant international standards e.g. WHO Guidelines for Safe Use of Pesticides*
- 8. relevant sector standards e.g. EU Council Directive 91/271/EEC Concerning Urban Waste Water Treatment*
- 9. grievance redress mechanism including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of GBV/SEA.*
- 10. GBV/SEA prevention and management.*
- 11. The detail specification for ES should, to the extent possible, describe the intended outcome rather than the method of working.*

*The ES requirements should be prepared in manner that does not conflict with the relevant General Conditions of Contract and Particular Conditions of Contract.*

**PAYMENT FOR ES REQUIREMENTS**

*The Employer's ES and procurement specialists should consider how the Contractor will cost the delivery of the ES requirements. In the majority of cases, the payment for the delivery of ES requirements shall be a subsidiary obligation of the Contractor covered under the prices quoted for other Bill of Quantity items. For example, normally the cost of implementing workplace safe systems of work, including the **measures** necessary for ensuring traffic safety, shall be covered by the Bidder's rates for the relevant works. Alternatively, provisional sums could be set aside for discrete activities for example for HIV counselling service, gender-based violence and SEA awareness and sensitization or to encourage the contractor to deliver additional ES outcomes beyond the requirement of the Contract.*

**MINIMUM CONTENT OF ESHS REQUIREMENTS**

*In preparing detailed specifications for ESHS requirements, the specialists should refer to:*

- *project reports e.g. ESIA/ESMP*
- *consent/permit conditions*
- *required standards including World Bank Group EHS Guidelines*
- *national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant Indian Standards for Safe Use of Pesticides, and in the absence of such Indian Standards relevant international standards e.g. WHO Guidelines for Safe Use of Pesticides*
- *relevant Indian Standards Concerning Urban Waste Water Treatment, and in the absence of such Indian Standards relevant sector standards e.g. EU Council Directive 91/271/EEC Concerning Urban Waste Water Treatment*
- *grievance redress mechanisms*

**MINIMUM REQUIREMENTS FOR THE CODE OF CONDUCT**

*A minimum requirement for the Code of Conduct should be set out, taking into consideration the issues, impacts, and mitigation measures identified in:*

- *project reports e.g. ESIA/ESMP*
- *consent/permit conditions*
- *required standards including World Bank Group EHS Guidelines*
- *national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant standards e.g. Workers' Accommodation: Process and Standards (Indian Standards, and in the absence of such Indian Standards those of IFC and EBRD)*
- *relevant sector standards e.g. workers accommodation*
- *grievance redress mechanisms.*

*The types of issues identified could include. risks associated with: labor influx, spread of communicable diseases, sexual harassment, gender based violence, illicit behavior and crime, and maintaining a safe environment etc.*

***The minimum Code of Conduct requirement may be based on the following:***

**CODE OF CONDUCT REQUIREMENTS**

A satisfactory code of conduct will contain obligations on all project staff (including sub-contractors and day workers) that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to particular concerns of the region, the location and the project sector or to specific project requirements. The issues to be addressed include:

1. Compliance with applicable laws, rules, and regulations of the jurisdiction
2. Compliance with applicable health and safety requirements (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
3. The use of illegal substances
4. Non-Discrimination (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, birth, age, disability, or political conviction)
5. Interactions with community members (for example to convey an attitude of respect and non-discrimination)
6. Sexual harassment (for example to prohibit use of language or behavior, in particular towards women or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate)
7. Violence or exploitation (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading or exploitative behavior)
8. Protection of children (including prohibitions against abuse, defilement, or otherwise unacceptable behavior with children, limiting interactions with children, and ensuring their safety in project areas)
9. Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
10. Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection)
11. Respecting reasonable work instructions (including regarding environmental and social norms)
12. Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
13. Duty to report violations of this Code
14. Non retaliation against workers who report violations of the Code, if that report is made in good faith.

**The Code of Conduct should be written in plain language and signed by each worker to indicate that they have:**

- received a copy of the code;
- had the code explained to them;
- acknowledged that adherence to this Code of Conduct is a condition of employment; and
- understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

\*\*\*\*\*

**Part III**

## Environmental, Social, Health and Safety (ESHS) Metrics for Progress Reports

**Metrics for regular reporting:**

- a) Environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;
- b) Health and safety incidents, accidents, injuries and all fatalities that require treatment;
- c) Interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);
- d) Status of all permits and agreements:

**work permits:** number required, number received, actions taken for those not received;  
status of permits and consents:

- a. *list areas/facilities with permits required, dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
- b. *list areas with landowner agreements required, dates of agreements, dates submitted to resident engineer (or equivalent);*
- c. *identify major activities undertaken in each area this month and highlights of environmental and social protection (boundary marking, traffic management, decommissioning planning, decommissioning implementation);*

**Health and safety supervision:**

- d. *safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;*
- e. *number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);*

**Worker accommodations:**

- f. *number of expats housed in accommodations, number of locals;*
- g. *date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;*
- h. *actions taken to recommend/require improved conditions, or to improve conditions.*

**HIV/AIDS:** provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);

**Gender** (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);

**training:**

- i. *number of new workers, number receiving induction training, dates of induction training;*
- j. *number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;*
- k. *number and dates of HIV/AIDS sensitization training, no. workers receiving training (this month and in the past); same questions for gender sensitization, flaglady/flagman training.*

**environmental and social supervision:**

- l. *environmentalist: days worked, areas inspected and numbers of inspections of each (e.g. road section, work camp, accommodations, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;*
- m. *sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and*

- n. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.

**Grievances:** list this month's and unresolved past grievances by date received, complainant, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed):

- o. Worker grievances;
- p. Community grievances

**Traffic and vehicles/equipment: (On Shore and off Shore)**

- q. traffic accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;
- r. accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;
- s. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).

**Environmental mitigations and issues (what has been done):**

- t. dust: number of working bowsters, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve;
- u. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
- v. quarries, borrow areas, spoil areas, asphalt plants, batch plants (if any) : identify major activities undertaken this month at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
- w. blasting (if applicable): number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);
- x. spill cleanups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);
- y. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
- z. details of tree plantings and other mitigations (if applicable) required undertaken this month;
- aa. details of water and swamp protection mitigations required undertaken this month.

**compliance:**

- bb. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
- cc. compliance status of ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
- dd. other unresolved issues from previous months related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

**[ Digha – Majhaua ]**

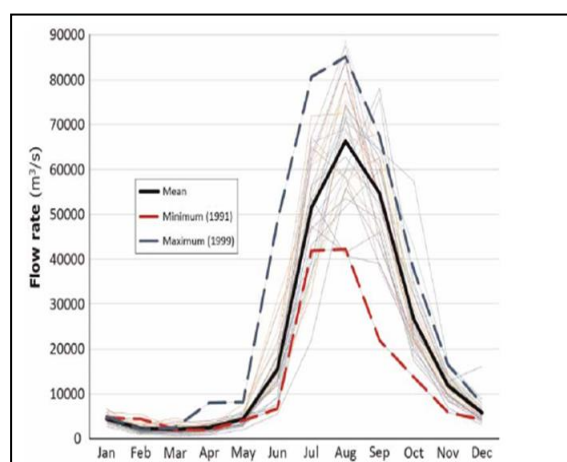
The report “Status on River Ganga: State of the Environment and Water Quality” from the National River Conservation Directorate (2009) provides useful information in terms of understanding water discharges along the upstream reaches of NW-1. The report presents water discharges with a probability of exceedance of 50%, 10% and 90% at 6 stations: Allahabad, Mirzapur, Varanasi, Buxar, Patna and Azamabad during the low flow season. It also presents average post-monsoon flows (in October-November), average flows in December-February and in March-May periods. These values are summarized in below.

Table A- 1: Characteristic discharges obtained from the National River Conservation Directorate (2009) report

| Flow regime Discharge (m <sup>3</sup> /s)                       | Allahabad | Mizarpur | Varanasi | Buxar | Patna | Azamabad |
|---|-----------|----------|----------|-------|-------|----------|
| Q50 (flow with 50% probability of exceedance) during low season | 300       | 300      | 300      | 450   | 1050  | 1400     |
| Q90 (flow with 90% probability of exceedance) during low season | 175       | 175      | 175      | 250   | 600   | 1050     |
| Q10 (flow with 10% probability of exceedance) during low season | 450       | 450      | 450      | 600   | 1600  | 2000     |
| Average in October-November                                     | 2000      | 2200     | 2400     | 3100  | 5500  | 9500     |
| Average in December-February                                    | 500       | 500      | 500      | 750   | 1300  | 2200     |
| Average in March-May  | 400       | 400      | 400      | 500   | 1000  | 1500     |

Source: The National River Conservation Directorate, Ministry of Environment and Forests, Government of India (2009)

Farakka Barrage, with a length of 2.2 km and about 15 km from the border with Bangladesh, regulates the flow of the River Ganga diverting some of the water into the 42 km long Feeder Canal linking with the Bhagirathi River downstream towards Kolkata. The navigation lock at Farakka, as well as the Feeder Canal, are part of the Farakka Barrage Project and become the link between the Bhagirathi-Hugli system and the main River Ganga upstream of the Farakka Barrage



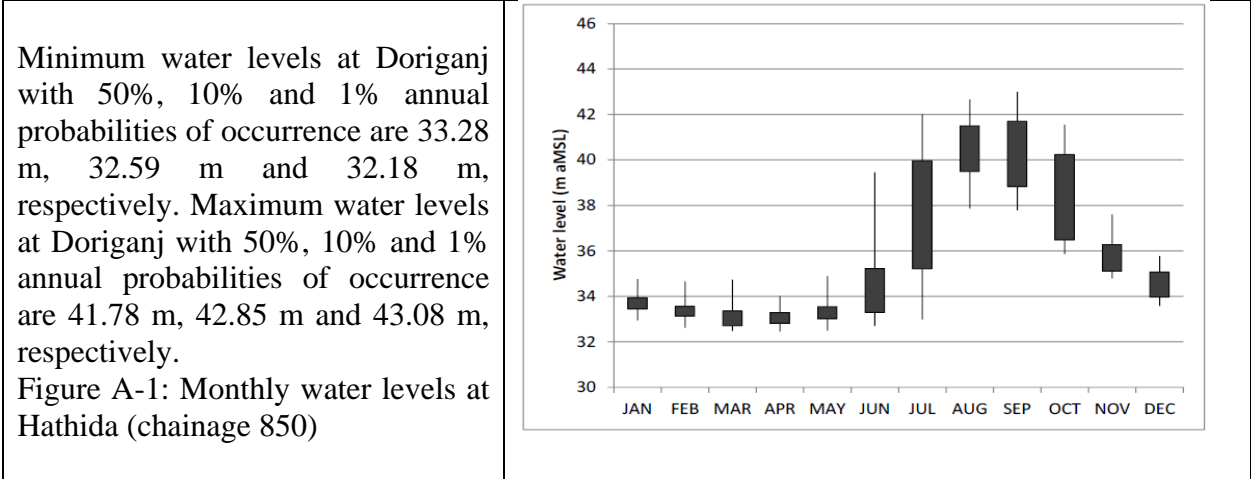
The existing agreement between India and Bangladesh, includes specific water allocation rules during the low flow season. The treaty establishes that during the period January – May water shall be shared alternatively through the Farakka Barrage on a 10 day cycle in each month by both countries.

Data extracted from Jeuland et al (2013) shows the historical flows at Farakka for the period 1969-2001

## 2. Water Levels

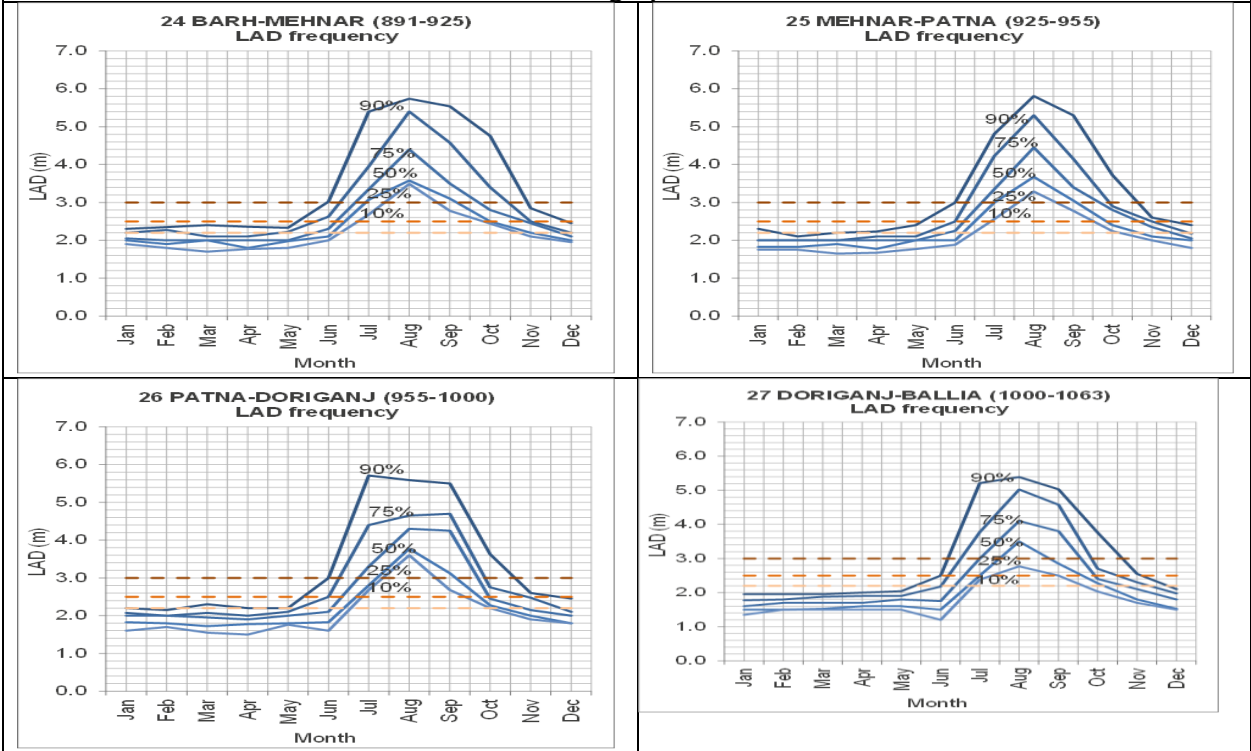
Temporal series of water levels have been provided for Doriganj. The figure shows the variability of monthly water levels, which can be of the order of 10-12 m during the high season. In general, water levels are at their highest in August-September and sharply decrease in October-November. In

general, they continue to decrease during the whole low flow season, from December to May, and start to raise again in June-July. The figure shows the maximum and minimum monthly values with the black block representing where 50% of the values concentrate. The period of the year in which the minimum water level can occur varies with location along the river.



**2.1 Analysis of LAD**

Least Available Depth (LAD) available from Tribeni to Allahabad was analysed to get an understanding of the variations of water depths. Data for the period April 2002 to June 2015 was used to build probability curves of LAD. The probability curves for the reaches between Barh-Doriganj are shown in Figure A-2. The curves shows the percentage of the years where LAD value lower than the value shown in the graph.



**Figure A-1: Probability curves of LAD in Barh- Digha -Majhaua ( Ballia) - Ghazipur**

This statistical information has also been analysed to show the periods when available water depths have a 50% probability to be lower than a certain value mentioned here. The information is presented in **Error! Reference source not found.** below. Key

3.0m =&lt; LAD

2.5m =&lt; LAD &lt; 3.0m

2.2m =&lt; LAD &lt; 2.5m

LAD &lt; 2.2m

**Table A- 1: 50% probability of LADs being lower than mentioned LAD (in metres)**

|    | Name              | Chainage (km) | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  |
|----|-------------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 24 | Barh – Mehnar     | 891-925       | 2.05 | 2.00 | 2.00 | 2.00 | 2.00 | 2.30 | 3.40 | 4.50 | 3.50 | 2.80 | 2.40 | 2.10 |
| 25 | Mehnar – Patna    | 925-955       | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.25 | 3.40 | 4.50 | 3.40 | 2.70 | 2.30 | 2.00 |
| 26 | Patna – Doriganj  | 955-1000      | 2.00 | 2.00 | 1.95 | 1.90 | 2.00 | 2.10 | 3.20 | 4.30 | 4.20 | 2.40 | 2.10 | 2.00 |
| 27 | Doriganj – Ballia | 1000-1063     | 1.60 | 1.70 | 1.70 | 1.70 | 1.80 | 1.75 | 3.00 | 4.00 | 3.60 | 2.30 | 2.05 | 1.75 |
| 28 | Ballia – Buxar    | 1063-1124     | 1.70 | 1.70 | 1.60 | 1.60 | 1.50 | 1.50 | 3.00 | 4.10 | 3.60 | 2.40 | 2.00 | 1.70 |
| 29 | Buxar – Ghazipur  | 1124-1178     | 1.55 | 1.60 | 1.60 | 1.50 | 1.30 | 1.50 | 2.70 | 4.40 | 4.10 | 2.25 | 1.80 | 1.70 |

The different colours in show the range of minimum depths available. Green corresponds to the months when available depths are larger than 2.5 m. The table clearly shows the behaviour of water depths upstream of Barh. The LADs for the period 2006 & 2010-2015 are shown in the tables below.

**Table A- 2: LAD for 2015 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 2.2     | 1.7      | 1.8     | 1.7      | 2.5     | 2.4      | 2.5     | 2.5      | 2.3     | 2.3      | 2.5     | 2.6      | 4.6 | 5.8 | 2.5 | 2.7     | 2.0      | 2.0     | 2.3      | 2.0     | 2.1      |
| 25 | Mehnar - Patna    | 925-955       | 2.3     | 2.0      | 2.0     | 1.7      | 2.3     | 2.4      | 2.4     | 2.4      | 2.4     | 2.4      | 2.4     | 2.5      | 4.4 | 5.5 | 2.4 | 2.1     | 2.0      | 1.9     | 1.9      | 1.5     | 1.5      |
| 26 | Patna - Doriganj  | 955-1000      | 1.6     | 1.8      | 1.7     | 2.0      | 1.8     | 2.0      | 2.2     | 1.8      | 1.9     | 2.1      | 1.9     | 2.3      | 2.5 | 2.7 | 2.5 | 2.1     | 2.0      | 2.0     | 1.8      | 1.8     | 1.4      |
| 27 | Doriganj - Ballia | 1000-1063     | 1.5     | 1.6      | 1.6     | 1.6      | 1.9     | 1.7      | 1.9     | 1.9      | 1.8     | 1.8      | 1.1     | 1.7      | 2.8 | 3.2 | 2.3 | 1.8     | 1.1      | 1.2     | 1.2      | 1.2     | 1.2      |
| 28 | Ballia - Buxar    | 1063-1124     | 1.5     | 1.5      | 1.7     | 1.6      | 1.7     | 1.9      | 1.9     | 1.7      | 1.5     | 1.6      | 1.4     | 1.2      | 3.4 | 4.8 | 2.4 | 1.7     | 1.1      | 1.2     | 1.2      | 1.2     | 1.2      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.5     | 1.5      | 1.5     | 1.5      | 1.7     | 2.1      | 2.0     | 1.8      | 1.6     | 1.6      | 1.5     | 1.5      | 5.0 | 3.2 | 2.2 | 1.7     | 1.6      | 1.5     | 1.4      | 1.4     | 1.4      |

**Table A- 3: LAD for 2015 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 2.2     | 1.7      | 1.8     | 1.7      | 2.5     | 2.4      | 2.5     | 2.5      | 2.3     | 2.3      | 2.5     | 2.6      | 4.6 | 5.8 | 2.5 | 2.7     | 2.0      | 2.0     | 2.3      | 2.0     | 2.1      |
| 25 | Mehnar - Patna    | 925-955       | 2.3     | 2.0      | 2.0     | 1.7      | 2.3     | 2.4      | 2.4     | 2.4      | 2.4     | 2.4      | 2.4     | 2.5      | 4.4 | 5.5 | 2.4 | 2.1     | 2.0      | 1.9     | 1.9      | 1.5     | 1.5      |
| 26 | Patna - Doriganj  | 955-1000      | 1.6     | 1.8      | 1.7     | 2.0      | 1.8     | 2.0      | 2.2     | 1.8      | 1.9     | 2.1      | 1.9     | 2.3      | 2.5 | 2.7 | 2.5 | 2.1     | 2.0      | 2.0     | 1.8      | 1.8     | 1.4      |
|    | Doriganj - Ballia | 1000-1063     | 1.5     | 1.6      | 1.6     | 1.6      | 1.9     | 1.7      | 1.9     | 1.9      | 1.8     | 1.8      | 1.1     | 1.7      | 2.8 | 3.2 | 2.3 | 1.8     | 1.1      | 1.2     | 1.2      | 1.2     | 1.2      |
| 28 | Ballia - Buxar    | 1063-1124     | 1.5     | 1.5      | 1.7     | 1.6      | 1.7     | 1.9      | 1.9     | 1.7      | 1.5     | 1.6      | 1.4     | 1.2      | 3.4 | 4.8 | 2.4 | 1.7     | 1.1      | 1.2     | 1.2      | 1.2     | 1.2      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.5     | 1.5      | 1.5     | 1.5      | 1.7     | 2.1      | 2.0     | 1.8      | 1.6     | 1.6      | 1.5     | 1.5      | 5.0 | 3.2 | 2.2 | 1.7     | 1.6      | 1.5     | 1.4      | 1.4     | 1.4      |

**Table A- 4: LAD for 2014 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 2.4     | 2.2      | 2.3     | 2.7      | 2.5     | 2.4      | 2.3     | 2.3      | 2.3     | 2.4      | 2.6     | 3.7      | 3.1 | 5.4 | 3.1 | 5.5     | 2.9      | 2.5     | 2.5      | 2.1     | 1.8      |
| 25 | Mehnar - Patna    | 925-955       | 2.3     | 2.3      | 2.2     | 2.5      | 2.5     | 2.0      | 2.0     | 1.8      | 1.8     | 2.6      | 2.6     | 3.2      | 3.2 | 5.7 | 3.2 | 3.3     | 2.7      | 2.4     | 2.3      | 2.0     | 2.1      |
| 26 | Patna - Doriganj  | 955-1000      | 2.0     | 2.0      | 2.1     | 2.6      | 2.4     | 1.9      | 1.9     | 1.9      | 1.8     | 1.8      | 2.1     | 2.5      | 2.8 | 4.6 | 2.8 | 2.9     | 2.9      | 2.6     | 1.9      | 1.8     | 1.8      |
| 27 | Doriganj - Ballia | 1000-1063     | 2.0     | 2.0      | 2.0     | 2.6      | 2.2     | 2.0      | 2.0     | 2.0      | 1.9     | 1.9      | 2.0     | 2.6      | 2.5 | 4.7 | 2.5 | 2.6     | 2.8      | 2.7     | 2.0      | 1.9     | 1.8      |
| 28 | Ballia - Buxar    | 1063-1124     | 1.9     | 2.0      | 2.0     | 2.5      | 2.2     | 1.9      | 1.7     | 1.6      | 1.5     | 1.5      | 1.6     | 2.5      | 2.9 | 4.9 | 2.9 | 2.8     | 3.1      | 2.7     | 1.8      | 1.7     | 1.8      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.8     | 1.8      | 1.7     | 2.1      | 2.5     | 1.7      | 1.5     | 2.1      | 1.8     | 1.6      | 1.7     | 2.6      | 2.5 | 5.8 | 2.5 | 2.5     | 2.9      | 2.3     | 1.5      | 1.5     | 1.5      |

**Table A- 5: LAD for 2013 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 2.4     | 2.2      | 2.3     | 2.7      | 2.5     | 2.4      | 2.3     | 2.3      | 2.3     | 2.4      | 2.6     | 3.7      | 3.1 | 5.4 | 3.1 | 5.5     | 2.9      | 2.5     | 2.5      | 2.1     | 1.8      |
| 25 | Mehnar - Patna    | 925-955       | 2.3     | 2.3      | 2.2     | 2.5      | 2.5     | 2.0      | 2.0     | 1.8      | 1.8     | 2.6      | 2.6     | 3.2      | 3.2 | 5.7 | 3.2 | 3.3     | 2.7      | 2.4     | 2.3      | 2.0     | 2.1      |
| 26 | Patna - Doriganj  | 955-1000      | 2.0     | 2.0      | 2.1     | 2.6      | 2.4     | 1.9      | 1.9     | 1.8      | 1.8     | 2.1      | 2.5     | 2.8      | 4.6 | 2.8 | 2.9 | 2.9     | 2.6      | 1.9     | 1.8      | 1.8     |          |
| 27 | Doriganj - Ballia | 1000-1063     | 2.0     | 2.0      | 2.0     | 2.6      | 2.2     | 2.0      | 2.0     | 1.9      | 1.9     | 2.0      | 2.6     | 2.5      | 4.7 | 2.5 | 2.6 | 2.8     | 2.7      | 2.0     | 1.9      | 1.8     |          |
| 28 | Ballia - Buxar    | 1063-1124     | 1.9     | 2.0      | 2.0     | 2.5      | 2.2     | 1.9      | 1.7     | 1.6      | 1.5     | 1.5      | 1.6     | 2.5      | 2.9 | 4.9 | 2.9 | 2.8     | 3.1      | 2.7     | 1.8      | 1.7     | 1.8      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.8     | 1.8      | 1.7     | 2.1      | 2.5     | 1.7      | 1.5     | 2.1      | 1.8     | 1.6      | 1.7     | 2.6      | 2.5 | 5.8 | 2.5 | 2.5     | 2.9      | 2.3     | 1.5      | 1.5     | 1.5      |

**Table A- 6: LAD for 2012 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 2.1     | 2.1      | 2.1     | 2.1      | 2.1     | 2.1      | 2.1     | 2.1      | 2.0     | 2.0      | 2.1     | 2.8      | 3.1 | 4.8 | 3.8 | 2.7     | 2.8      | 3.0     | 2.9      | 2.5     | 2.5      |
| 25 | Mehnar - Patna    | 925-955       | 2.1     | 2.4      | 2.1     | 2.0      | 2.0     | 2.0      | 2.3     | 2.0      | 2.0     | 2.0      | 2.1     | 2.6      | 3.4 | 4.1 | 3.9 | 2.9     | 2.5      | 2.1     | 2.1      | 2.4     | 2.4      |
| 26 | Patna - Doriganj  | 955-1000      | 2.1     | 2.0      | 2.0     | 2.0      | 2.0     | 2.0      | 1.5     | 1.6      | 1.8     | 1.4      | 1.5     | 2.0      | 2.8 | 4.3 | 4.7 | 3.0     | 2.2      | 2.0     | 2.1      | 2.0     | 2.0      |
| 27 | Doriganj - Ballia | 1000-1063     | 1.6     | 1.3      | 1.1     | 1.9      | 1.9     | 1.6      | 1.6     | 1.2      | 1.7     | 1.4      | 1.6     | 1.3      | 2.4 | 4.0 | 4.1 | 2.7     | 2.2      | 2.2     | 2.3      | 2.1     | 2.0      |
| 28 | Ballia - Buxar    | 1063-1124     | 1.9     | 1.8      | 1.7     | 1.4      | 1.4     | 1.6      | 1.9     | 1.0      | 1.1     | 1.1      | 0.9     | 1.1      | 2.5 | 4.2 | 4.1 | 2.5     | 2.3      | 2.2     | 1.8      | 1.8     | 1.8      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.7     | 1.8      | 1.6     | 1.5      | 1.5     | 1.3      | 1.4     | 1.3      | 1.1     | 1.1      | 0.9     | 1.4      | 2.4 | 5.5 | 4.2 | 2.8     | 2.2      | 2.1     | 2.1      | 2.0     | 1.9      |

**Table A- 7: LAD for 2011 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 2.3     | 2.3      | 2.3     | 2.3      | 2.1     | 2.1      | 2.1     | 2.1      | 2.3     | 2.5      | 2.5     | 3.6      | 4.5 | 4.7 | 5.3 | 2.8     | 3.1      | 2.9     | 2.8      | 2.4     | 2.1      |
| 25 | Mehnar - Patna    | 925-955       | 2.0     | 2.5      | 2.1     | 2.1      | 2.1     | 2.1      | 2.1     | 2.2      | 2.5     | 2.5      | 3.7     | 4.2      | 4.5 | 4.0 | 2.8 | 2.6     | 2.5      | 2.4     | 2.0      | 2.0     | 2.0      |
| 26 | Patna - Doriganj  | 955-1000      | 1.5     | 1.6      | 1.8     | 1.8      | 1.7     | 1.6      | 1.8     | 1.8      | 1.8     | 2.1      | 2.0     | 2.6      | 5.7 | 6.4 | 4.4 | 2.3     | 2.2      | 2.0     | 2.0      | 1.8     | 2.1      |
| 27 | Doriganj - Ballia | 1000-1063     | 1.5     | 1.9      | 1.6     | 1.8      | 1.7     | 1.7      | 1.7     | 1.7      | 2.0     | 2.1      | 2.1     | 5.3      | 6.8 | 5.0 | 2.3 | 2.6     | 2.0      | 1.8     | 1.2      | 1.6     |          |
| 28 | Ballia - Buxar    | 1063-1124     | 1.7     | 1.7      | NA      | 1.7      | 1.7     | 1.7      | 1.6     | 1.7      | 1.3     | 1.3      | 1.2     | 1.4      | 5.4 | 6.8 | 4.8 | 2.6     | 2.0      | 2.1     | 2.0      | 1.7     | 1.7      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.8     | 1.8      | NA      | 1.7      | 1.6     | 1.6      | 1.6     | 1.6      | 1.3     | 1.3      | 1.2     | 1.2      | 5.8 | 7.3 | 4.5 | 4.0     | 2.0      | 1.8     | 1.6      | 1.7     | 1.7      |

**Table A- 8: LAD for 2010 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 1.9     | 2.1      | 1.9     | 1.9      | 1.7     | 1.5      | 1.7     | 1.8      | 1.8     | 1.8      | 1.8     | 2.0      | 3.4 | 3.4 | 4.0 | 2.8     | 2.5      | 2.7     | 2.5      | 2.6     | 2.0      |
| 25 | Mehnar - Patna    | 925-955       | 2.0     | 2.0      | 1.8     | 2.0      | 1.7     | 1.5      | 2.0     | 2.0      | 2.0     | 2.0      | 2.0     | 2.1      | 3.1 | 3.3 | 3.2 | 2.8     | 2.2      | 2.3     | 2.6      | 2.2     | 2.0      |
| 26 | Patna - Doriganj  | 955-1000      | 1.9     | 2.0      | 1.7     | 1.8      | 1.6     | 1.7      | 1.7     | 1.9      | 1.8     | 1.7      | 1.4     | 1.4      | 3.5 | 4.3 | 5.2 | 2.5     | 2.2      | 2.1     | 2.1      | 2.0     | 2.0      |
| 27 | Doriganj - Ballia | 1000-1063     | 1.8     | 1.8      | 1.7     | 1.7      | 1.5     | 1.5      | 1.5     | 1.6      | 1.5     | 1.5      | 1.0     | 1.0      | 2.5 | 3.9 | 5.1 | 4.0     | 2.1      | 2.1     | 2.3      | 2.1     | 2.1      |
| 28 | Ballia - Buxar    | 1063-1124     | 1.7     | 1.8      | 1.6     | 1.6      | 1.2     | 1.2      | 1.3     | 1.3      | 1.3     | 0.9      | 0.8     | 0.8      | 2.1 | 3.5 | 6.6 | 3.3     | 2.6      | 2.0     | 2.0      | 2.0     | 2.0      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.8     | 1.7      | 1.6     | 1.6      | 1.2     | 1.2      | 1.3     | 1.3      | 1.0     | 0.6      | 0.6     | 0.8      | 2.1 | 3.0 | 6.4 | 3.2     | 2.1      | 2.0     | 2.0      | 2.0     | 2.0      |

**Table A- 9: LAD for 2006 (in metres)**

|    | Name              | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul IFN | Jul IIFN | Aug IFN | Aug IIFN | Sep IFN | Sep IIFN | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| 24 | Barh - Mehnar     | 891-925       | 1.9     | 1.9      | 1.9     | 1.8      | 1.9     | 1.7      | 1.6     | 1.8      | 1.9     | 1.9      | 2.7     | 2.1      | 3.8     | 5.8      | 4.5     | 3.5      | 3.1     | 2.5      | 2.1     | 1.9      | 1.9     | 1.9      | 2.1     | 2.0      |
| 25 | Mehnar - Patna    | 925-955       | 1.8     | 1.7      | 1.8     | 1.8      | 1.8     | 1.9      | 2.0     | 2.0      | 2.1     | 2.0      | 2.4     | 2.3      | 4.3     | 4.9      | 4.3     | 5.1      | 3.4     | 2.5      | 2.2     | 2.4      | 2.2     | 2.4      | 2.5     | 2.1      |
| 26 | Patna - Doriganj  | 955-1000      | 2.0     | 2.0      | 1.8     | 1.6      | 1.5     | 1.8      | 1.6     | 1.5      | 1.9     | 2.1      | 3.2     | 1.7      | 2.2     | 3.2      | 3.7     | 4.1      | 4.7     | 3.1      | 2.0     | 2.2      | 2.1     | 1.9      | 1.8     | 2.0      |
| 27 | Doriganj - Ballia | 1000-1063     | 1.6     | 1.3      | 1.5     | 1.5      | 1.5     | 1.6      | 1.5     | 1.6      | 1.7     | 1.9      | 2.4     | 1.5      | 2.1     | 3.0      | 3.5     | 4.2      | 4.9     | 2.8      | 1.9     | 1.8      | 1.7     | 1.8      | 1.8     | 1.5      |
| 28 | Ballia - Buxar    | 1063-1124     | 1.8     | 1.6      | 1.5     | 1.4      | 1.3     | 1.5      | 1.3     | 1.5      | 1.2     | 1.3      | 2.4     | 1.5      | 2.3     | 3.2      | 3.9     | 4.4      | 5.1     | 2.5      | 1.9     | 1.9      | 1.8     | NA       | 1.7     | 1.7      |
| 29 | Buxar - Ghazipur  | 1124-1178     | 1.4     | 1.3      | 1.3     | 1.4      | 1.3     | 1.3      | 1.1     | 1.2      | 1.0     | 1.2      | 1.8     | 1.5      | 1.9     | 3.1      | 3.8     | 4.5      | 4.6     | 4.0      | 1.9     | 1.8      | 1.7     | NA       | 1.5     | 1.5      |

## Studies of Changes to the River Course in Past Ten Years

In this section, the general character of the river morphology is discussed having in mind its possible impacts to navigation. The River Ganga is a dynamic system which has continuous and unsteady inputs (e.g. water discharge, sediment transport) and thus, it is continuously adjusting in response to the changing inputs. Depending on those inputs, the river is significantly mobile, changing pattern from one season to another.

From the analysis of satellite images in the last 10 years, the general river typologies along each river reach have been identified. These are presented in Table B-1 below.

Table B-1: Description of the Morphological Character Barh – Digha

| Reach | Description                 | Chainage    | Morphological description  |
|-------|-----------------------------|-------------|--|
| 24    | BARH-MEHNAR                 | (891-925)   | Anabranched river with channels with a certain degree of braiding showing bars, islands and side |
| 25    | MEHNAR-PATNA<br>Digha – 965 | (925-955)   | Anabranched river with channels with a certain degree of braiding showing bars and islands       |
| 26    | PATNA-DORIGANJ              | (955-1000)  | Split sinuous channels with a high degree of anabranching  |
| 27    | DORIGANJ-BALLIA             | (1000-1063) | Meandering single channel, wider at bends with some chutes and several subparallel anabranches   |

This statistical information has also been analysed to show the periods when available water depths have a 50% probability to be lower than a certain value mentioned here.

## Appendix G

### G. LAD for 2010 – 2015

Table G0: LAD for 2015 (in metres)

|    | Name                          | Chainage (km) | Jan IFN | Jan IFN | Feb IFN | Feb IFN | Mar IFN | Mar IFN | Apr IFN | Apr IFN | May IFN | May IFN | Jun IFN | Jun IFN | Jul | Aug | Sep | Oct IFN | Oct IFN | Nov IFN | Nov IFN | Dec IFN | Dec IFN |
|----|-------------------------------|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|-----|-----|---------|---------|---------|---------|---------|---------|
| 1  | Tribeni - Balagarh            | 193-221       | 3.1     | 3.7     | 3.3     | 3.1     | 3.0     | 3.7     | 3.2     | 3.5     | 3.3     | 3.3     | 4.2     | 4.1     | 4.8 | 4.1 | 3.2 | N/A     | 3.5     | 3.1     | 3.5     | 3.0     | 3.2     |
| 2  | Balagarh - Kalna              | 221-245       | 3.1     | 3.3     | 3.0     | 3.0     | 3.0     | 3.3     | 3.3     | 3.5     | 3.2     | 3.5     | 3.4     | 3.4     | 4.1 | 4.0 | 3.4 | N/A     | 3.7     | 3.0     | 3.3     | 3.3     | 3.2     |
| 3  | Kalna - Samudragarh           | 245-263       | 3.5     | 4.0     | 3.8     | 3.3     | 3.2     | 3.6     | 3.6     | 3.6     | 3.2     | 3.3     | 3.3     | 3.5     | 3.6 | 4.1 | 3.4 | N/A     | 3.5     | 3.4     | 3.3     | 3.3     | 3.3     |
| 4  | Samudragarh - Nabadweep       | 263-280       | 3.4     | 3.2     | 3.4     | 3.3     | 3.2     | 3.6     | 3.3     | 3.5     | 3.3     | 3.3     | 3.4     | 3.9     | 3.6 | 4.2 | 3.6 | N/A     | 3.8     | 3.5     | 3.2     | 3.2     | 3.1     |
| 5  | Nabadweep - Patuli            | 280-322       | 3.2     | 3.3     | 3.2     | 3.2     | 3.1     | 3.2     | 3.3     | 3.2     | 3.1     | 3.3     | 3.4     | 3.5     | 3.5 | 4.3 | 3.7 | N/A     | 3.5     | 3.0     | 3.0     | 2.9     | 2.9     |
| 6  | Patuli - Katwa                | 322-345       | 3.2     | 3.2     | 3.3     | 3.2     | 3.1     | 3.3     | 3.3     | 3.3     | 3.1     | 3.2     | 3.1     | 3.3     | 3.5 | 4.0 | 3.1 | N/A     | 3.2     | 2.9     | 3.0     | 2.9     | 2.8     |
| 7  | Katwa - Palassey              | 345-371       | 3.1     | 3.1     | 3.1     | 3.0     | 3.0     | 3.3     | 3.1     | 3.2     | 3.3     | 3.3     | 3.4     | 3.4     | 4.0 | 4.1 | 3.7 | N/A     | 3.6     | 3.2     | 3.1     | 2.9     | 2.9     |
| 8  | Palassey - Chaurigacha        | 371-400       | 3.3     | 3.3     | 3.4     | 3.1     | 3.1     | 3.3     | 3.3     | 3.2     | 3.1     | 3.2     | 3.1     | 3.3     | 3.5 | 4.0 | 3.5 | N/A     | 3.3     | 3.1     | 3.1     | 2.9     | 2.9     |
| 9  | Chaurigacha - Berhampur       | 400-421       | 3.7     | 3.6     | 3.9     | 3.4     | 3.5     | 3.9     | 3.8     | 4.0     | 3.5     | 3.4     | 3.8     | 4.1     | 3.7 | 4.2 | 3.9 | N/A     | 3.6     | 4.1     | 3.6     | 3.4     | 3.5     |
| 10 | Berhampur - Mohammadpur       | 421-449       | 3.8     | 3.7     | 3.8     | 3.4     | 3.2     | 3.9     | 3.7     | 3.8     | 3.9     | 3.8     | 3.8     | 3.9     | 4.3 | 4.0 | 3.8 | N/A     | 3.8     | 3.6     | 3.4     | 3.2     | 3.3     |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 3.3     | 3.3     | 3.3     | 3.2     | 3.0     | 3.7     | 4.0     | 3.7     | 3.8     | 3.9     | 3.9     | 3.5     | 3.8 | 4.1 | 3.5 | N/A     | 3.7     | 3.5     | 3.3     | 3.3     | 3.2     |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 4.1     | 4.8     | 4.6     | 4.2     | 3.3     | 4.7     | 4.9     | 4.9     | 5.0     | 5.0     | 5.0     | 4.9     | 4.7 | 4.5 | 4.6 | N/A     | 4.4     | 4.0     | 4.2     | 4.0     | 4.0     |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 3.2     | 3.2     | 3.2     | 3.2     | 2.8     | 3.1     | 3.1     | 3.1     | 3.3     | 3.2     | 3.2     | 3.3     | 3.0 | 3.4 | 3.0 | N/A     | 3.0     | 3.0     | 3.0     | 2.7     | 2.7     |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.3     | 2.4     | 2.6     | 2.4     | 2.8     | 2.7     | 2.6     | 2.7     | 2.6     | 2.6     | 2.6     | 2.6     | 2.6 | 2.9 | 2.9 | N/A     | 2.2     | 2.2     | 2.2     | 2.2     | 2.2     |
| 15 | Rajmahal - Manihari           | 583-633       | 2.9     | 2.8     | 3.3     | 3.2     | 3.0     | 3.0     | 4.4     | 2.8     | 3.0     | 2.9     | 3.3     | 3.2     | 3.7 | 6.0 | 4.1 | 2.6     | 2.6     | 2.8     | 3.0     | 3.0     | 3.1     |
| 16 | Manihari - Karagola           | 633-660       | 3.2     | 2.8     | 2.5     | 2.4     | 2.8     | 3.0     | 2.8     | 2.8     | 2.8     | 2.9     | 2.8     | 3.4     | 3.1 | 4.9 | 4.6 | 3.0     | 2.7     | 2.9     | 3.0     | 2.6     | 2.6     |
| 17 | Karagola - Kahalgaon          | 660-690       | 2.7     | 2.6     | 2.6     | 2.5     | 2.2     | 2.7     | 2.8     | 2.8     | 2.5     | 2.6     | 2.6     | 2.6     | 2.7 | 5.2 | 3.8 | 3.4     | 2.6     | 2.5     | 2.3     | 2.1     | 1.8     |
| 18 | Kahalgaon - Bhagalpur         | 690-715       | 2.7     | 3.0     | 2.9     | 2.9     | 2.3     | 2.9     | 3.1     | 3.1     | 3.1     | 3.4     | 3.4     | 3.6     | 3.8 | 7.6 | 4.6 | 2.8     | 3.0     | 2.7     | 2.6     | 2.5     | 2.2     |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.4     | 2.5     | 2.3     | 2.5     | 2.2     | 2.8     | 2.8     | 2.7     | 2.6     | 2.6     | 2.5     | 2.7     | 3.1 | 4.6 | 6.1 | 3.2     | 2.6     | 2.8     | 2.6     | 2.3     | 2.2     |
| 20 | Sultanganj - Munger           | 746-793       | 2.8     | 2.7     | 2.7     | 2.8     | 2.1     | 2.8     | 2.8     | 2.8     | 2.7     | 2.8     | 2.6     | 2.6     | 3.5 | 4.9 | 5.7 | 2.9     | 2.5     | 2.5     | 2.4     | 2.3     | 2.1     |
| 21 | Munger - Mahendrapur          | 793-820       | 2.1     | 2.5     | 2.4     | 2.0     | 2.4     | 2.4     | 2.4     | 2.3     | 2.5     | 2.5     | 2.5     | 2.8     | 4.9 | 6.0 | 2.6 | 2.4     | 2.0     | 2.1     | 2.3     | 2.0     | 2.1     |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.2     | 2.1     | 2.1     | 1.7     | 2.3     | 2.4     | 2.5     | 2.4     | 2.5     | 2.5     | 2.6     | 2.8     | 4.7 | 5.9 | 2.6 | 2.4     | 2.0     | 2.2     | 2.2     | 2.1     | 2.1     |
| 23 | Semaria - Barh                | 853-891       | 2.4     | 2.1     | 2.2     | 2.1     | 2.3     | 2.3     | 2.4     | 2.4     | 2.3     | 2.4     | 2.4     | 2.6     | 4.5 | 5.7 | 2.5 | 2.3     | 2.0     | 1.8     | 1.8     | 1.8     | 1.7     |
| 24 | Barh - Mehnar                 | 891-925       | 2.2     | 1.7     | 1.8     | 1.7     | 2.5     | 2.4     | 2.5     | 2.5     | 2.3     | 2.3     | 2.5     | 2.6     | 4.6 | 5.8 | 2.5 | 2.7     | 2.0     | 2.0     | 2.3     | 2.0     | 2.1     |
| 25 | Mehnar - Patna                | 925-955       | 2.3     | 2.0     | 2.0     | 1.7     | 2.3     | 2.4     | 2.4     | 2.4     | 2.4     | 2.4     | 2.4     | 2.5     | 4.4 | 5.5 | 2.4 | 2.1     | 2.0     | 1.9     | 1.9     | 1.5     | 1.5     |
| 26 | Patna - Doriganj              | 955-1000      | 1.6     | 1.8     | 1.7     | 2.0     | 1.8     | 2.0     | 2.2     | 1.8     | 1.9     | 2.1     | 1.9     | 2.3     | 2.5 | 2.7 | 2.5 | 2.1     | 2.0     | 2.0     | 1.8     | 1.8     | 1.4     |
| 27 | Doriganj - Ballia             | 1000-1063     | 1.5     | 1.6     | 1.6     | 1.6     | 1.9     | 1.7     | 1.9     | 1.9     | 1.8     | 1.8     | 1.1     | 1.7     | 2.8 | 3.2 | 2.3 | 1.8     | 1.1     | 1.2     | 1.2     | 1.2     | 1.2     |
| 28 | Ballia - Buxar                | 1063-1124     | 1.5     | 1.5     | 1.7     | 1.6     | 1.7     | 1.9     | 1.9     | 1.7     | 1.5     | 1.6     | 1.4     | 1.2     | 3.4 | 4.8 | 2.4 | 1.7     | 1.1     | 1.2     | 1.2     | 1.2     | 1.2     |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.5     | 1.5     | 1.5     | 1.5     | 1.7     | 2.1     | 2.0     | 1.8     | 1.6     | 1.6     | 1.5     | 1.5     | 5.0 | 3.2 | 2.2 | 1.7     | 1.6     | 1.5     | 1.4     | 1.4     | 1.4     |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.3     | 1.2     | 1.5     | 1.2     | 1.2     | 1.7     | 1.3     | 1.4     | 1.0     | 1.1     | 0.9     | 1.1     | 2.7 | 3.4 | 1.5 | 1.4     | 1.5     | 1.5     | 1.5     | 1.4     | 1.3     |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.3     | 1.2     | 1.6     | 1.3     | 1.3     | 1.8     | 1.4     | 1.5     | 1.0     | 1.0     | 1.0     | 1.1     | 3.1 | 4.3 | 1.5 | 1.3     | 1.2     | 1.3     | 1.1     | 1.1     | 1.2     |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.5     | 1.4     | 1.5     | 1.2     | 1.1     | 1.5     | 1.5     | 1.5     | 0.9     | 0.8     | 0.8     | 1.3     | 3.7 | 4.9 | 1.5 | N/A     | 1.2     | 1.5     | 1.6     | 1.5     | 1.5     |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.4     | 1.4     | 1.5     | 1.5     | 0.9     | 0.8     | 1.0     | 1.0     | 1.0     | 0.8     | 0.8     | 0.8     | 3.7 | 2.8 | 1.5 | 1.5     | 1.1     | 1.2     | 1.1     | 1.1     | 0.9     |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.3     | 1.5     | 1.4     | 1.5     | 1.2     | 1.0     | 1.3     | 1.3     | 1.2     | 0.8     | 0.8     | 0.8     | 2.3 | 4.1 | 1.5 | 1.5     | 1.1     | 1.1     | 1.2     | 1.1     | 0.9     |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.9     | 1.4     | 1.8     | 1.7     | 1.0     | 1.3     | 1.6     | 1.5     | 1.4     | 0.8     | 0.8     | 1.0     | 2.7 | 5.2 | 1.6 | 1.5     | 1.1     | 1.2     | 1.5     | 1.3     | 1.1     |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.0     | 1.0     | 0.8     | 1.0     | 0.8     | 1.0     | 0.8     | 0.8     | 0.7     | 0.8     | 0.8     | 0.8     | 2.4 | 3.5 | 1.5 | 0.9     | 0.8     | 1.0     | 0.9     | 0.9     | 0.9     |

Key:

|             |                    |                    |            |
|-------------|--------------------|--------------------|------------|
| 3.0m =< LAD | 2.5m =< LAD < 3.0m | 2.2m =< LAD < 2.5m | LAD < 2.2m |
|-------------|--------------------|--------------------|------------|

Table G1: LAD for 2014 (in metres)

|    | Name                          | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 1  | Tribeni - Balagarh            | 193-221       | 3.2     | 3.6      | 2.9     | 3.1      | 3.0     | 3.1      | 3.5     | 3.5      | 3.2     | 3.7      | 3.7     | 3.3      | 4.1 | 3.3 | 3.6 | 4.0     | N/A      | 3.3     | 3.4      | 3.1     | 3.1      |
| 2  | Balagarh - Kalna              | 221-245       | 2.8     | 3.0      | 2.9     | 2.9      | 3.0     | 3.2      | 3.1     | 3.1      | 3.2     | 3.4      | 3.3     | 3.3      | 3.5 | 3.5 | 3.6 | 3.4     | N/A      | 3.3     | 3.1      | 3.1     | 3.1      |
| 3  | Kalna - Samudragarh           | 245-263       | 3.3     | 3.2      | 3.2     | 3.0      | 3.0     | 3.1      | 3.0     | 3.0      | 3.2     | 3.1      | 3.1     | 3.4      | 3.3 | 3.5 | 3.5 | 3.3     | N/A      | 3.5     | 3.8      | 3.7     | 3.5      |
| 4  | Samudragarh - Nabadweep       | 263-280       | 2.9     | 3.2      | 2.9     | 2.9      | 3.0     | 2.9      | 3.0     | 3.1      | 3.0     | 3.1      | 3.1     | 3.2      | 3.6 | 3.8 | 3.6 | 3.3     | N/A      | 3.1     | 3.4      | 3.5     | 3.6      |
| 5  | Nabadweep - Patuli            | 280-322       | 3.0     | 3.0      | 2.9     | 2.9      | 2.9     | 2.9      | 3.1     | 3.0      | 3.0     | 3.0      | 3.1     | 3.1      | 3.3 | 3.1 | 3.5 | 3.3     | N/A      | 3.1     | 3.1      | 3.1     | 3.2      |
| 6  | Patuli - Katwa                | 322-345       | 3.1     | 3.0      | 3.0     | 3.0      | 3.0     | 3.5      | 3.1     | 3.0      | 3.1     | 3.1      | 3.1     | 3.1      | 3.2 | 3.0 | 3.5 | 3.2     | N/A      | 3.0     | 3.3      | 3.2     | 3.1      |
| 7  | Katwa - Palassey              | 345-371       | 2.9     | 2.8      | 3.0     | 3.0      | 3.0     | 3.0      | 3.1     | 3.0      | 3.0     | 3.1      | 3.2     | 3.3      | 3.2 | 3.4 | 3.6 | 3.3     | N/A      | 3.0     | 3.0      | 3.0     | 3.1      |
| 8  | Palassey - Chaurigacha        | 371-400       | 2.9     | 3.0      | 3.1     | 3.1      | 3.1     | 3.1      | 3.1     | 3.0      | 3.1     | 3.1      | 3.1     | 3.2      | 3.1 | 3.4 | 3.5 | 3.2     | N/A      | 3.2     | 3.1      | 3.1     | 3.2      |
| 9  | Chaurigacha - Berhampur       | 400-421       | 3.5     | 3.6      | 3.3     | 3.3      | 3.5     | 3.6      | 3.6     | 3.3      | 3.2     | 3.2      | 3.1     | 3.2      | 3.5 | 3.6 | 3.4 | 3.4     | N/A      | 3.6     | 3.5      | 3.9     | 3.6      |
| 10 | Berhampur - Mohammadpur       | 421-449       | 2.9     | 2.9      | 3.0     | 3.1      | 3.2     | 3.0      | 2.9     | 2.9      | 2.7     | 3.3      | 3.2     | 3.5      | 3.6 | 3.7 | 3.9 | 3.8     | N/A      | 3.5     | 3.8      | 3.8     | 3.8      |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 3.4     | 3.3      | 3.1     | 3.2      | 3.5     | 3.3      | 3.2     | 2.9      | 3.1     | 3.3      | 3.5     | 3.3      | 3.4 | 3.3 | 3.5 | 3.6     | N/A      | 3.4     | 3.4      | 3.2     | 3.2      |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 3.4     | 4.0      | 3.8     | 3.2      | 3.8     | 4.3      | 4.1     | 3.7      | 3.6     | 3.5      | 3.3     | 4.1      | 4.3 | 4.5 | 4.7 | 4.9     | N/A      | 4.8     | 4.9      | 4.7     | 4.4      |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 2.8     | 2.8      | 2.8     | 2.8      | 3.0     | 2.9      | 2.6     | 2.5      | 2.6     | 4.3      | 4.6     | 3.1      | 3.1 | 3.0 | 3.0 | 3.2     | N/A      | 3.1     | 3.0      | 3.0     | 3.0      |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.5     | 2.6      | 2.5     | 2.2      | 2.5     | 2.5      | 2.2     | 2.0      | 2.4     | 3.1      | 3.0     | 2.6      | 2.8 | 3.3 | 2.5 | 2.0     | N/A      | 2.0     | 2.0      | 2.2     | 2.2      |
| 15 | Rajmahal - Manihari           | 583-633       | 2.6     | 2.6      | 2.8     | 3.0      | 3.0     | 2.9      | 3.0     | 2.5      | 2.5     | 2.6      | 2.6     | 2.7      | 3.0 | 4.2 | 3.0 | 3.1     | 2.9      | 2.8     | 3.1      | 3.3     | 2.9      |
| 16 | Manihari - Karagola           | 633-660       | 2.6     | 2.8      | 3.2     | 3.1      | 3.7     | 2.8      | 2.9     | 2.8      | 2.8     | 2.6      | 3.6     | 3.2      | 3.1 | 5.2 | 3.2 | 2.9     | 3.4      | 2.7     | 2.8      | 2.9     | 3.2      |
| 17 | Karagola - Kahalgaon          | 660-690       | 2.2     | 2.5      | 2.6     | 2.5      | 2.5     | 2.6      | 2.6     | 2.5      | 2.5     | 3.0      | 2.7     | 2.6      | 3.0 | 4.0 | 4.2 | 3.0     | 3.3      | 2.6     | 2.8      | 2.8     | 2.6      |
| 18 | Kahalgaon - Bhagalpur         | 690-715       | 2.2     | 2.5      | 2.8     | 2.9      | 3.0     | 3.0      | 2.9     | 2.6      | 2.7     | 2.5      | 2.8     | 2.8      | 3.7 | 4.8 | 3.6 | 3.1     | 3.5      | 2.8     | 3.1      | 3.0     | 2.7      |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.5     | 2.5      | 2.6     | 2.5      | 2.5     | 2.5      | 2.5     | 2.5      | 2.5     | 2.8      | 2.6     | 2.5      | 3.0 | 4.4 | 3.5 | 2.8     | 2.8      | 2.5     | 2.5      | 2.4     | 2.1      |
| 20 | Sultanganj - Munger           | 746-793       | 2.7     | 2.6      | 3.1     | 2.7      | 2.8     | 2.6      | 2.7     | 2.6      | 2.5     | 2.5      | 2.7     | 2.8      | 3.5 | 5.6 | 4.7 | 3.0     | 2.9      | 2.8     | 2.6      | 2.5     | 2.7      |
| 21 | Munger - Mahendrapur          | 793-820       | 2.4     | 2.6      | 2.6     | 2.5      | 2.5     | 2.5      | 2.5     | 1.6      | 2.5     | 2.6      | 2.6     | 2.8      | 3.4 | 5.5 | 3.6 | 2.5     | 3.5      | 2.6     | 2.3      | 2.5     | 2.5      |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.3     | 2.3      | 2.5     | 2.5      | 2.5     | 2.5      | 2.5     | 2.1      | 2.6     | 2.5      | 2.6     | 2.7      | 3.5 | 5.2 | 4.3 | 2.6     | 3.9      | 2.8     | 2.6      | 2.4     | 2.1      |
| 23 | Semaria - Barh                | 853-891       | 1.7     | 1.8      | 2.1     | 2.1      | 2.0     | 1.6      | 1.6     | 1.6      | 2.2     | 2.3      | 2.6     | 2.7      | 2.9 | 4.3 | 3.2 | 2.6     | 3        | 2.4     | 2.3      | 2.4     | 2.5      |
| 24 | Barh - Mehnar                 | 891-925       | 2.3     | 2.3      | 2.4     | 2.1      | 2.3     | 2.0      | 2.0     | 2.0      | 2.0     | 2.5      | 2.6     | 2.7      | 3.0 | 4.5 | 3.4 | 2.8     | 3.4      | 2.6     | 2.5      | 2.3     | 2.2      |
| 25 | Mehnar - Patna                | 925-955       | 1.9     | 1.6      | 2.0     | 2.0      | 2.0     | 1.9      | 1.7     | 1.5      | 1.9     | 2.0      | 2.0     | 2.4      | 2.8 | 4.4 | 3.3 | 2.9     | 2.8      | 2.6     | 2.5      | 2.5     | 2.3      |
| 26 | Patna - Doriganj              | 955-1000      | 1.3     | 2.5      | 2.2     | 2.1      | 2.4     | 2.3      | 2.1     | 2.2      | 2.0     | 1.8      | 1.8     | 2.1      | 3.7 | 4.3 | 3.2 | 2.7     | 2.5      | 2.4     | 1.8      | 1.8     | 1.8      |
| 27 | Doriganj - Ballia             | 1000-1063     | 1.6     | 1.5      | 2.1     | 1.7      | 1.9     | 1.8      | 1.8     | 1.7      | 1.5     | 1.4      | 1.3     | 1.7      | 2.8 | 4.2 | 2.8 | 2.3     | 2.3      | 1.8     | 1.7      | 1.7     | 1.5      |
| 28 | Ballia - Buxar                | 1063-1124     | 1.3     | 1.5      | 1.7     | 1.7      | 2.1     | 1.9      | 1.7     | 1.7      | 1.7     | 1.6      | 1.4     | 1.5      | 1.9 | 4.1 | 3.6 | 2.4     | 2.2      | 1.7     | 1.6      | 1.4     | 1.5      |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.3     | 2.1      | 1.9     | 1.8      | 1.8     | 2.0      | 1.7     | 1.8      | 1.6     | 1.6      | 1.6     | 1.7      | 2.0 | 3.9 | 4.1 | 2.5     | 2.0      | 1.7     | 1.6      | 1.3     | 1.6      |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.4     | 1.4      | 1.0     | 1.0      | 1.7     | 1.9      | 1.5     | 1.4      | 1.5     | 1.5      | N/A     | 1.2      | 1.4 | 4.8 | 2.1 | 2.0     | 1.5      | 1.5     | 1.2      | 1.1     | 1.3      |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.7     | 1.7      | 1.7     | 1.8      | 2.1     | 1.8      | 1.5     | 1.5      | 1.9     | 1.5      | N/A     | 1.5      | 1.5 | 7.2 | 2.1 | 1.2     | 1.2      | 1.2     | 1.3      | 1.2     | 1.2      |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.3     | 1.4      | 1.4     | 1.8      | 1.5     | 1.8      | 1.7     | 1.7      | 1.7     | 1.5      | 1.5     | 1.5      | 1.5 | 7.6 | 2.1 | 1.5     | 1.7      | 1.7     | 1.6      | 1.6     | 1.5      |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.7     | 2.0      | 2.0     | 1.8      | 2.0     | 1.8      | 1.2     | 1.2      | 1.0     | 1.0      | 1.1     | 1.1      | 1.7 | 2.7 | 2.3 | 1.5     | 1.7      | N/A     | N/A      | N/A     | 1.4      |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.7     | 1.5      | 1.4     | 1.7      | 2.1     | 1.7      | 1.4     | 1.5      | 1.0     | 1.0      | 1.0     | 1.1      | 1.7 | 3.1 | 2.0 | 1.2     | 1.3      | N/A     | N/A      | N/A     | 1.5      |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.9     | 2.0      | 1.8     | 1.5      | 1.6     | 1.7      | 1.4     | 1.5      | 1.3     | 1.3      | 1.2     | 1.2      | 1.9 | 2.9 | 2.3 | 1.4     | 1.5      | N/A     | N/A      | N/A     | 1.5      |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.4     | 1.5      | 1.4     | 1.2      | 1.0     | 0.9      | 0.8     | 0.9      | 0.7     | 0.7      | 0.8     | 0.8      | 1.7 | 2.3 | 1.8 | 1.2     | 1.2      | N/A     | N/A      | N/A     | 1.2      |

Key:

|             |                    |                    |            |
|-------------|--------------------|--------------------|------------|
| 3.0m =< LAD | 2.5m =< LAD < 3.0m | 2.2m =< LAD < 2.5m | LAD < 2.2m |
|-------------|--------------------|--------------------|------------|

Appendix G

Table G2: LAD for 2013 (in metres)

|    | Name                          | Chainage (km) | Jan<br>FN | Jan<br>IFN | Feb<br>FN | Feb<br>IFN | Mar<br>FN | Mar<br>IFN | Apr<br>FN | Apr<br>IFN | May<br>FN | May<br>IFN | Jun<br>FN | Jun<br>IFN | Jul<br>FN | Aug<br>FN | Sep<br>FN | Oct<br>FN | Oct<br>IFN | Nov<br>FN | Nov<br>IFN | Dec<br>FN | Dec<br>IFN |
|----|-------------------------------|---------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|-----------|-----------|-----------|------------|-----------|------------|-----------|------------|
| 1  | Tribeni - Balagarh            | 193-221       | 3.9       | N/A        | 4.5       | 3.5        | 3.8       | 3.5        | 3.2       | 3.5        | 3.9       | 5.3        | 4.1       | 4.0        | 3.9       | 3.7       | 3.7       | N/A       | 3.8        | 3.1       | 3.5        | 3.0       | 3.1        |
| 2  | Balagarh - Kalna              | 221-245       | 3.4       | N/A        | 3.2       | 3.2        | 3.1       | 3.5        | 3.1       | 3.1        | 3.5       | 3.5        | 3.4       | 3.3        | 4.1       | 3.5       | 3.2       | N/A       | 4.0        | 3.1       | 3.0        | 3.4       | 3.1        |
| 3  | Kalna - Samudragarh           | 245-263       | 3.3       | N/A        | 3.5       | 3.1        | 3.1       | 3.1        | 3.1       | 3.1        | 3.3       | 3.2        | 3.2       | 3.2        | 3.6       | 3.5       | 3.6       | N/A       | 4.2        | 3.1       | 3.1        | 3.5       | 3.7        |
| 4  | Samudragarh - Nabadweep       | 263-280       | 3.3       | N/A        | 3.1       | 3.1        | 3.1       | 3.0        | 2.9       | 2.8        | 2.9       | 3.0        | 3.2       | 3.2        | 3.2       | 4.3       | 3.2       | N/A       | 4.0        | 2.9       | 2.9        | 2.8       | 2.8        |
| 5  | Nabadweep - Patuli            | 280-322       | 3.3       | N/A        | 3.2       | 3.1        | 3.0       | 3.0        | 2.9       | 2.9        | 3.0       | 3.1        | 3.2       | 3.1        | 3.7       | 3.6       | 3.7       | N/A       | 4.6        | 3.2       | 3.4        | 2.9       | 3.0        |
| 6  | Patuli - Katwa                | 322-345       | 3.5       | N/A        | 3.2       | 3.1        | 3.1       | 3.0        | 2.9       | 2.9        | 3.2       | 3.2        | 3.3       | 3.1        | 3.3       | 3.4       | 3.3       | N/A       | 4.2        | 2.9       | 2.9        | 3.0       | 3.0        |
| 7  | Katwa - Palassey              | 345-371       | 3.3       | N/A        | 3.1       | 3.0        | 3.0       | 3.0        | 2.9       | 2.9        | 3.0       | 3.0        | 3.1       | 3.0        | 3.0       | 3.4       | 3.0       | N/A       | 3.3        | 2.8       | 2.8        | 2.7       | 2.8        |
| 8  | Palassey - Chaurigacha        | 371-400       | 3.3       | N/A        | 3.4       | 3.0        | 3.0       | 3.4        | 3.0       | 2.9        | 3.4       | 3.2        | 3.2       | 3.1        | 3.6       | 3.9       | 3.6       | N/A       | 4.2        | 2.9       | 3.0        | 3.0       | 3.1        |
| 9  | Chaurigacha - Berhampur       | 400-421       | 3.4       | N/A        | 3.2       | 3.2        | 3.2       | 3.4        | 3.1       | 3.0        | 3.5       | 3.2        | 3.5       | 3.2        | 3.9       | 4.3       | 3.9       | N/A       | 4.5        | 3.5       | 3.7        | 3.6       | 3.9        |
| 10 | Berhampur - Mohammadpur       | 421-449       | 3.0       | 3.2        | 3.5       | 3.2        | 3.3       | 3.1        | 3.1       | 3.0        | 3.5       | 3.2        | 3.9       | 3.7        | 3.5       | 4.2       | 3.5       | N/A       | 4.0        | 3.3       | 3.1        | 3.4       | 3.1        |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 3.1       | 3.2        | 3.5       | 3.3        | 3.2       | 3.2        | 3.1       | 3.0        | 3.2       | 3.2        | 3.7       | 3.6        | 4.2       | 4.1       | 4.2       | N/A       | 3.8        | 3.4       | 3.3        | 3.9       | 3.5        |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 3.6       | 4.0        | 3.5       | 3.6        | 3.4       | 3.6        | 3.5       | 3.1        | 3.9       | 4.2        | 4.7       | 4.9        | 4.4       | 5.0       | 4.4       | N/A       | 5.2        | 4.1       | 4.1        | 4.9       | 3.8        |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 3.6       | 3.0        | 3.0       | 3.0        | 3.0       | 3.0        | 3.0       | 2.9        | 3.1       | 3.0        | 3.2       | 3.2        | 3.3       | 3.4       | 3.3       | N/A       | 3.3        | 3.1       | 3.1        | 3.1       | 3.0        |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.5       | N/A        | 2.5       | 2.5        | 2.5       | 2.5        | 2.4       | 2.3        | 2.5       | 2.5        | 2.6       | 2.7        | 3.5       | 3.4       | 3.5       | N/A       | 2.0        | 2.5       | 2.5        | 2.7       | 2.6        |
| 15 | Rajmahal - Manihari           | 583-633       | 2.7       | 3.1        | 2.8       | 2.9        | 3.4       | 3.1        | 3.1       | 2.8        | 3.1       | 3.0        | 3.2       | 4.2        | 3.0       | 4.6       | 3.0       | 3.2       | 3.0        | 3.1       | 2.8        | 3.2       | 3.0        |
| 16 | Manihari - Karagola           | 633-660       | 2.6       | 2.6        | 3.3       | 3.1        | 3.9       | 3.3        | 3.1       | 3.4        | 3.0       | 3.2        | 2.9       | 4.5        | 3.5       | 6.8       | 3.5       | 4.5       | 4.2        | 3.0       | 2.6        | 3.3       | 3.1        |
| 17 | Karagola - Kahalgaon          | 660-690       | 2.2       | 2.6        | 2.7       | 2.8        | 3.1       | 3.0        | 3.0       | 2.5        | 2.7       | 2.7        | 3.1       | 5.9        | 4.2       | 4.2       | 4.2       | 3.5       | 2.8        | 3.0       | 2.6        | 2.5       | 2.5        |
| 18 | Kahalgaon - Bhagalpur         | 690-715       | 2.6       | 2.6        | 2.6       | 2.7        | 2.9       | 2.7        | 2.7       | 2.8        | 2.8       | 2.7        | 2.8       | 3.7        | 4.3       | 5.2       | 4.3       | 3.4       | 2.9        | 2.7       | 3.2        | 2.8       | 2.6        |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.5       | 2.5        | 2.9       | 3.0        | 3.5       | 2.7        | 2.7       | 2.6        | 2.8       | 2.7        | 2.9       | 5.4        | 3.9       | 5.4       | 3.9       | 2.8       | 3.3        | 2.5       | 2.6        | 2.7       | 2.5        |
| 20 | Sultanganj - Munger           | 746-793       | 2.6       | 2.7        | 2.7       | 3.2        | 3.4       | 3.0        | 2.9       | 2.6        | 2.9       | 2.6        | 3.3       | 6.7        | 4.1       | 6.8       | 4.1       | 3.1       | 3.9        | 3.3       | 2.8        | 3.2       | 2.8        |
| 21 | Munger - Mahendrapur          | 793-820       | 2.5       | 2.5        | 2.4       | 2.8        | 2.6       | 2.4        | 2.3       | 2.3        | 2.3       | 2.6        | 2.6       | 4.1        | 3.1       | 5.8       | 3.1       | 5.0       | 3.3        | 3.2       | 2.7        | 2.1       | 2.2        |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.5       | 2.6        | 2.5       | 2.9        | 2.7       | 2.4        | 2.4       | 2.5        | 2.5       | 2.5        | 2.8       | 3.1        | 3.2       | 5.6       | 3.2       | 3.5       | 2.7        | 3.5       | 3.0        | 2.5       | 2.4        |
| 23 | Semaria - Barh                | 853-891       | 2.0       | 1.8        | 2.3       | 2.6        | 2.6       | 2.4        | 2.5       | 2.5        | 2.5       | 2.6        | 2.6       | 3.1        | 3.1       | 5.2       | 3.1       | 3.4       | 2.8        | 2.8       | 2.7        | 2.4       | 2.3        |
| 24 | Barh - Mehnar                 | 891-925       | 2.4       | 2.2        | 2.3       | 2.7        | 2.5       | 2.4        | 2.3       | 2.3        | 2.3       | 2.4        | 2.6       | 3.7        | 3.1       | 5.4       | 3.1       | 5.5       | 2.9        | 2.5       | 2.5        | 2.1       | 1.8        |
| 25 | Mehnar - Patna                | 925-955       | 2.3       | 2.3        | 2.2       | 2.5        | 2.5       | 2.0        | 2.0       | 1.8        | 1.8       | 2.6        | 2.6       | 3.2        | 3.2       | 5.7       | 3.2       | 3.3       | 2.7        | 2.4       | 2.3        | 2.0       | 2.1        |
| 26 | Patna - Doriganj              | 955-1000      | 2.0       | 2.0        | 2.1       | 2.6        | 2.4       | 1.9        | 1.9       | 1.9        | 1.8       | 1.8        | 2.1       | 2.5        | 2.8       | 4.6       | 2.8       | 2.9       | 2.9        | 2.6       | 1.9        | 1.8       | 1.8        |
| 27 | Doriganj - Ballia             | 1000-1063     | 2.0       | 2.0        | 2.0       | 2.6        | 2.2       | 2.0        | 2.0       | 2.0        | 1.9       | 1.9        | 2.0       | 2.6        | 2.5       | 4.7       | 2.5       | 2.6       | 2.8        | 2.7       | 2.0        | 1.9       | 1.8        |
| 28 | Ballia - Buxar                | 1063-1124     | 1.9       | 2.0        | 2.0       | 2.5        | 2.2       | 1.9        | 1.7       | 1.6        | 1.5       | 1.5        | 1.6       | 2.5        | 2.9       | 4.9       | 2.9       | 2.8       | 3.1        | 2.7       | 1.8        | 1.7       | 1.8        |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.8       | 1.8        | 1.7       | 2.1        | 2.5       | 1.7        | 1.5       | 2.1        | 1.8       | 1.6        | 1.7       | 2.6        | 2.5       | 5.8       | 2.5       | 2.5       | 2.9        | 2.3       | 1.5        | 1.5       | 1.5        |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.1       | 1.2        | N/A       | 2.3        | 1.4       | 1.3        | 1.1       | 1.3        | 0.7       | N/A        | 1         | 3.5        | 1.5       | 9.1       | 1.5       | 1.7       | 2.1        | 1.6       | 1.4        | 1.2       | 1.4        |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.7       | 1.7        | 2.0       | 2.3        | 2.0       | 1.8        | 1.3       | 1.3        | N/A       | N/A        | N/A       | 4.0        | 2.1       | 8.2       | 2.1       | 2.5       | 2.3        | 2.0       | 1.6        | 1.2       | 1.5        |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.9       | 1.9        | 2.4       | 2.2        | 2.1       | N/A        | 1.8       | 1.8        | N/A       | N/A        | N/A       | 5.2        | 2.0       | 7.9       | 2.0       | 2.3       | 2.2        | 1.6       | 1.7        | 1.6       | 1.3        |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.1       | 1.0        | N/A       | 1.3        | 1.1       | 0.9        | 1.0       | 1.1        | 0.8       | 0.8        | 0.8       | 4.2        | 1.5       | 8.7       | 1.5       | 2.5       | 2.0        | 1.5       | 1.5        | 1.5       | 1.5        |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.2       | 1.0        | N/A       | 1.6        | 1.2       | 1.2        | 1.2       | 1.2        | 1.0       | 1.1        | 1.0       | 5.0        | 2.0       | 8.2       | 2.0       | 4.1       | 3.9        | 2.1       | 2.1        | 1.6       | 1.6        |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.1       | 1.0        | N/A       | 1.4        | 1.4       | 1.2        | 1.0       | 1.2        | 1.3       | 1.1        | 1.1       | 4.1        | 1.8       | 7.1       | 1.8       | 2.5       | 2.4        | 2.0       | 2.0        | 1.5       | 1.8        |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.0       | 1.1        | N/A       | 1.0        | 0.9       | 0.8        | 0.8       | 0.8        | 0.7       | 0.7        | 0.7       | 3.5        | 1.8       | 7.8       | 1.8       | 3.5       | 2.0        | 2.0       | 1.8        | 1.5       | 1.5        |

Key:

|             |                    |                    |            |
|-------------|--------------------|--------------------|------------|
| 3.0m =< LAD | 2.5m =< LAD < 3.0m | 2.2m =< LAD < 2.5m | LAD < 2.2m |
|-------------|--------------------|--------------------|------------|

Table G3: LAD for 2012 (in metres)

|    | Name                          | Chainage (km) | Jan IFN | Jan IFN | Feb IFN | Feb IFN | Mar IFN | Mar IFN | Apr IFN | Apr IFN | May IFN | May IFN | Jun IFN | Jun IFN | Jul | Aug | Sep | Oct IFN | Oct IFN | Nov IFN | Nov IFN | Dec IFN | Dec IFN |
|----|-------------------------------|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|-----|-----|---------|---------|---------|---------|---------|---------|
| 1  | Tribeni - Balagarh            | 193-221       | 3.1     | 3.0     | 3.2     | 3.4     | 3.5     | 3.2     | 3.0     | 3.5     | 3.8     | 3.5     | 3.4     | 5.1     | 4.1 | 5.6 | 4.7 | 4.2     | N/A     | 3.3     | 3.9     | 4.4     | 3.3     |
| 2  | Balagarh - Kalna              | 221-245       | 3.2     | 2.8     | 3.0     | 2.8     | 3.1     | 3.1     | 3.1     | 3.1     | 3.2     | 3.1     | 3.4     | 3.9     | 4.0 | 4.2 | 4.1 | 3.9     | N/A     | 3.3     | 3.6     | 3.5     | 3.1     |
| 3  | Kalna - Samudragarh           | 245-263       | 3.2     | 3.0     | 2.9     | 2.8     | 3.0     | 3.5     | 3.1     | 3.3     | 3.4     | 3.4     | 3.6     | 3.7     | 3.7 | 3.9 | 3.5 | 3.5     | N/A     | 3.4     | 3.3     | 3.1     | 3.1     |
| 4  | Samudragarh - Nabadweep       | 263-280       | 3.0     | 3.0     | 2.9     | 2.2     | 2.7     | 3.0     | 3.1     | 3.3     | 3.2     | 3.3     | 3.4     | 3.7     | 3.4 | 3.7 | 5.0 | 3.6     | N/A     | 3.4     | 3.2     | 3.1     | 3.1     |
| 5  | Nabadweep - Patuli            | 280-322       | 3.2     | 3.0     | 3.0     | 2.5     | 3.0     | 3.2     | 3.1     | 3.1     | 3.2     | 3.1     | 3.4     | 3.7     | 3.6 | 3.7 | 3.7 | 3.8     | N/A     | 3.7     | 3.6     | 3.3     | 3.2     |
| 6  | Patuli - Katwa                | 322-345       | 3.1     | 3.1     | 2.7     | 2.0     | 3.0     | 3.3     | 3.1     | 3.1     | 3.2     | 3.2     | 3.1     | 3.6     | 3.2 | 3.0 | 3.3 | 3.4     | N/A     | 3.5     | 3.3     | 3.1     | 3.2     |
| 7  | Katwa - Palassey              | 345-371       | 3.0     | 3.0     | 2.7     | 2.0     | 2.5     | 3.2     | 2.8     | 3.0     | 3.3     | 3.1     | 3.2     | 3.4     | 3.5 | 3.1 | 3.4 | 3.1     | N/A     | 2.8     | 2.6     | 3.2     | 3.2     |
| 8  | Palassey - Chaurigacha        | 371-400       | 2.6     | 2.6     | 2.7     | 2.7     | 2.7     | 2.8     | 3.1     | 3.5     | 3.3     | 3.0     | 3.3     | 3.6     | 3.7 | 3.5 | 3.4 | 3.2     | N/A     | 3.4     | 3.1     | 3.0     | 3.1     |
| 9  | Chaurigacha - Berhampur       | 400-421       | 2.8     | 2.8     | 2.7     | 2.0     | 2.5     | 2.8     | 3.2     | 3.5     | 3.2     | 3.2     | 3.2     | 3.8     | 3.6 | 3.7 | 3.4 | 3.4     | N/A     | 3.4     | 3.4     | 3.5     | 3.5     |
| 10 | Berhampur - Mohammadpur       | 421-449       | 2.2     | 2.6     | 2.7     | 2.5     | 2.8     | 3.0     | 3.0     | 3.0     | 3.1     | 3.0     | 3.0     | 3.1     | 3.4 | 3.2 | 3.3 | 3.2     | N/A     | 3.0     | 3.0     | 3.0     | 3.1     |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 2.5     | 2.5     | 2.7     | 2.7     | 3.0     | 3.1     | 3.0     | 3.6     | 3.2     | 3.0     | 3.0     | 3.8     | 3.7 | 3.2 | 3.7 | 3.6     | N/A     | 3.5     | 3.3     | 3.1     | 3.4     |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 2.9     | 2.9     | 3.1     | 2.9     | 3.0     | 3.2     | 3.3     | 3.9     | 3.0     | 3.2     | 3.3     | 4.6     | 4.2 | 4.2 | 4.3 | 4.3     | N/A     | 3.6     | 4.0     | 4.1     | 3.6     |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 2.0     | 2.5     | 2.0     | 1.7     | 2.5     | 2.8     | 2.8     | 2.8     | 2.8     | 2.8     | 3.0     | 3.1     | 3.2 | 3.1 | 3.2 | 3.1     | N/A     | 3.0     | 3.0     | 3.0     | 3.1     |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.0     | 2.0     | 1.8     | 1.8     | 2.5     | 2.9     | 2.9     | 2.9     | 2.9     | 3.0     | 3.0     | 3.0     | 3.1 | 3.1 | 3.7 | 2.5     | N/A     | 2.0     | 2.5     | 2.5     | 2.5     |
| 15 | Rajmahal - Manihari           | 583-633       | 2.8     | 2.9     | 2.6     | 2.6     | 2.5     | 2.7     | 3.0     | 2.9     | 3.1     | 3.5     | 3.5     | 3.0     | 6.3 | 4.3 | 4.6 | 3.2     | 3.0     | 3.3     | 2.8     | 3.0     | 3.1     |
| 16 | Manihari - Karagola           | 633-660       | 2.6     | 2.6     | 2.8     | 2.5     | 2.6     | 2.6     | 2.7     | 2.7     | 2.6     | 2.5     | 2.5     | 3.5     | 6.1 | 5.2 | 4.7 | 2.9     | 3.4     | 2.9     | 3.3     | 3.0     | 3.1     |
| 17 | Karagola - Kahalgaon          | 660-690       | 2.5     | 2.4     | 2.3     | 2.3     | 2.5     | 2.5     | 2.4     | 2.5     | 2.5     | 2.6     | 2.6     | 3.0     | 4.7 | 4.2 | 4.5 | 2.7     | 2.9     | 3.2     | 2.8     | 2.7     | 2.7     |
| 18 | Kahalgaon - Bhagalpur         | 690-715       | 2.5     | 2.6     | 2.5     | 2.5     | 2.5     | 2.5     | 2.6     | 2.6     | 2.5     | 2.6     | 2.6     | 4.1     | 7.0 | 4.5 | 4.4 | 3.2     | 2.7     | 2.6     | 2.7     | 2.7     | 2.8     |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.5     | 2.7     | 2.5     | 2.5     | 2.5     | 2.5     | 2.6     | 2.6     | 2.6     | 2.6     | 2.6     | 3.0     | 5.8 | 4.6 | 4.7 | 2.8     | 2.7     | 2.7     | 3.0     | 2.8     | 2.9     |
| 20 | Sultanganj - Munger           | 746-793       | 2.5     | 2.5     | 2.5     | 2.5     | 2.5     | 2.5     | 2.6     | 2.5     | 2.5     | 2.5     | 2.5     | 3.5     | 5.8 | 5.2 | 5.2 | 3.4     | 3.6     | 2.7     | 3.5     | 3.1     | 3.0     |
| 21 | Munger - Mahendrapur          | 793-820       | 2.5     | 2.8     | 2.6     | 2.5     | 2.3     | 2.3     | 2.5     | 2.5     | 2.5     | 2.5     | 2.5     | 3.8     | 3.7 | 4.0 | 4.2 | 2.8     | 3.1     | 3.0     | 2.7     | 2.5     | 2.4     |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.5     | 2.5     | 2.5     | 2.5     | 2.2     | 2.4     | 2.5     | 2.5     | 2.5     | 2.1     | 2.5     | 3.7     | 3.8 | 3.9 | 3.9 | 2.8     | 3.6     | 3.0     | 2.8     | 2.5     | 2.5     |
| 23 | Semaria - Barh                | 853-891       | 2.5     | 2.5     | 2.5     | 2.5     | 2.3     | 2.1     | 2.5     | 2.5     | 2.5     | 2.5     | 2.5     | 2.6     | 2.9 | 4.8 | 3.9 | 2.7     | 3.2     | 2.8     | 2.5     | 2.4     | 2.0     |
| 24 | Barh - Mehnar                 | 891-925       | 2.1     | 2.1     | 2.1     | 2.1     | 2.1     | 2.1     | 2.1     | 2.1     | 2.0     | 2.0     | 2.1     | 2.8     | 3.1 | 4.8 | 3.8 | 2.7     | 2.8     | 3.0     | 2.9     | 2.5     | 2.5     |
| 25 | Mehnar - Patna                | 925-955       | 2.1     | 2.4     | 2.1     | 2.0     | 2.0     | 2.0     | 2.3     | 2.0     | 2.0     | 2.0     | 2.1     | 2.6     | 3.4 | 4.1 | 3.9 | 2.9     | 2.5     | 2.1     | 2.1     | 2.4     | 2.4     |
| 26 | Patna - Doriganj              | 955-1000      | 2.1     | 2.0     | 2.0     | 2.0     | 2.0     | 2.0     | 1.5     | 1.6     | 1.8     | 1.4     | 1.5     | 2.0     | 2.8 | 4.3 | 4.7 | 3.0     | 2.2     | 2.0     | 2.1     | 2.0     | 2.0     |
| 27 | Doriganj - Ballia             | 1000-1063     | 1.6     | 1.3     | 1.1     | 1.9     | 1.9     | 1.6     | 1.6     | 1.2     | 1.7     | 1.4     | 1.6     | 1.3     | 2.4 | 4.0 | 4.1 | 2.7     | 2.2     | 2.2     | 2.3     | 2.1     | 2.0     |
| 28 | Ballia - Buxar                | 1063-1124     | 1.9     | 1.8     | 1.7     | 1.4     | 1.4     | 1.6     | 1.9     | 1.0     | 1.1     | 1.1     | 0.9     | 1.1     | 2.5 | 4.2 | 4.1 | 2.5     | 2.3     | 2.2     | 1.8     | 1.8     | 1.8     |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.7     | 1.8     | 1.6     | 1.5     | 1.5     | 1.3     | 1.4     | 1.3     | 1.1     | 1.1     | 0.9     | 1.4     | 2.4 | 5.5 | 4.2 | 2.8     | 2.2     | 2.1     | 2.1     | 2.0     | 1.9     |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.5     | 1.3     | 1.3     | 1.0     | 0.9     | 1.2     | 1.1     | 1.0     | 0.8     | 0.9     | N/A     | N/A     | 1.9 | 6.6 | 4.7 | 2.1     | 1.2     | 1.2     | 1.2     | 1.3     | 1.4     |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.3     | 1.2     | 1.5     | 1.3     | N/A     | 1.3     | 1.3     | N/A     | 1.1     | 1.1     | N/A     | 1.1     | 2.0 | 6.0 | 4.9 | 3.0     | 1.2     | 1.1     | 1.7     | 1.4     | 1.5     |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.6     | 1.4     | 1.5     | 1.4     | N/A     | 1.4     | 1.4     | N/A     | 1.3     | 0.8     | 1.1     | 2.9     | 2.1 | 4.0 | 5.6 | 1.7     | 1.5     | 1.9     | 1.7     | 1.7     | 1.7     |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.4     | 1.2     | 1.3     | 0.9     | 0.9     | 0.9     | 0.9     | 0.8     | 0.8     | 0.7     | 0.7     | 0.7     | 1.5 | 4.6 | 5.2 | 2.0     | 1.4     | N/A     | 1.2     | 1.2     | 1.2     |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.5     | 1.5     | 1.3     | 1.4     | 1.4     | 1.4     | 1.5     | 1.3     | 0.9     | 0.8     | 0.9     | 1.1     | 1.9 | 6.7 | 4.6 | 2.1     | 1.4     | N/A     | 1.3     | 1.3     | 1.2     |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.5     | 1.5     | 1.5     | 1.5     | 1.3     | 1.3     | 1.5     | 1.4     | N/A     | 0.7     | 1.2     | 0.9     | 1.4 | 5.5 | 6.0 | 2.0     | 1.4     | N/A     | 1.3     | 1.5     | 1.2     |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.5     | 1.3     | 1.0     | 0.9     | N/A     | 0.8     | 0.9     | 0.9     | N/A     | 0.7     | 0.7     | N/A     | 1.3 | 7.1 | 5.1 | 1.7     | 1.4     | N/A     | 1.0     | 1.3     | 1.1     |

Key:

|             |                    |                    |            |
|-------------|--------------------|--------------------|------------|
| 3.0m >= LAD | 2.5m >= LAD < 3.0m | 2.2m >= LAD < 2.5m | LAD < 2.2m |
|-------------|--------------------|--------------------|------------|

## Appendix G

Table G4: LAD for 2011 (in metres)

|    | Name                          | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 1  | Tribeni - Balagarh            | 193-221       | 3.6     | 3.4      | 3.4     | 3.2      | 3.2     | 4.1      | 4.6     | 4.7      | 3.6     | 4.2      | 5.1     | 4.1      | 3.6 | 3.4 | 4.1 | 3.1     | 3.1      | 3.1     | 3.6      | 3.2     | 3.2      |
| 2  | Balagarh - Kalna              | 221-245       | 3.6     | 3.4      | 3.2     | 3.2      | 3.1     | 2.9      | 3.1     | 3.2      | 3.0     | 4.0      | 4.6     | 3.9      | 3.5 | 5.1 | 3.9 | 3.2     | 3.2      | 3.4     | 3.2      | 3.2     | 3.2      |
| 3  | Kalna - Samudragarh           | 245-263       | 3.3     | 3.4      | 3.2     | 3        | 3.0     | 2.7      | 2.9     | 3.3      | 3.4     | 3.1      | 4.3     | 4.5      | 3.2 | 5.3 | 3.8 | 3.4     | 3.4      | 3.2     | 3.2      | 3.2     | 3.2      |
| 4  | Samudragarh - Nabadweep       | 263-280       | 3.5     | 3.5      | 3.2     | 3.1      | 3.0     | 2.6      | 2.8     | 3.0      | 3.1     | 3.6      | 3.9     | 3.1      | 3.3 | 4.2 | 3.9 | 3.2     | 3.2      | 3.4     | 3.4      | 3.4     | 3.4      |
| 5  | Nabadweep - Patuli            | 280-322       | 3.1     | 3.5      | 3.1     | 3.1      | 3.1     | 2.7      | 2.7     | 3.5      | 3.3     | 3.3      | 4.4     | 3.3      | 3.1 | 3.6 | 3.5 | 3.3     | 3.3      | 3.2     | 3.2      | 3.4     | 3.5      |
| 6  | Patuli - Katwa                | 322-345       | 3.5     | 3.5      | 3.1     | 3.1      | 3.1     | 2.7      | 2.9     | 3.2      | 3.0     | 3.0      | 4.4     | 3.5      | 3.2 | 5.7 | 4.1 | 3.5     | 3.5      | 3.5     | 3.4      | 3.5     | 3.3      |
| 7  | Katwa - Palassey              | 345-371       | 3.1     | 3.2      | 2.8     | 2.8      | 2.7     | 2.5      | 2.5     | 2.9      | 3.0     | 3.0      | 4.2     | 3.3      | 3.0 | 5.3 | 4.1 | 3.2     | 3.2      | 2.8     | 2.8      | 2.8     | 2.8      |
| 8  | Palassey - Chaurigacha        | 371-400       | 3.1     | 3.1      | 3       | 3.1      | 2.8     | 2.5      | 2.8     | 3.0      | 3.1     | 3.1      | 3.8     | 4.0      | 3.2 | 4.3 | 4.1 | 3.2     | 3.2      | 3.3     | 3.2      | 3.0     | 3.0      |
| 9  | Chaurigacha - Berhampur       | 400-421       | 3.5     | 3.5      | 3.3     | 3.1      | 2.8     | 2.6      | 2.7     | 3.0      | 3.1     | 3.1      | 4.3     | 3.8      | 3.2 | 4.0 | 4.2 | 3.3     | 3.3      | 3.6     | 3.6      | 3.3     | 3.3      |
| 10 | Berhampur - Mohammadpur       | 421-449       | 3.5     | 3.3      | 3       | 3        | 3.0     | 2.5      | 2.7     | 3.0      | 3.4     | 3.1      | 4.2     | 3.9      | 3.1 | 5.1 | 4.1 | 3.6     | 3.6      | 3.7     | 3.8      | 3.4     | 3.3      |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 3.5     | 3.3      | 3.2     | 3.2      | 3.2     | 2.7      | 3.0     | 3.3      | 3.8     | 3.5      | 4.7     | 3.6      | 3.1 | 5.1 | 3.3 | 3.7     | 3.7      | 3.2     | 3.8      | 3.8     | 3.6      |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 3.8     | 4.0      | 3.6     | 3.6      | 3.6     | 3.3      | 3.0     | 4.0      | 4.1     | 3.9      | 5.3     | 4.2      | 3.5 | 5.1 | 5.0 | 3.7     | 3.7      | 3.5     | 3.6      | 4.2     | 3.7      |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 3.1     | 3.0      | 2.5     | 2.3      | 2.1     | 1.4      | 1.4     | 2.0      | 2.0     | 2.2      | 3.2     | 3.2      | 3.2 | 3.7 | 3.3 | 3.1     | 3.1      | 3.8     | 4.0      | 2.7     | 2.7      |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.0     | 2.0      | 2.4     | 2.3      | 2.0     | 1.9      | 1.6     | 1.6      | 2.0     | 2.8      | 3.0     | 2.9      | 2.9 | 3.0 | 3.0 | 2.2     | 2.2      | 2.2     | 3.9      | 2.5     | 2.5      |
| 15 | Rajmahal - Manihari           | 583-633       | 2.7     | 2.3      | 2.3     | 2.4      | 2.5     | 2.6      | 2.2     | 2.2      | 2.9     | 2.9      | 3.2     | 3.9      | 3.5 | 4.3 | 4.6 | 3.1     | 3.5      | 2.5     | 2.5      | 2.7     | 3.0      |
| 16 | Manihari - Karagola           | 633-660       | 2.3     | 2.0      | 1.9     | 2.2      | 2.0     | 1.9      | 1.8     | 2.0      | 2.1     | 2.4      | 2.6     | 4.3      | 3.1 | 4.8 | 4.2 | 2.5     | 3.1      | 3.5     | 2.5      | 2.7     | 2.6      |
| 17 | Karagola - Kahalgaoon         | 660-690       | 2.0     | 2.0      | 1.9     | 2        | 1.6     | 1.9      | 1.9     | 2.0      | 2.2     | 2.3      | 2.6     | 4.0      | 3.2 | 4.1 | 4.4 | 3.3     | 3.2      | 2.5     | 2.6      | 2.5     | 2.4      |
| 18 | Kahalgaoon - Bhagalpur        | 690-715       | 2.5     | 2.2      | 2.4     | 2.4      | 2.0     | 2.1      | 2.2     | 2.0      | 2.3     | 2.4      | 2.8     | 4.8      | 3.4 | 4.6 | 6.4 | 3.0     | 2.8      | 2.9     | 2.7      | 2.5     | 2.5      |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.3     | 2.4      | 1.9     | 2.2      | 2.0     | 2.2      | 2.1     | 2.0      | 2.4     | 2.4      | 2.7     | 4.2      | 5.8 | 5.3 | 4.1 | 3.2     | 3.2      | 2.6     | 2.5      | 2.5     | 2.5      |
| 20 | Sultanganj - Munger           | 746-793       | 2.5     | 2.1      | 2.4     | 2.3      | 1.9     | 2.3      | 2.1     | 2.0      | 2.4     | 2.4      | 2.7     | 3.7      | 3.0 | 4.8 | 4.0 | 3.8     | 2.9      | 3.5     | 2.8      | 2.6     | 2.4      |
| 21 | Munger - Mahendrapur          | 793-820       | 2.6     | 2.5      | 2.1     | 2.1      | 2.5     | 2.5      | 2.5     | 2.5      | 2.5     | 2.5      | 2.5     | 3.3      | 4.4 | 6.0 | 4.8 | 3.1     | 3.2      | 3.1     | 3.1      | 3.1     | 2.5      |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.3     | 2.2      | 2.1     | 2.5      | 2.5     | 2.5      | 2.5     | 2.5      | 2.5     | 2.5      | 2.5     | 3.6      | 4.0 | 6.1 | 5.4 | 2.9     | 2.9      | 2.6     | 2.7      | 2.6     | 2.5      |
| 23 | Semaria - Barh                | 853-891       | 2.0     | 2.3      | 2.4     | 2.1      | 2.1     | 2.1      | 2.1     | 2.1      | 2.2     | 2.5      | 2.5     | 3.5      | 4.5 | 5.4 | 5.1 | 2.8     | 2.8      | 2.5     | 2.5      | 2.6     | 2.5      |
| 24 | Barh - Mehnar                 | 891-925       | 2.3     | 2.3      | 2.3     | 2.3      | 2.1     | 2.1      | 2.1     | 2.1      | 2.3     | 2.5      | 2.5     | 3.6      | 4.5 | 4.7 | 5.3 | 2.8     | 3.1      | 2.9     | 2.8      | 2.4     | 2.1      |
| 25 | Mehnar - Patna                | 925-955       | 2.0     | 2.5      | 2.1     | 2.1      | 2.1     | 2.1      | 2.1     | 2.1      | 2.2     | 2.5      | 2.5     | 3.7      | 4.2 | 4.5 | 4.0 | 2.8     | 2.6      | 2.5     | 2.4      | 2.0     | 2.0      |
| 26 | Patna - Doriganj              | 955-1000      | 1.5     | 1.6      | 1.8     | 1.8      | 1.7     | 1.6      | 1.8     | 1.8      | 1.8     | 2.1      | 2.0     | 2.6      | 5.7 | 6.4 | 4.4 | 2.3     | 2.2      | 2.0     | 2.0      | 1.8     | 2.1      |
| 27 | Doriganj - Ballia             | 1000-1063     | 1.5     | 1.9      | 1.6     | 1.8      | 1.7     | 1.7      | 1.7     | 1.7      | 1.7     | 2.0      | 2.1     | 2.1      | 5.3 | 6.8 | 5.0 | 2.3     | 2.6      | 2.0     | 1.8      | 1.2     | 1.6      |
| 28 | Ballia - Buxar                | 1063-1124     | 1.7     | 1.7      | N/A     | 1.7      | 1.7     | 1.7      | 1.6     | 1.7      | 1.3     | 1.3      | 1.2     | 1.4      | 5.4 | 6.8 | 4.8 | 2.6     | 2.0      | 2.1     | 2.0      | 1.7     | 1.7      |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.8     | 1.8      | N/A     | 1.7      | 1.6     | 1.6      | 1.6     | 1.6      | 1.3     | 1.3      | 1.2     | 1.2      | 5.8 | 7.3 | 4.5 | 4.0     | 2.0      | 1.8     | 1.6      | 1.7     | 1.7      |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.6     | 1.5      | 1.3     | 1.1      | 1.4     | 1.1      | 1.1     | 1.0      | 1.0     | 1.0      | 1.0     | 3.1      | 6.9 | 5.6 | 5.0 | 2.2     | 1.6      | 1.5     | 1.1      | 1.1     | 1.3      |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.8     | 1.7      | 1.2     | 1.2      | 1.2     | 1.1      | 1.1     | 1.0      | 1.0     | 1.0      | 1.0     | 3.1      | 7.5 | 7.0 | 5.4 | 2.2     | 2.1      | 1.9     | 1.4      | 1.5     | 1.4      |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.6     | 1.6      | 1.4     | 1.5      | 1.5     | 1.4      | 1.4     | 1.4      | 1.2     | 1.3      | 1.3     | 2.5      | 5.2 | 7.9 | 7.0 | 2.4     | 2.2      | 2.3     | 1.6      | 1.9     | 1.8      |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.3     | 1.4      | 1.4     | 1.4      | 1.4     | 1.3      | 1.0     | 1.0      | 0.9     | 0.9      | 1.0     | 2.7      | 2.5 | 4.8 | 4.8 | 2.2     | 2.2      | 2.4     | 1.3      | 1.3     | 1.1      |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.3     | 1.5      | 1.4     | 1.5      | 1.5     | 1.3      | 1.2     | 1.3      | 1.2     | 1.1      | 1.3     | 2.5      | 3.7 | 3.8 | 4.5 | 2.3     | 2.1      | 1.9     | 1.5      | 1.6     | 1.4      |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.6     | 1.5      | 1.6     | 1.5      | 1.4     | 1.4      | 1.4     | 1.5      | 1.5     | 1.3      | 1.4     | 3.5      | 2.6 | 3.1 | 5.2 | 2.5     | 1.7      | 1.8     | 1.5      | 1.9     | 1.5      |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.4     | 1.5      | 1.5     | 1.4      | 1.4     | 1.3      | 1.0     | 1.0      | 0.9     | 0.8      | 0.9     | 2.1      | 2.8 | 4.3 | 4.2 | 2.2     | 1.9      | 1.8     | 1.4      | 1.4     | 1.4      |

Key:

|             |                    |                    |            |
|-------------|--------------------|--------------------|------------|
| 3.0m =< LAD | 2.5m =< LAD < 3.0m | 2.2m =< LAD < 2.5m | LAD < 2.2m |
|-------------|--------------------|--------------------|------------|

Table G5 LAD for 2010 (in metres)

|    | Name                          | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul | Aug | Sep | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|-----|-----|-----|---------|----------|---------|----------|---------|----------|
| 1  | Tribeni - Balagarh            | 193-221       | 3.1     | 3.0      | 3.4     | 3.2      | 3.1     | 3.6      | 3.9     | 3.0      | 4.4     | 3.9      | 3.4     | 4.0      | 3.7 | 4.5 | 4.2 | 4.5     | N/A      | 3.4     | 3.6      | 3.4     | 4.2      |
| 2  | Balagarh - Kalna              | 221-245       | 3.0     | 3.0      | 3.0     | 3.0      | 2.6     | 2.5      | 3.0     | 2.7      | 3.0     | 3.0      | 3.0     | 3.4      | 3.4 | 4.0 | 3.8 | 3.2     | N/A      | 3.2     | 3.2      | 3.3     | 3.5      |
| 3  | Kalna - Samudragarh           | 245-263       | 3.0     | 3.0      | 3.0     | 2.5      | 2.1     | 1.5      | 2.1     | 2.0      | 2.3     | 2.8      | 3.0     | 3.0      | 2.8 | 3.5 | 3.4 | 3.3     | N/A      | 3.4     | 3.2      | 3.5     | 3.5      |
| 4  | Samudragarh - Nabadweep       | 263-280       | 3.4     | 3.4      | 3.0     | 3.0      | 2.4     | 2.3      | 3.0     | 3.0      | 2.8     | 2.6      | 3.1     | 3.5      | 3.0 | 4.0 | 3.7 | 3.2     | N/A      | 3.7     | 3.3      | 3.4     | 3.6      |
| 5  | Nabadweep - Patuli            | 280-322       | 3.2     | 3.0      | 3.1     | 2.9      | 2.5     | 2.0      | 2.6     | 2.5      | 2.7     | 2.2      | 3.0     | 3.1      | 3.0 | 3.4 | 3.2 | 3.2     | N/A      | 3.2     | 3.2      | 3.2     | 3.1      |
| 6  | Patuli - Katwa                | 322-345       | 3.1     | 3.1      | 3.0     | 2.8      | 2.8     | 2.0      | 3.0     | 2.4      | 2.2     | 2.3      | 2.5     | 2.8      | 2.6 | 3.1 | 3.5 | 3.1     | N/A      | 3.0     | 3.2      | 3.2     | 3.2      |
| 7  | Katwa - Palassey              | 345-371       | 3.0     | 3.0      | 3.0     | 3.0      | 2.4     | 1.5      | 2.2     | 1.6      | 2.3     | 2.2      | 2.5     | 3.2      | 2.9 | 3.2 | 3.1 | 3.1     | N/A      | 3.3     | 3.2      | 3.1     | 3.1      |
| 8  | Palassey - Chaurigacha        | 371-400       | 3.0     | 3.0      | 3.0     | 3.0      | 2.6     | 2.0      | 3.0     | 2.1      | 3.0     | 2.5      | 3.0     | 3.3      | 3.1 | 3.4 | 3.3 | 3.0     | N/A      | 3.1     | 3.3      | 3.3     | 3.1      |
| 9  | Chaurigacha - Berhampur       | 400-421       | 3.8     | 3.5      | 3.2     | 3.0      | 2.8     | 2.2      | 3.0     | 2.2      | 3.3     | 2.8      | 3.3     | 3.6      | 3.6 | 3.8 | 3.4 | 3.0     | N/A      | 3.3     | 4.0      | 3.5     | 3.5      |
| 10 | Berhampur - Mohammadpur       | 421-449       | 3.0     | 3.2      | 3.0     | 3.0      | 2.5     | 2.0      | 2.9     | 2.1      | 3.4     | 3.0      | 3.5     | 3.4      | 3.0 | 3.8 | 3.6 | 3.1     | N/A      | 3.6     | 3.4      | 3.5     | 3.2      |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 3.4     | 3.3      | 3.7     | 3.0      | 2.9     | 2.6      | 3.0     | 2.2      | 3.0     | 3.2      | 3.5     | 3.9      | 3.6 | 3.8 | 3.5 | 3.1     | N/A      | 3.7     | 4.1      | 3.9     | 4.0      |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 3.7     | 3.1      | 3.9     | 3.2      | 3.3     | 2.3      | 3.0     | 2.5      | 4.2     | 3.2      | 3.8     | 4.4      | 3.8 | 4.8 | 4.0 | 3.7     | N/A      | 3.4     | 4.0      | 4.8     | 4.5      |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 3.0     | 3.0      | 3.0     | 2.7      | 2.0     | 1.9      | 1.9     | 1.9      | 2.2     | 1.8      | 2.6     | 2.6      | 2.6 | 2.8 | 2.6 | 3.0     | N/A      | 3.0     | 3.2      | 3.0     | 3.1      |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.0     | 2.0      | 2.0     | 1.6      | 1.7     | 1.6      | 1.7     | 1.7      | 1.8     | 2.1      | 2.1     | 2.1      | 2.3 | 2.3 | 3.4 | 3.1     | 1.6      | 1.6     | 1.7      | 1.8     | 2.0      |
| 15 | Rajmahal - Manihari           | 583-633       | 2.0     | 2.4      | 2.3     | 2.2      | 2.4     | 2.2      | 2.7     | 2.6      | 2.7     | 3.0      | 3.2     | 3.3      | 3.9 | 5.0 | 4.3 | 3.2     | 2.9      | 3.0     | 3.2      | 2.9     | 3.1      |
| 16 | Manihari - Karagola           | 633-660       | 2.2     | 2.2      | 2.1     | 2.1      | 2.0     | 2.0      | 2.0     | 2.0      | 2.0     | 2.5      | 2.5     | 2.8      | 4.8 | 4.9 | 4.2 | 3.5     | 3.0      | 3.3     | 2.9      | 2.6     | 2.6      |
| 17 | Karagola - Kahalgaon          | 660-690       | 2.2     | 2.5      | 2.4     | 2.3      | 2.1     | 2.1      | 2.0     | 2.1      | 2.2     | 2.3      | 2.3     | 2.7      | 3.5 | 4.4 | 4.3 | 3.0     | 2.8      | 3.0     | 2.7      | 2.4     | 2.4      |
| 18 | Kahalgaon - Bhagalpur         | 690-715       | 3.0     | 2.8      | 2.4     | 2.4      | 2.2     | 2.2      | 2.1     | 2.2      | 2.0     | 2.4      | 2.4     | 2.5      | 4.4 | 7.1 | 6.5 | 3.6     | 2.8      | 3.3     | 2.7      | 2.7     | 2.7      |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.0     | 2.0      | 2.0     | 2.0      | 1.9     | 1.9      | 2.0     | 1.8      | 1.8     | 2.0      | 2.2     | 2.3      | 3.1 | 3.9 | 5.3 | 2.7     | 2.7      | 2.6     | 2.7      | 2.7     | 2.6      |
| 20 | Sultanganj - Munger           | 746-793       | 2.0     | 2.0      | 2.0     | 1.8      | 1.9     | 1.9      | 1.8     | 1.8      | 2.1     | 2.0      | 2.0     | 2.1      | 4.0 | 3.8 | 3.8 | 2.9     | 2.6      | 2.0     | 2.0      | 2.3     | 2.4      |
| 21 | Munger - Mahendrapur          | 793-820       | 2.0     | 2.0      | 2.0     | 2.0      | 1.7     | 1.8      | 2.0     | 2.1      | 1.8     | 2.1      | 2.1     | 2.1      | 3.5 | 5.8 | 3.2 | 2.9     | 2.5      | 2.6     | 2.6      | 2.5     | 2.7      |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.0     | 2.1      | 2.0     | 1.9      | 1.7     | 1.6      | 1.8     | 1.8      | 1.8     | 1.8      | 1.8     | 2.0      | 3.0 | 5.8 | 3.3 | 2.9     | 2.3      | 2.1     | 2.0      | 2.0     | 2.3      |
| 23 | Semaria - Barh                | 853-891       | 1.9     | 2.0      | 1.8     | 1.9      | 1.7     | 1.5      | 1.7     | 1.8      | 1.8     | 2.1      | 1.8     | 2.0      | 3.2 | 3.1 | 3.2 | 2.8     | 3.0      | 2.2     | 2.0      | 2.4     | 2.2      |
| 24 | Barh - Mehnar                 | 891-925       | 1.9     | 2.1      | 1.9     | 1.9      | 1.7     | 1.5      | 1.7     | 1.8      | 1.8     | 1.8      | 1.8     | 2.0      | 3.4 | 3.4 | 4.0 | 2.8     | 2.5      | 2.7     | 2.5      | 2.6     | 2.0      |
| 25 | Mehnar - Patna                | 925-955       | 2.0     | 2.0      | 1.8     | 2.0      | 1.7     | 1.5      | 2.0     | 2.0      | 2.0     | 2.0      | 2.0     | 2.1      | 3.1 | 3.3 | 3.2 | 2.8     | 2.2      | 2.3     | 2.6      | 2.2     | 2.0      |
| 26 | Patna - Doriganj              | 955-1000      | 1.9     | 2.0      | 1.7     | 1.8      | 1.6     | 1.7      | 1.7     | 1.9      | 1.8     | 1.7      | 1.4     | 1.4      | 3.5 | 4.3 | 5.2 | 2.5     | 2.2      | 2.1     | 2.1      | 2.0     | 2.0      |
| 27 | Doriganj - Ballia             | 1000-1063     | 1.8     | 1.8      | 1.7     | 1.7      | 1.5     | 1.5      | 1.5     | 1.6      | 1.5     | 1.5      | 1.0     | 1.0      | 2.5 | 3.9 | 5.1 | 4.0     | 2.1      | 2.1     | 2.3      | 2.1     | 2.1      |
| 28 | Ballia - Buxar                | 1063-1124     | 1.7     | 1.8      | 1.6     | 1.6      | 1.2     | 1.2      | 1.3     | 1.3      | 1.3     | 0.9      | 0.8     | 0.8      | 2.1 | 3.5 | 6.6 | 3.3     | 2.6      | 2.0     | 2.0      | 2.0     | 2.0      |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.8     | 1.7      | 1.6     | 1.6      | 1.2     | 1.2      | 1.3     | 1.3      | 1.0     | 0.6      | 0.6     | 0.8      | 2.1 | 3.0 | 6.4 | 3.2     | 2.1      | 2.0     | 2.0      | 2.0     | 2.0      |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.5     | 1.6      | 1.3     | 1.2      | 0.9     | 0.9      | 0.9     | 0.8      | 0.9     | 0.8      | 0.4     | 0.4      | 2.2 | 3.6 | 4.9 | 5.4     | 2.2      | 2.0     | 2.0      | 2.0     | 1.9      |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.5     | 1.5      | 1.2     | 1.2      | 0.9     | 0.9      | 0.9     | 0.8      | 0.7     | 0.7      | 0.5     | 0.4      | 2.2 | 3.8 | 5.4 | 5.8     | 2.2      | 2.5     | 2.0      | 2.0     | 1.9      |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.6     | 1.8      | 1.6     | 1.3      | 1.3     | 1.1      | 0.9     | 1.0      | 0.7     | 0.8      | 0.6     | 0.6      | 2.6 | 5.1 | 5.7 | 5.9     | 2.2      | 2.5     | 2.1      | 2.2     | 1.8      |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.5     | 1.5      | 1.0     | 1.0      | 1.0     | 1.2      | 1.0     | 1.1      | 0.9     | 0.8      | 0.8     | 0.8      | 4.9 | 3.6 | 3.9 | 3.1     | 2.3      | 2.4     | 1.9      | 1.8     | 1.4      |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.6     | 1.6      | 1.5     | 1.5      | 1.5     | 1.2      | 1.3     | 1.0      | 1.0     | 0.9      | 1.2     | 0.9      | 3.5 | 3.2 | 7.0 | 3.9     | 2.4      | 2.7     | 1.9      | 1.5     | 1.4      |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.5     | 1.6      | 1.4     | 1.5      | 1.5     | 1.4      | 1.4     | 1.1      | 1.0     | 1.0      | 1.4     | 0.9      | 3.4 | 3.7 | 3.7 | 3.1     | 3.1      | 2.2     | 1.9      | 1.6     | 1.5      |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.5     | 1.6      | 1.5     | 1.1      | 1.0     | 1.1      | 1.0     | 0.8      | 0.7     | 0.7      | 0.8     | 0.8      | 3.9 | 4.4 | 6.1 | 3.1     | 2.3      | 2.3     | 1.8      | 1.5     | 1.4      |

Key:

|             |                    |                    |            |
|-------------|--------------------|--------------------|------------|
| 3.0m <= LAD | 2.5m <= LAD < 3.0m | 2.2m <= LAD < 2.5m | LAD < 2.2m |
|-------------|--------------------|--------------------|------------|

## Appendix G

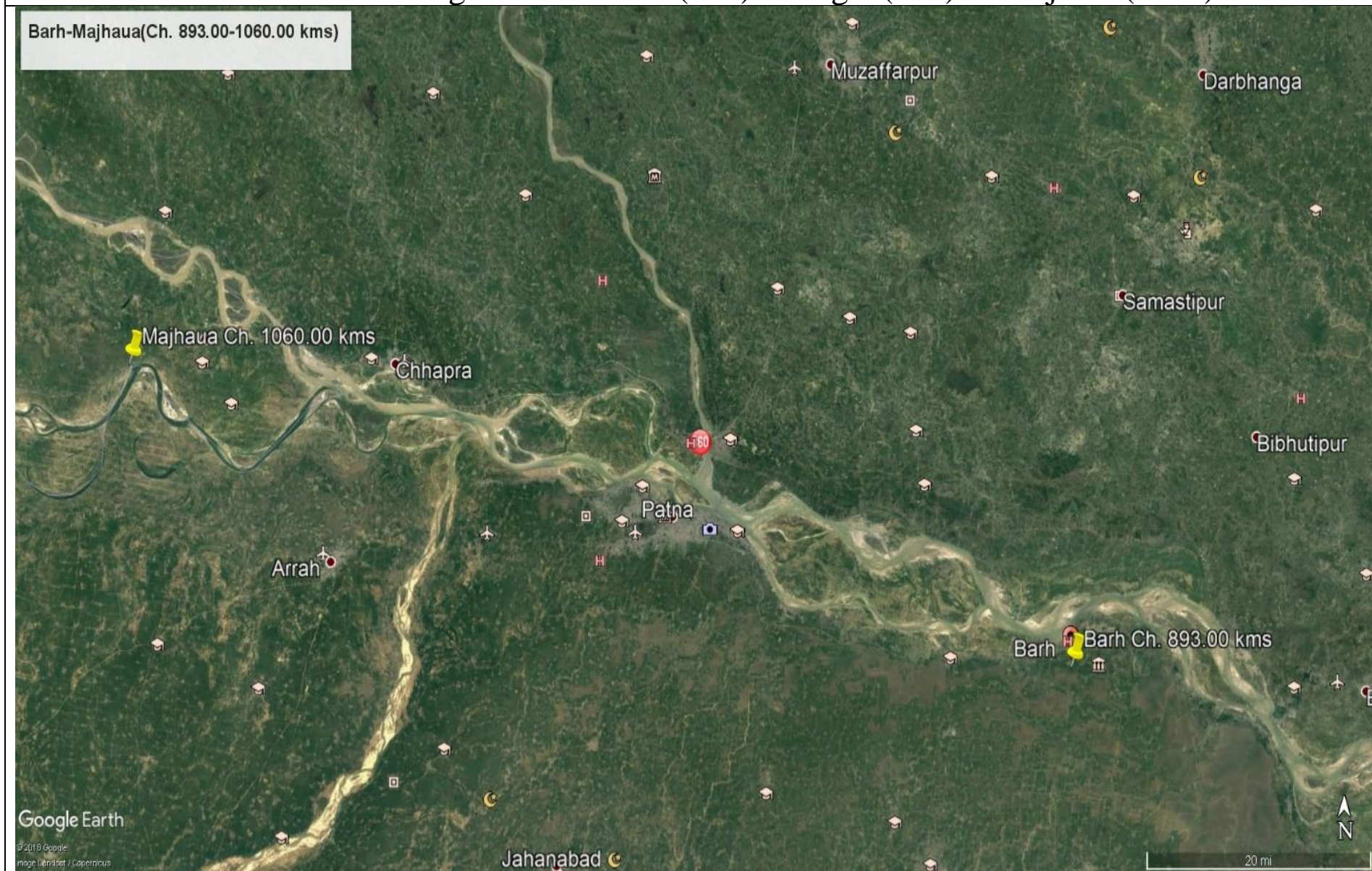
Table G6 LAD for 2006 (in metres)

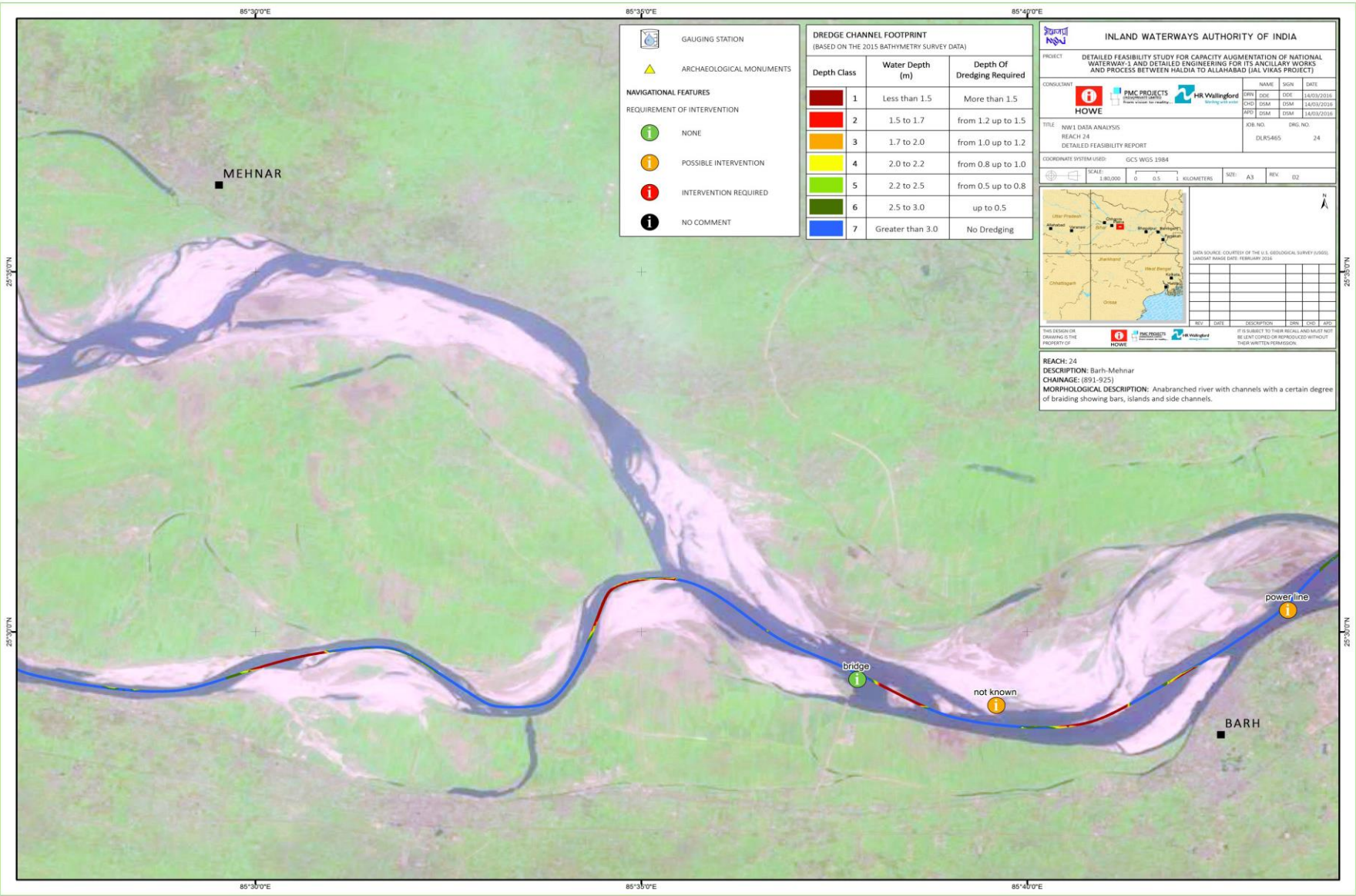
|    | Name                          | Chainage (km) | Jan IFN | Jan IIFN | Feb IFN | Feb IIFN | Mar IFN | Mar IIFN | Apr IFN | Apr IIFN | May IFN | May IIFN | Jun IFN | Jun IIFN | Jul IFN | Jul IIFN | Aug IFN | Aug IIFN | Sep IFN | Sep IIFN | Oct IFN | Oct IIFN | Nov IFN | Nov IIFN | Dec IFN | Dec IIFN |
|----|-------------------------------|---------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
| 1  | Tribeni - Balagarh            | 193-221       | 2.8     | 2.8      | 3.1     | 2.4      | 2.4     | 2.5      | 2.1     | 2.9      | 2.9     | 2.7      | 3.1     | 3.4      | 3.1     | 4.9      | 4.9     | 4.6      | 3.7     | 5.6      | 3.7     | 2.9      | 2.8     | 2.9      | 2.9     | 2.7      |
| 2  | Balagarh - Kalna              | 221-245       | 3.1     | 3.1      | 3.1     | 2.1      | 2.1     | 2.4      | 1.8     | 2.7      | 2.4     | 2.6      | 3.5     | 3.1      | 2.8     | 4.8      | 4.1     | 3.6      | 3.9     | 5.9      | 4.0     | 3.7      | 3.2     | 3.0      | 2.8     | 2.7      |
| 3  | Kalna - Samudragarh           | 245-263       | 3.2     | 3.1      | 3.1     | 2.4      | 2.0     | 2.6      | 1.8     | 2.8      | 2.3     | 2.8      | 3.8     | 3.1      | 2.8     | 5.5      | 4.4     | 4.7      | 4.7     | 5.3      | 4.1     | 3.5      | 3.2     | 3.1      | 3.0     | 2.7      |
| 4  | Samudragarh - Nabadweep       | 263-280       | 3.4     | 3.0      | 3.0     | 2.5      | 2.2     | 2.7      | 1.9     | 2.7      | 2.5     | 2.7      | 4.2     | 3.1      | 3.3     | 4.8      | 4.2     | 4.3      | 4.5     | 6.1      | 4.6     | 3.0      | 3.0     | 3.0      | 3.0     | 2.7      |
| 5  | Nabadweep - Patuli            | 280-322       | 2.4     | 2.4      | 2.6     | 2.1      | 1.8     | 2.6      | 1.5     | 2.5      | 2.2     | 2.6      | 3.5     | 2.7      | 2.5     | 4.9      | 4.3     | 4.3      | 3.7     | 5.3      | 3.8     | 3.0      | 3.0     | 3.0      | 3.0     | 2.8      |
| 6  | Patuli - Katwa                | 322-345       | 3.0     | 3.0      | 2.8     | 2.1      | 1.6     | 2.6      | 1.5     | 2.8      | 2.4     | 2.6      | 3.7     | 2.7      | 3.2     | 4.7      | 3.2     | 3.2      | 3.0     | 6.5      | 3.7     | 3.5      | 3.0     | 3.0      | 3.0     | 2.8      |
| 7  | Katwa - Palassey              | 345-371       | 2.8     | 2.8      | 2.8     | 2.0      | 1.6     | 2.2      | 1.5     | 2.5      | 2.3     | 2.5      | 2.7     | 2.4      | 2.7     | 4.7      | 3.9     | 3.9      | 3.5     | 4.4      | 3.1     | 2.6      | 2.8     | 2.6      | 2.5     | 2.4      |
| 8  | Palassey - Chaurigacha        | 371-400       | 3.2     | 3.2      | 3.2     | 2.0      | 2.2     | 2.7      | 2.2     | 3.1      | 2.5     | 2.7      | 2.9     | 2.6      | 2.8     | 4.5      | 3.7     | 3.4      | 3.3     | 4.9      | 3.2     | 3.1      | 3.0     | 3.0      | 2.8     | 2.8      |
| 9  | Chaurigacha - Berhampur       | 400-421       | 3.5     | 3.1      | 3.0     | 2.5      | 2.5     | 2.7      | 1.8     | 3.0      | 2.5     | 2.9      | 3.4     | 3.1      | 3.3     | 4.0      | 3.3     | 3.7      | 3.8     | 5.0      | 3.5     | 3.6      | 3.5     | 3.5      | 3.2     | 3.0      |
| 10 | Berhampur - Mohammadpur       | 421-449       | 3.8     | 3.2      | 3.0     | 2.5      | 2.4     | 3.5      | 2.2     | 3.5      | 3.1     | 3.9      | 3.2     | 3.0      | 3.3     | 3.7      | 3.1     | 4.4      | 3.7     | 3.8      | 3.6     | 3.8      | 3.7     | 3.7      | 3.3     | 3.5      |
| 11 | Mohammadpur - Nasirpur        | 449-479       | 3.8     | 3.8      | 3.1     | 2.6      | 2.5     | 3.3      | 2.1     | 3.0      | 2.7     | 3.7      | 3.4     | 3.5      | 3.7     | 4.1      | 4.0     | 4.2      | 3.7     | 4.2      | 4.0     | 4.5      | 4.2     | 4.4      | 4.1     | 3.6      |
| 12 | Nasirpur - Jangipur Lock      | 479-505       | 4.5     | 4.8      | 3.3     | 3.0      | 3.2     | 3.3      | 2.9     | 3.6      | 3.5     | 3.1      | 4.2     | 4.0      | 4.3     | 4.7      | 4.7     | 4.8      | 4.2     | 4.7      | 4.6     | 4.4      | 4.4     | 4.4      | 4.4     | 4.7      |
| 13 | Jangipur Lock - Farrakka Lock | 505-544       | 2.7     | 2.7      | 1.4     | 1.5      | 0.9     | 0.7      | 0.8     | 2.2      | 2.2     | 2.5      | 2.4     | 2.1      | 2.7     | 2.8      | 2.6     | 2.6      | 2.7     | 2.6      | 2.9     | 2.8      | 3.0     | 3.0      | 2.8     | 2.7      |
| 14 | Farrakka Lock - Rajmahal      | 544-583       | 2.0     | 2.0      | 1.8     | 1.9      | 2.0     | 2.0      | 1.8     | 1.9      | 2.0     | 2.1      | 2.2     | 2.0      | 2.3     | 2.3      | 2.2     | 2.2      | 1.9     | 1.8      | 1.5     | 1.5      | 1.5     | 1.3      | 1.8     | 1.7      |
| 15 | Rajmahal - Manihari           | 583-633       | 3.7     | 2.0      | 2.0     | 1.9      | 2.0     | 2.0      | 2.0     | 2.3      | 2.2     | 2.2      | 2.4     | 2.3      | 3.0     | 3.2      | 3.0     | 3.2      | 3.4     | 3.5      | 3.0     | 2.9      | 1.9     | 2.6      | 2.5     | 2.4      |
| 16 | Manihari - Karagola           | 633-660       | 3.0     | 2.0      | 1.9     | 2.0      | 2.0     | 2.2      | 2.1     | 2.6      | 2.4     | 2.3      | 2.4     | 3.2      | 4.0     | 3.8      | 3.0     | 3.3      | 3.5     | 3.7      | 3.7     | 3.6      | 3.1     | 2.5      | 2.4     | 2.4      |
| 17 | Karagola - Kahalgaon          | 660-690       | 2.2     | 1.9      | 1.9     | 1.9      | 1.9     | 2.0      | 2.0     | 2.1      | 2.4     | 2.5      | 2.3     | 4.5      | 6.2     | 5.1      | 5.2     | 5.2      | 5.5     | 1.9      | 1.9     | 2.0      | 2.2     | 2.2      | 1.9     |          |
| 18 | Kahalgaon - Bhagalpur         | 690-715       | 2.3     | 1.9      | 1.9     | 1.8      | 1.8     | 1.8      | 1.8     | 1.9      | 1.9     | 2.1      | 2.3     | 2.4      | 4.0     | 4.3      | 2.5     | 3.0      | 3.1     | 3.2      | 2.8     | 2.0      | 2.0     | 3.9      | 3.7     | 3.5      |
| 19 | Bhagalpur - Sultanganj        | 715-746       | 2.1     | 2.2      | 2.1     | 2.1      | 2.1     | 1.7      | 2.0     | 2.0      | 2.2     | 2.0      | 3.6     | 2.4      | 5.3     | 5.5      | 5.5     | 5.6      | 4.9     | 4.1      | 2.1     | 2.5      | 2.0     | 2.3      | 2.5     | 2.0      |
| 20 | Sultanganj - Munger           | 746-793       | 1.8     | 2.0      | 2.0     | 2.0      | 1.9     | 1.7      | 2.0     | 2.2      | 2.2     | 2.1      | 2.5     | 2.2      | 4.5     | 4.8      | 5.0     | 4.2      | 4.4     | 3.2      | 2.3     | 2.0      | 2.0     | 2.2      | 2.4     | 2.1      |
| 21 | Munger - Mahendrapur          | 793-820       | 2.0     | 2.0      | 2.1     | 2.0      | 2.0     | 2.0      | 2.0     | 2.1      | 2.2     | 2.0      | 2.4     | 2.3      | 4.6     | 4.2      | 4.7     | 4.5      | 3.6     | 3.0      | 2.1     | 2.0      | 2.5     | 2.5      | 2.5     | 2.5      |
| 22 | Mahendrapur - Semaria         | 820-853       | 2.1     | 2.0      | 2.1     | 2.0      | 2.0     | 1.8      | 2.0     | 2.2      | 2.2     | 2.2      | 3.5     | 2.1      | 4.5     | 5.5      | 5.2     | 3.5      | 3.2     | 2.8      | 2.2     | 2.2      | 2.4     | 2.4      | 2.8     | 2.2      |
| 23 | Semaria - Barh                | 853-891       | 1.7     | 1.8      | 1.9     | 1.8      | 1.7     | 1.5      | 1.5     | 1.8      | 1.6     | 2.0      | 2.4     | 2.2      | 3.7     | 4.5      | 4.2     | 4.6      | 3.3     | 2.5      | 2.2     | 2.1      | 2.0     | 2.0      | 2.4     | 2.0      |
| 24 | Barh - Mehnar                 | 891-925       | 1.9     | 1.9      | 1.9     | 1.8      | 1.9     | 1.7      | 1.6     | 1.8      | 1.9     | 1.9      | 2.7     | 2.1      | 3.8     | 5.8      | 4.5     | 3.5      | 3.1     | 2.5      | 2.1     | 1.9      | 1.9     | 1.9      | 2.1     | 2.0      |
| 25 | Mehnar - Patna                | 925-955       | 1.8     | 1.7      | 1.8     | 1.8      | 1.8     | 1.9      | 2.0     | 2.0      | 2.1     | 2.0      | 2.4     | 2.3      | 4.3     | 4.9      | 4.3     | 5.1      | 3.4     | 2.5      | 2.2     | 2.4      | 2.2     | 2.4      | 2.5     | 2.1      |
| 26 | Patna - Doriganj              | 955-1000      | 2.0     | 2.0      | 1.8     | 1.6      | 1.5     | 1.8      | 1.6     | 1.5      | 1.9     | 2.1      | 3.2     | 1.7      | 2.2     | 3.2      | 3.7     | 4.1      | 4.7     | 3.1      | 2.0     | 2.2      | 2.1     | 1.9      | 1.8     | 2.0      |
| 27 | Doriganj - Ballia             | 1000-1063     | 1.6     | 1.3      | 1.5     | 1.5      | 1.5     | 1.6      | 1.5     | 1.6      | 1.7     | 1.9      | 2.4     | 1.5      | 2.1     | 3.0      | 3.5     | 4.2      | 4.9     | 2.8      | 1.9     | 1.8      | 1.7     | 1.8      | 1.8     | 1.5      |
| 28 | Ballia - Buxar                | 1063-1124     | 1.8     | 1.6      | 1.5     | 1.4      | 1.3     | 1.5      | 1.3     | 1.5      | 1.2     | 1.3      | 2.4     | 1.5      | 2.3     | 3.2      | 3.9     | 4.4      | 5.1     | 2.5      | 1.9     | 1.9      | 1.8     | N/A      | 1.7     | 1.7      |
| 29 | Buxar - Ghazipur              | 1124-1178     | 1.4     | 1.3      | 1.3     | 1.4      | 1.3     | 1.3      | 1.1     | 1.2      | 1.0     | 1.2      | 1.8     | 1.5      | 1.9     | 3.1      | 3.8     | 4.5      | 4.6     | 4.0      | 1.9     | 1.8      | 1.7     | N/A      | 1.5     | 1.5      |
| 30 | Ghazipur - Saidpur            | 1178-1254     | 1.2     | 1.2      | 1.2     | 1.2      | 1.2     | 1.2      | 1.3     | 1.2      | 1.2     | 1.2      | N/A     | 1.3      | 1.2     | 2.1      | 2.9     | 4.4      | 4.1     | 5.0      | 3.0     | 1.5      | 1.4     | 1.4      | 1.5     | 1.7      |
| 31 | Saidpur - Varanasi            | 1254-1311     | 1.4     | 1.4      | 1.2     | 1.2      | 1.2     | 1.2      | 1.2     | 1.2      | 1.2     | 1.2      | N/A     | 1.2      | 1.2     | 2.2      | 3.0     | 4.0      | 5.8     | 5.2      | 3.0     | 1.5      | 1.5     | 2.0      | 1.9     | 1.8      |
| 32 | Varanasi - Chunar             | 1311-1344     | 1.8     | 1.3      | 1.4     | 1.0      | 1.3     | 1.2      | 1.2     | 1.4      | 1.2     | 1.2      | N/A     | 0.9      | 2.4     | 3.2      | 3.5     | 2.7      | 2.8     | 2.3      | 1.7     | 1.8      | 1.6     | 1.4      | 1.4     | 1.3      |
| 33 | Chunar - Mirzapur             | 1344-1398     | 1.6     | 1.5      | 1.4     | 1.2      | 1.4     | 1.3      | 1.3     | 1.3      | 1.2     | 1.0      | N/A     | 1.1      | 1.5     | 3.3      | 3.0     | 3.7      | 3.0     | 2.2      | 1.8     | 1.8      | 1.6     | 1.5      | 1.4     | 1.3      |
| 34 | Mirzapur - Rampur Ghat        | 1398-1419     | 1.2     | 1.1      | 1.2     | 1.1      | 1.0     | 1.2      | 1.2     | 1.3      | 1.2     | 1.1      | N/A     | 1.1      | 1.6     | 2.2      | 2.9     | 2.9      | 4.6     | 2.2      | 1.8     | 2.0      | 1.8     | 1.3      | 1.2     | 1.2      |
| 35 | Rampur Ghat - Sirsa           | 1419-1506     | 1.6     | 1.7      | 1.5     | 1.5      | 1.2     | 1.1      | 1.2     | 1.2      | 1.2     | 1.2      | N/A     | 1.2      | 1.8     | 2.7      | 3.0     | 2.9      | 3.8     | 3.0      | 1.8     | 1.9      | 1.9     | 1.4      | 1.7     | 1.4      |
| 36 | Sirsa - Allahabad             | 1506-1547     | 1.0     | 1.2      | 1.0     | 1.0      | 1.0     | 1.0      | 0.8     | 0.8      | 0.8     | 0.8      | N/A     | 0.9      | 1.6     | 2.0      | 2.6     | 2.4      | 2.0     | 2.2      | 1.8     | 1.7      | 1.4     | 1.3      | 1.3     | 1.3      |

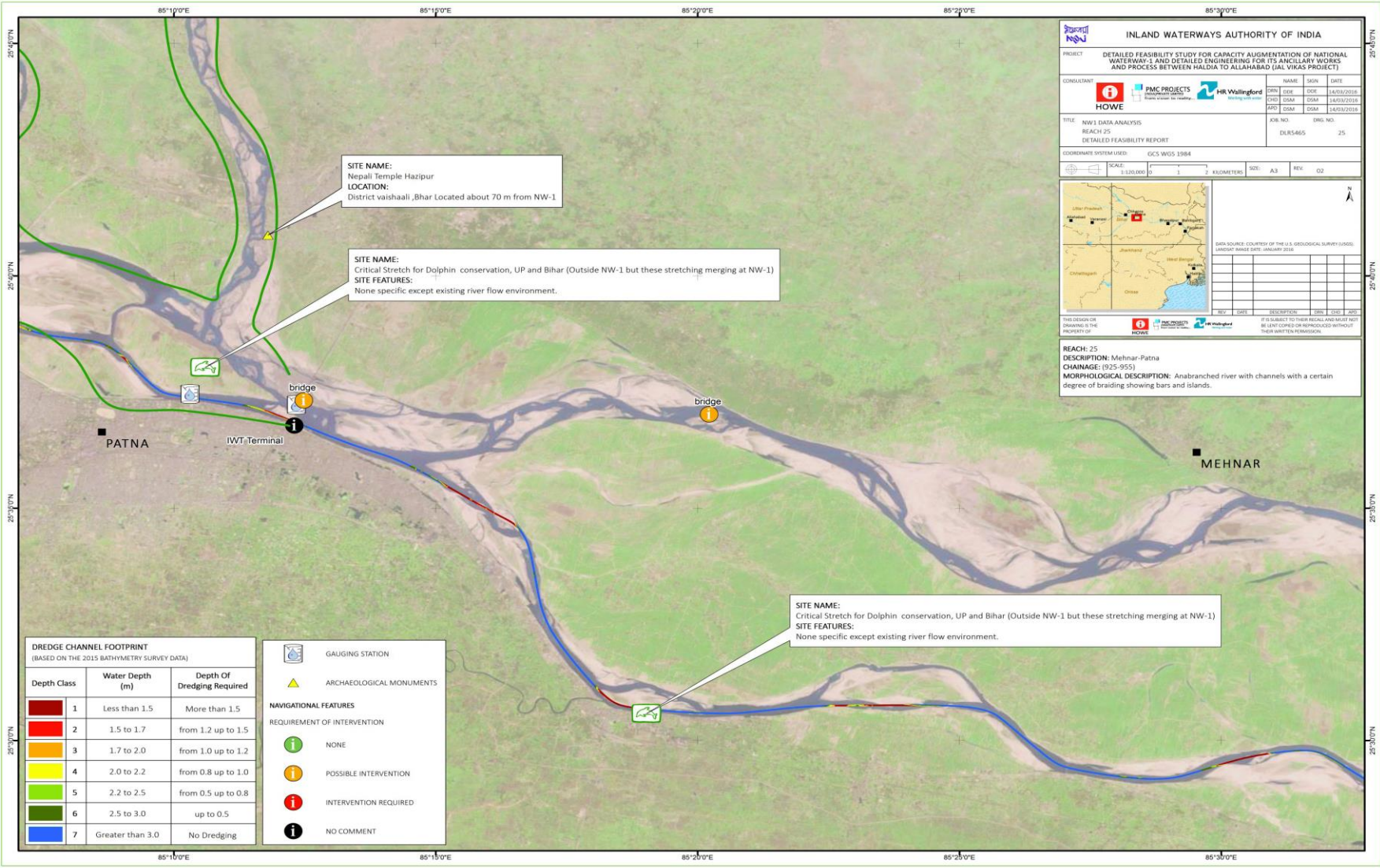
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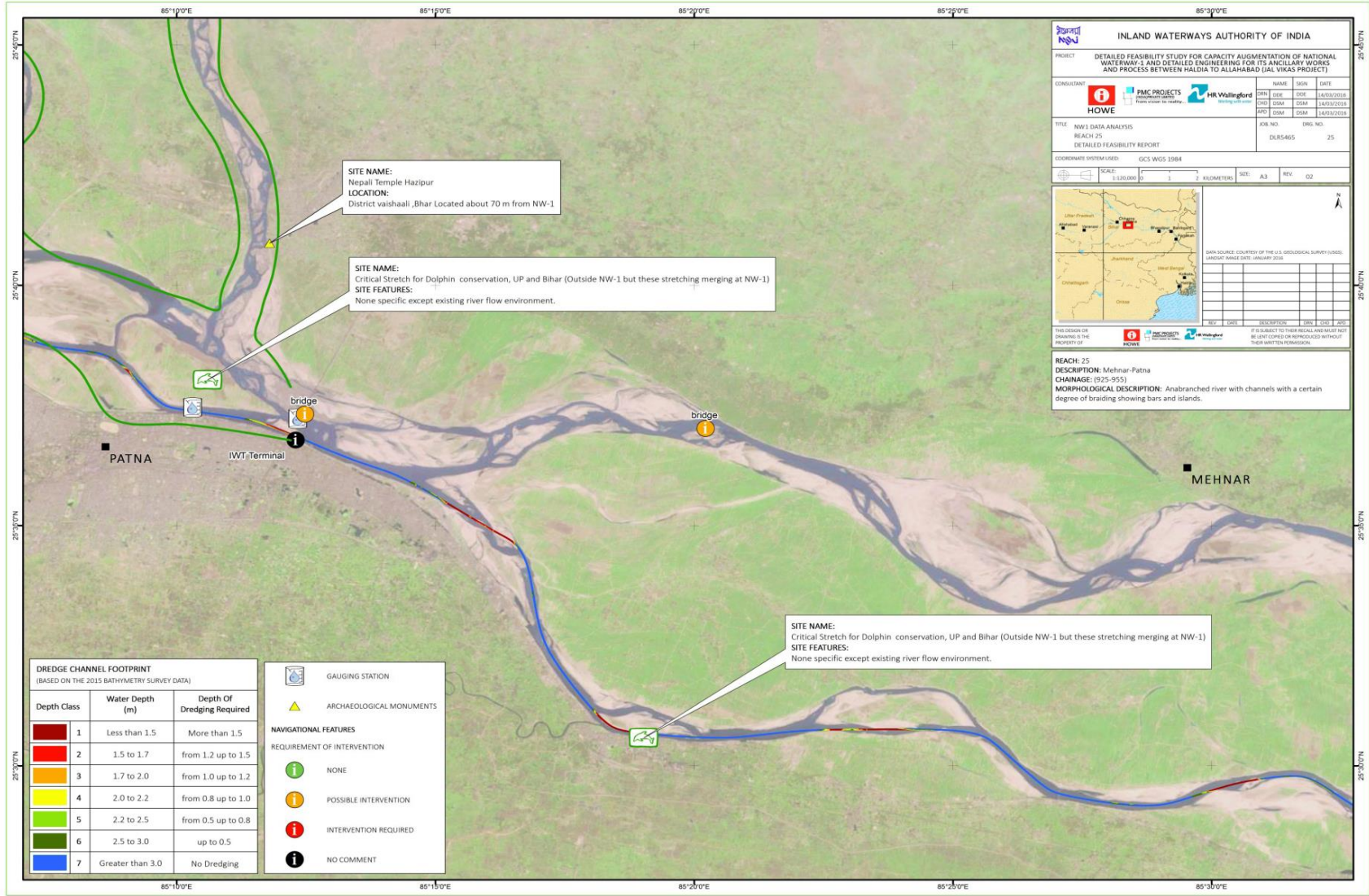
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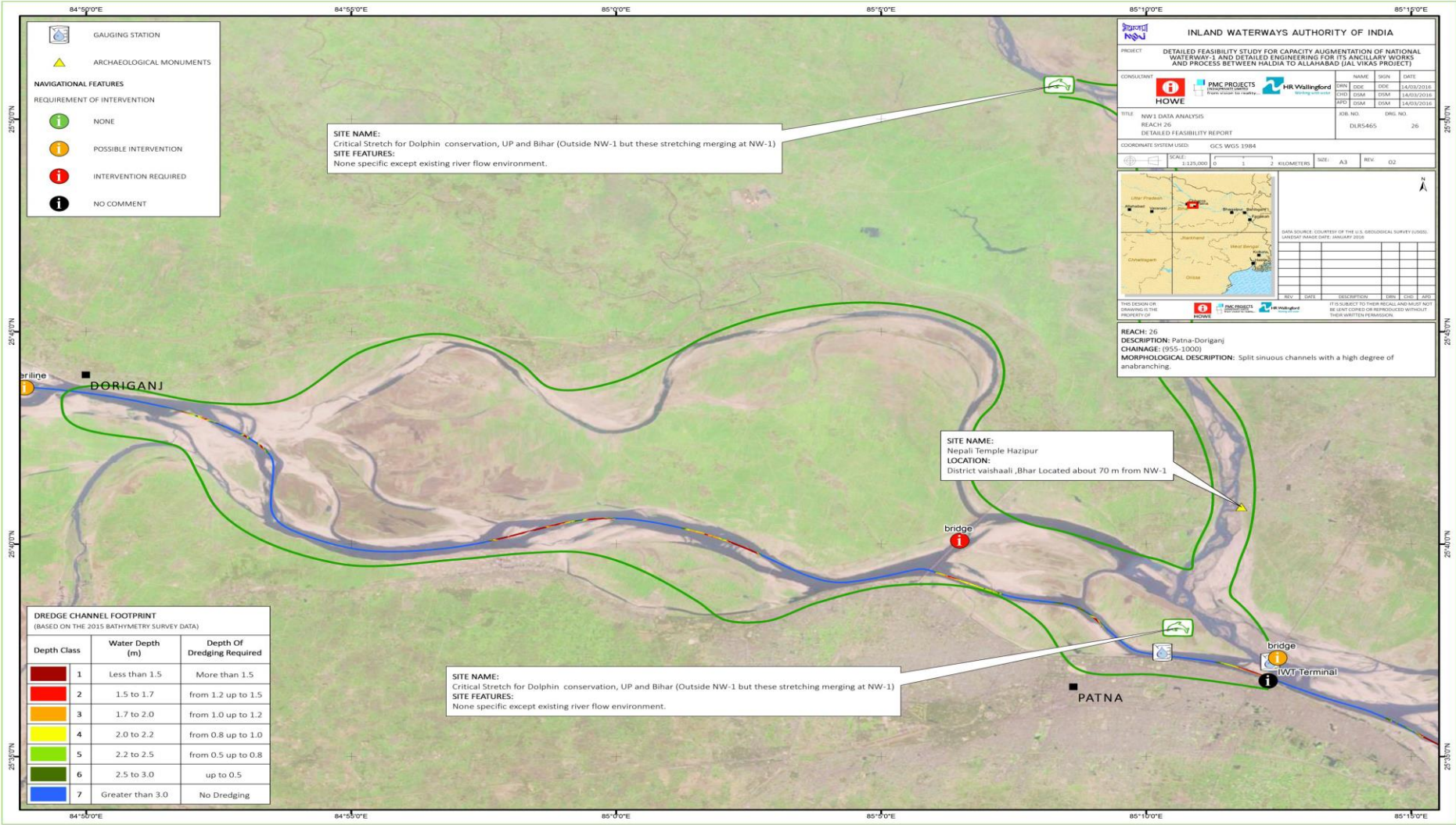
## River Reach Figures from Barh(893) to Digha(965) to Majhaua(1060)

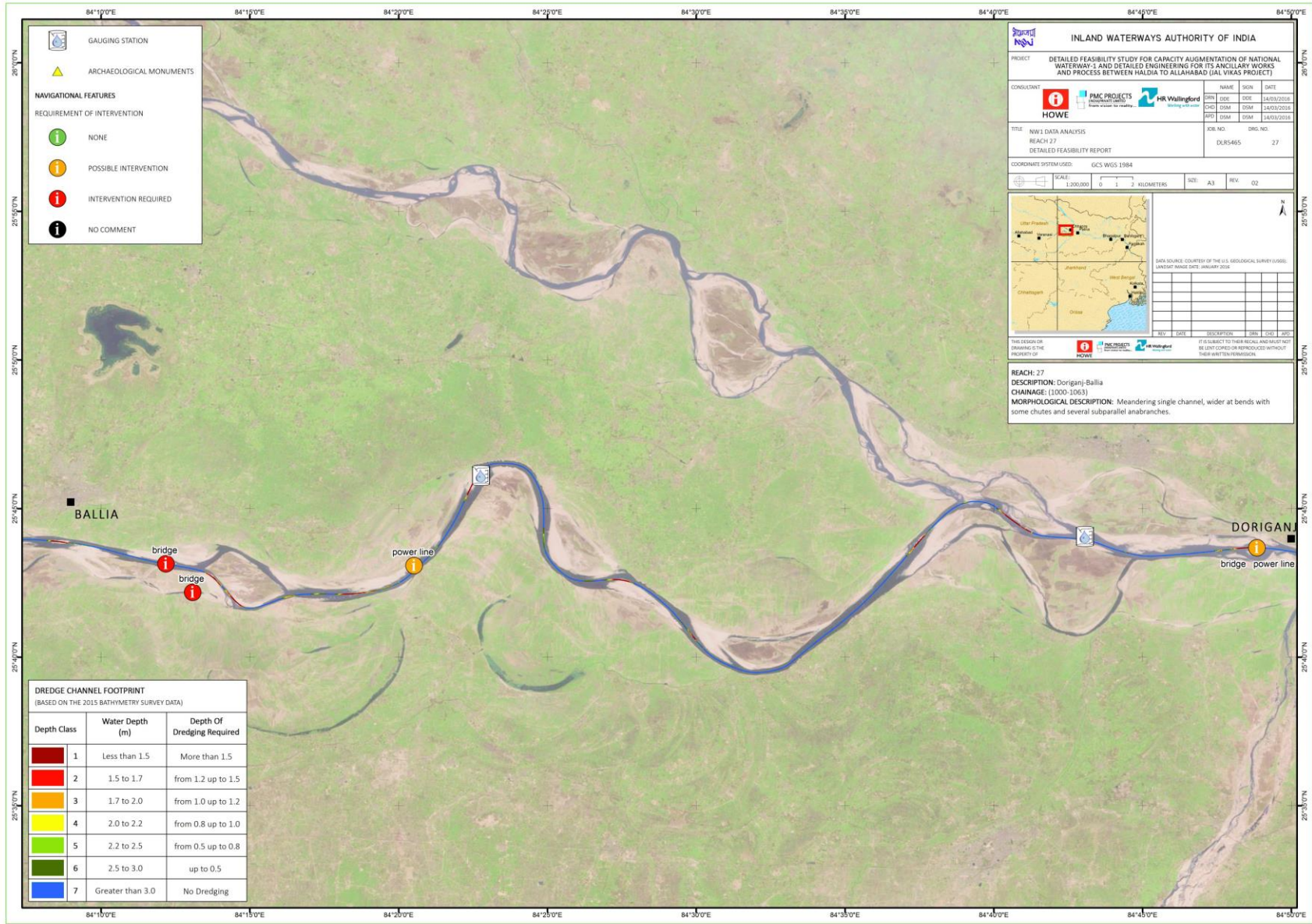












## PART 3 – Conditions of Contract and Contract Forms

### Section VIII. General Conditions of Contract

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## General Conditions of Contract

### A. General

|                       |  |
|-----------------------|--|
| <b>1. Definitions</b> | <p>1.1 Boldface type is used to identify defined terms.</p> <ul style="list-style-type: none"> <li>i. The Accepted Contract Amount means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.</li> <li>ii. Not used.</li> <li>iii. The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.</li> <li>iv. Bank means the financing institution <b>named in the PCC</b>.</li> <li>v. Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.</li> <li>vi. Compensation Events are those defined in GCC Clause 42 hereunder.</li> <li>vii. The Completion Date is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 53.1.</li> <li>viii. The Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub-Clause 2.3 below.</li> <li>ix. The Contractor is the party whose Bid to carry out the Works has been accepted by the Employer.</li> <li>x. The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.</li> <li>xi. The Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.</li> <li>xii. Days are calendar days; months are calendar months.</li> <li>xiii. Not used.</li> <li>xiv. A Defect is any part of the Works not completed in accordance with the Contract.</li> <li>xv. The Defects Liability Certificate is the certificate issued by Project Manager upon correction of defects by the Contractor.</li> <li>xvi. The Defects Liability Period is the period named in the</li> </ul> |
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|         | PCC pursuant to Sub-Clause 34.3 and calculated from the Completion Date.  |
| xvii.   | Drawings means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract. |
| xviii.  | The Employer is the party who employs the Contractor to carry out the Works, as <b>specified in the PCC</b> .   |
| xix.    | Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.  |
| xx.     | "In writing" or "written" means hand-written, type-written, printed or electronically made, and resulting in a permanent record;  |
| xxi.    | The Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.   |
| xxii.   | The Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is <b>specified in the PCC</b> . The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.      |
| xxiii.  | Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.   |
| xxiv.   | Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.   |
| xxv.    | The Project Manager is the person <b>named in the PCC</b> (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.                      |
| xxvi.   | PCC means Particular Conditions of Contract.  |
| xxvii.  | The Site is the area <b>defined as such in the PCC</b> .  |
| xxviii. | Site Investigation Reports are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.  |
| xxix.   | Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.   |
| xxx.    | The Start Date is <b>given in the PCC</b> . It is the latest date when the  |

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|                            | <p>Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.</p> <p>xxxi. A Subcontractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.</p> <p>xxxii. Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.</p> <p>xxxiii. A Variation is an instruction given by the Project Manager which varies the Works.</p> <p>xxxiv. The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, <b>as defined in the PCC.</b></p>  |
| <b>2. Interpretation</b>   | <p>2.1 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.</p> <p>2.2 If sectional completion is specified in the PCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).</p> <p>2.3 The documents forming the Contract shall be interpreted in the following order of priority:</p> <ul style="list-style-type: none"> <li>(i) Agreement,</li> <li>(ii) Letter of Acceptance,</li> <li>(iii) Contractor's Bid &amp; Priced Bill of Quantities,</li> <li>(iv) Particular Conditions of Contract,</li> <li>(v) General Conditions of Contract including Appendices,</li> <li>(vi) Specifications,</li> <li>(vii) Drawings,</li> <li>(viii) Joint Venture Agreement [where applicable], and</li> <li>(ix) any other document listed in the PCC as forming part of the Contract.</li> </ul> |
| <b>3. Language and Law</b> | <p>3.1 The language of the Contract and the law governing the Contract are <b>stated in the PCC.</b></p> <p>Salient features of major labour and other laws that are applicable to construction industry in India are given as Appendix 1 to these General</p>   |

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|                                       | <p>Conditions of Contract.</p> <p>3.2 Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in India when</p> <p>(a) as a matter of law or official regulations, India prohibits commercial relations with that country; or</p> <p>(b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, India prohibits any import of goods from that country or any payments to any country, person, or entity in that country.</p>   |
| <b>4. Project Manager's Decisions</b> | <p>4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.</p> <p>However, if the Project Manager is required, under the rules and regulations and orders of the Employer, to obtain approval of some other authorities for specific actions, he will so obtain the approval. Provided further that any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Project Manager.</p>  |
| <b>5. Delegation</b>                  | <p>5.1 Unless otherwise <b>specified in the PCC</b>, the Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.</p>  |
| <b>6. Communications</b>              | <p>6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered. All oral instructions shall be confirmed in writing in seven working days.</p>   |
| <b>7. Subcontracting</b>              | <p>7.1 The Contractor may subcontract with the approval of the Project Manager upto a ceiling <b>specified in PCC</b>, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations.</p> <p>7.2 The Project Manager should satisfy himself before recommending to the Employer whether:</p> <p>a) the circumstances warrant such sub-contracting; and,</p> <p>b) the sub-Contractor so proposed for the Work possesses the experience, qualifications and equipment necessary for the job proposed to be entrusted to him in proportion to the quantum of</p> |

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|                             | <p>Works to be sub-contracted.</p> <p>7.3 If payments are proposed to be made directly to that sub-contractor, this should be subject to specific authorization by the prime contractor so that his arrangement does not alter the contractor's liability or obligations under the contract.</p> <p>7.4 The Contractor shall not be required to obtain any consent from the Employer for:</p> <ul style="list-style-type: none"> <li>(a) the sub-contracting of any part of the Works for which the Sub-Contractor is already named in the contract;</li> <li>(b) the provision for labour, or labour component, and,</li> <li>(c) the purchase of materials which are in accordance with the standards specified in the contract.</li> </ul> <p>(Note: 1. All bidders are expected to indicate clearly in the bid, if they proposed sub-contracting elements of the works amounting to more than 10 percent of the Bid Price. For each such proposal the qualification and the experience of the identified sub-contractor in the relevant field should be furnished alongwith the bid to enable the Employer to satisfy himself about their qualifications before agreeing for such sub-contracting and include it in the contract. In view of the above, normally no additional sub-contracting should arise during execution of the contract.</p> <p>2. However, [a] sub-contracting for certain specialized elements of the work is not unusual and acceptable for carrying out the works more effectively; but vertical splitting of the works for sub-contracting is not acceptable. [b] in any case, proposal for sub-contracting in addition to what was specified in bid and stated in contract agreement will not be acceptable if the value of such additional sub-contracting exceeds 25% of value of work which was to be executed by Contractor without sub-contracting.</p> <p>3. Assignment of the contract may be acceptable only under exceptional circumstances such as insolvencies/liquidation or merger of companies etc.)</p> |
| <b>8. Other Contractors</b> | <p>8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as <b>referred to in the PCC</b>. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.</p>  |

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| <b>9. Personnel and Equipment</b> | <p>9.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid and <b>referred to in the PCC</b>, to carry out the Works or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.</p> <p>9.2 The Project Manager may require the Contractor to remove from the Site of Works, a member of the Contractor's staff or his work force, who:</p> <ul style="list-style-type: none"> <li>(a) persists in any misconduct or lack of care,</li> <li>(b) carries out duties incompetently or negligently,</li> <li>(c) fails to conform with any provisions of the Contract, or</li> <li>(d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.</li> </ul> <p>9.3 If the Employer, Project Manager or Contractor determines, that any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 9.2 above</p> <p>9.4 In all the above cases, the contractor shall ensure that the person leaves the site within seven days and has no further connection with the work in the contract. The Contractor shall appoint a suitable replacement within 28 days or earlier as may be agreed to between the Project manager and the Contractor.</p> <p>9.5 The Contractor shall not employ any retired Gazetted officer who has either not completed two years after the date of retirement or has not obtained permission from the Government authorities for employment with the Contractor<sup>29</sup>.</p> <p>9.6 The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport. The Contractor shall, if required by the Project Manager, deliver to the Project Manager a return in detail, in such form and at such intervals as the Project Manager may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Project Manager may require.</p> |
| <b>Compliance with</b>            | <p>9.7 During continuance of the Contract, the Contractor and his Sub-</p>   |

<sup>29</sup>Based on Government Directives.

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| <b>Labour Regulations</b>                    | <p>Contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour laws (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law prevailing on the Base Date either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contraventions including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Project Manager/ Employer shall have the right to deduct any money due to the Contractor including his amount of performance security and if applicable, the Environmental, Social, Health and Safety (ESHS) Performance Security. The Employer/ Project Manager shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.</p> <p>9.8 The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.</p> <p>9.9 The Contractor shall duly comply with the provisions of the Apprentices Act 1961 (III of 1961) and the rules made there under, and comply, failure or neglect to shall be subject to all liabilities and penalties provided in the said Act and Rules.</p> |
| <b>10. Employer's and Contractor's Risks</b> | <p>10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.</p>  |
| <b>11. Employer's Risks</b>                  | <p>11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:</p> <ul style="list-style-type: none"> <li>(a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to <ul style="list-style-type: none"> <li>(i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or</li> <li>(ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.</li> </ul> </li> <li>(b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the</li> </ul>  |

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|                               | <p>Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.</p> <p>11.2 From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer's risk except loss or damage due to</p> <ul style="list-style-type: none"> <li>(a) a Defect which existed on the Completion Date,</li> <li>(b) an event occurring before the Completion Date, which was not itself an Employer's risk, or</li> <li>(c) the activities of the Contractor on the Site after the Completion Date.</li> </ul>   |
| <b>12. Contractor's Risks</b> | <p>12.1 From the Starting Date until the Defects Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.</p>   |
| <b>13. Insurance</b>          | <p>13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles <b>stated in the PCC</b> for the following events which are due to the Contractor's risks:</p> <ul style="list-style-type: none"> <li>a. loss of or damage to the Works, Plant, and Materials [which are incorporated in works];</li> <li>b. loss of or damage to Construction Equipment;</li> <li>c. loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and</li> <li>d. personal injury or death.</li> </ul> <p>13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.</p> |

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| <b>Insurance</b>   | <p>13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.</p> <p>13.4 Alterations to the terms of insurance shall not be made without the approval of the Project Manager.</p> <p>13.5 Both parties shall comply with any conditions of the insurance policies.</p>   |
| <b>14 Site Data</b>  | <p>14.2 The Contractor shall be deemed to have examined any Site Data <b>referred to in the PCC</b>, supplemented by any information available to the Contractor.</p>   |
| <b>15 Contractor to Construct the Works including protection of environment, and assurance of public health and safety</b> | <p>15.2 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings and as per instructions of Project Manager.</p> <p>15.2.1 The Contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other cause arising as a consequence of his methods of operation.</p> <p>15.2.2 During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made thereunder, regulations, notifications and by-laws of the State or Central Government, or local authorities and other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority. Salient features of the major laws are given in Appendix 1 to the General Conditions of Contract.</p> |
| <b>16 The Works to Be Completed by the Intended Completion Date</b>  | <p>16.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.</p>  |
| <b>17 Approval by the Project Manager</b>  | <p>17.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.</p> <p>17.2 The Contractor shall be responsible for design of Temporary Works.</p> <p>17.3 The Project Manager's approval shall not alter the Contractor's</p>   |

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|  | <p>responsibility for design of the Temporary Works.</p> <p>17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.</p> <p>17.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.</p>  |
| <b>18 Safety</b>                               | 18.1 The Contractor shall be responsible for the safety of all activities on the Site.   |
| <b>19 Discoveries</b>                          | 19.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.   |
| <b>20 Possession of the Site</b>               | 20.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date <b>stated in the PCC</b> , the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.   |
| <b>21 Access to the Site</b>                   | 21.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.   |
| <b>22 Instructions, Inspections and Audits</b> | <p>22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.</p> <p>22.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub-consultants to keep, accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs.</p> <p>22.3 The Contractor shall permit and shall cause its Subcontractors and sub-consultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and/or the accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 25.1 which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 22.2 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).</p> |
| <b>23 Appointment</b>                          | 23.1 The Adjudicator named in PCC shall be appointed jointly by the  |

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| <p><b>of the Adjudicator</b></p>        | <p>Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority <b>designated in the PCC</b>, to appoint the Adjudicator within 14 days of receipt of such request.</p> <p>23.1.1 The Adjudicator should be in position before "notice to proceed with work" is issued to the Contractor and an agreement should be signed with the Adjudicator jointly by the Employer and the Contractor in the form attached – Appendix 3.</p> <p>23.2 Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract; a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority <b>designated in the PCC</b> at the request of either party, within 14 days of receipt of such request.</p>   |
| <p><b>24 Procedure for Disputes</b></p> | <p>24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager's decision.</p> <p>24.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.</p> <p>24.3 The Adjudicator shall be paid daily at the rate <b>specified in the PCC</b>, together with reimbursable expenses of the types <b>specified in the PCC</b>, and the cost shall be divided equally between the Employer and the Contractor. Whatever decision is reached by the Adjudicator, either party may refer that decision to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision shall be final and binding.</p> <p>24.4 The arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and in the place <b>specified in the PCC</b>.</p> <p>The Arbitrator(s) shall give a decision in writing within 120 days of start of the proceedings unless otherwise agreed to by the Parties. The Arbitrators shall entertain only those issues which have been earlier referred to the Adjudicator and either party is dissatisfied with the decision given by the Adjudicator.</p> <p>25.1 The Bank requires compliance with its policy in regard to corrupt and</p> |

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| <b>25. Corrupt And Fraudulent Practices</b> | <p>fraudulent practices as set forth in Appendix A to the GCC.</p> <p>25.2 The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information shall be disclosed as and when such payments are made or agreed to, and compliance with the disclosure requirement shall be furnished, while submitting each monthly statement for payments; such disclosure must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.</p> |
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## B. Time Control

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| <b>26. Program</b>                                   | <p>26.1 Within the time <b>stated in the PCC</b>, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a revised Program showing the general methods, arrangements, order, and timing for all the activities in the Works along with monthly cash flow forecasts.</p> <p>26.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.</p> <p>26.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period <b>stated in the PCC</b>. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount <b>stated in the PCC</b> from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted.</p> <p>26.4 The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.</p> |
| <b>27. Extension of the Intended Completion Date</b> | <p>27.1 The Project Manager shall extend the Intended Completion Date including milestones if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date as per agreed milestones without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.</p> <p>27.2 The Project Manager shall decide whether and by how much to</p>  |

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|  |      | extend the Intended Completion Date/milestones within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date/milestones.  |
| <b>28. Acceleration</b>                          | 28.1 | When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor.  |
|  | 28.2 | If the Contractor's priced proposals for acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.   |
| <b>29. Delays Ordered by the Project Manager</b> | 29.1 | The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.  |
| <b>30. Management Meetings</b>                   | 30.1 | Either the Project Manager or the Contractor may require the other to attend a management meeting. (Which will be held at the place <b>indicated in PCC</b> . The periodicity to be fixed by Project Manager / Contractor jointly). The business of a management meeting shall be to review the progress of construction with reference to the construction program given in accordance with GCC 26.1, the plans for remaining work and to deal with matters raised in accordance with the early warning procedure. |
|  | 30.2 | The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.   |
| <b>31. Early Warning</b>                         | 31.1 | The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.       |

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|  | 31.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager. |
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### C. Quality Control

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| <b>32. Quality Assurance</b>                     | 32.1 The Contractor shall institute Quality Assurance (QA) and Quality Control (QC) systems in accordance with Quality Assurance Plan to demonstrate compliance with the requirements of the Contract as approved by the Project Manager.  |
|  | 32.2 Compliance with the QA/QC systems shall not relieve the Contractor of any of his duties obligations or responsibilities under the Contract.   |
| <b>33. Tests</b>                                 | 33.1 The Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently.  |
|  | 33.2 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.  |
| <b>34. Identifying and Correction of Defects</b> | 34.1. The Project Manager shall check the Contractor's work and notify the Contractor of any defects that are found specifying a time by which it should be corrected. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect. |
|  | 34.2 The contractor shall permit the Employer's Technical auditor to check the contractor's work and notify the Project Manager and Contractor of any defects that are found. Such a check shall not affect the Contractor's or the Project Manager's responsibility as defined in the Contract Agreement  |
|  | 34.3 The Project Manager shall give notice to the Contractor of any Defects [specifying a time limit by which it should be corrected] before the end of the Defects Liability Period, which begins at Completion, and is <b>defined in the PCC</b> . The Defects Liability Period shall be extended for as long as Defects remain to be  |

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|                                | <p>corrected.</p> <p>34.4 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.</p>  |
| <b>35. Uncorrected Defects</b> | <p>35.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager shall assess the cost of having the Defect corrected and the Contractor shall pay this amount.</p> <p><i>Note: 1. Where in certain cases, the technical specifications provide for acceptance of works within specified tolerance limits at reduced rates, Project Manager will certify payments to Contractor accordingly.</i></p> <p><i>2. Where the failure to correct a particular defect within the specified time is considered as a fundamental breach of contract a notice should be given to the contractor as stated in GCC 57.2(e).</i></p> |

#### D. Cost Control

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| <b>36. Contract Price</b>                | <p>36.1 The Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item.</p>   |
| <b>37. Changes in the Contract Price</b> | <p>37.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change.</p> <p>(a) If the quantity of work executed exceeds the quantity of the item in BOQ beyond the higher specified limit the Project Manager shall fix the rate to be applied for the additional quantity of the work executed.</p> <p>(b) If the quantity of work executed less than the quantity of the item in BOQ lesser than the lower specified limit, the Project Manager shall fix the rate to be applied for whole of the quantity of the work so executed.</p> <p>37.2. The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.</p> <p>37.3 If requested by the Project Manager, the Contractor shall provide</p> |

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|                                 | the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.  |
| <b>38. Variations</b>           | <p>38.1 All Variations shall be included in updated Programs, produced by the Contractor.</p> <p>38.2 The Contractor shall provide the Project Manager with a quotation (with breakdown of unit rates) for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.</p> <p>38.3 If the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 37.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.</p> <p>38.4 If the Contractor's quotation is unreasonable, [<i>or if contractor fails to provide the Project Manager with a quotation within a reasonable time specified by Project Manager in accordance with GCC38.2</i>] the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs</p> <p>38.5 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.</p> <p>38.6 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.</p> |
| <b>39. Cash Flow Forecasts</b>  | 39.1 When the Program, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall be in Indian Rupees.  |
| <b>40. Payment Certificates</b> | 40.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously alongwith details of measurement of the quantity of works executed in a tabular form  |

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|                                | <p>approved by the Project Manager.</p> <p>40.2 The Project Manager shall check the details given in the Contractor's monthly statement and within 14 days certify the amounts to be paid to the Contractor after taking into account any credit or debit for the month in question in respect of materials for the works in the relevant amount and under conditions set forth in GCC Sub-Clause 49.4 [<i>Secured Advance</i>]</p> <p>40.3 The value of work executed shall be determined by the Project Manager after due check and measurement of the quantities claimed as executed by the contractor</p> <p>40.4 The value of work executed shall comprise of the value of the quantities of work in the Bill of Quantities that have been completed;</p> <p>40.5 The value of work executed shall include the valuation of Variations and Compensation Events.</p> <p>40.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.</p>  |
| <b>41. Payments</b>            | <p>41.1 Payments shall be adjusted for deductions for advance payments, retention, other recoveries in terms of contract &amp; taxes to be deducted at source [TDS] as per applicable law. The Employer shall pay the Contractor the amounts certified by the Project Manager within 28 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made upto the date when the late payment is made at the rate <b>stated in the PCC</b>.</p> <p>41.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated at the rate stated in GCC 41.1 above, from the date upon which the increased amount would have been certified in the absence of dispute.</p> <p>41.3 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.</p> |
| <b>42. Compensation Events</b> | <p>42.1 The following shall be Compensation Events:</p>  |

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|      | <ul style="list-style-type: none"> <li>(a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC Sub-Clause 20.1.</li> <li>(b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.</li> <li>(c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.</li> <li>(d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.</li> <li>(e) The Project Manager unreasonably does not approve a subcontract to be let.</li> <li>(f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.</li> <li>(g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.</li> <li>(h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.</li> <li>(i) The advance payment is delayed.</li> <li>(j) The effects on the Contractor of any of the Employer's Risks.</li> <li>(k) The Project Manager unreasonably delays issuing a Certificate of Completion.</li> </ul> |
| 42.2 | If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.   |
| 42.3 | As soon as information demonstrating the effect of each  |

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|                             | <p>Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event.</p> <p>42.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.</p>  |
| <b>43. Tax</b>              | <p>43.1 The rates quoted by the Contractor shall be deemed to be inclusive of the VAT, Sales and other taxes that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source [TDS] as per applicable law.</p> <p>43.2 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the deadline for the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price.</p>   |
| <b>44. Currencies</b>       | <p>44.1 All payments shall be made in Indian Rupees.</p>   |
| <b>45. Price Adjustment</b> | <p>45.1 Contract price shall be adjusted for increase or decrease in rates and price of labour, materials, fuels and lubricants and other inputs to the works in accordance with the principles and procedures outlined below. A table of adjustment data is <b>included in the PCC</b> which indicates the coefficients of various inputs and the sources of indices for various schedules of BOQ. If the PCC does not include a table of adjustment data this sub clause shall not apply and there shall be no price adjustment.</p> <p>(a) The price adjustment according to sub para (d) below, shall apply for the work done from the start date given in the PCC upto the end of the Intended Completion Date. If there is delay in completion beyond such date for reasons attributable to the contractor, the Price Adjustment for the work carried out during such period, for reasons attributable to the Contractor, shall be regulated by sub-para (g) below.</p> <p>(b) The Contract Price shall be adjusted to take account of any increase or decrease in cost after the base date,</p> |

which affect the Contractor in performance of obligations under the Contract.

- (c) The total value (R) of the work done during the specified period [GCC 40.1] shall be as under:

$$R = \text{SUM} (R_{S1} + R_{S2} + R_{S3} + \dots R_{Sn}),$$

Where,

‘ $R_{sn}$ ’ is the value of work done during the specified period to which the price adjustment shall be applied for the relevant schedule of Bill of Quantities (BOQ) specified in P.C.C during the specified period, and represented as under:

$R_{sn} = (V_{sn} + S_{sn})$  minus (amount of secured advance recovered in the same period + value of works executed under variations for which price adjustments will be worked separately based on terms mutually agreed between the Project Manager and the Contractor)

where,

$V_{sn}$  is the total value of work done during the specified period for the respective schedule of BOQ, and

$S_{sn}$  is the secured advance paid during the specified period for the respective schedule of BOQ,

- (d) The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate schedule of BOQ and certified in Payment Certificates, shall be determined from formulae which shall be of the following general type:

$$P_n = a + b L_n/L_o + c E_n/E_o + d M_n/M_o + \dots$$

where,

“ $P_n$ ” is the adjustment multiplier to be applied to the value of the work done during the period “n”, this period being a month unless otherwise stated in the PCC.

“a” is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;

“b”, “c”, “d”,... are coefficients representing the estimated proportion of each cost element related to the execution of the Works, as stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and

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|                      | <p>materials;</p> <p>“L<sub>n</sub>”[<i>Labour</i>], “E<sub>n</sub>”[<i>Equipment</i>], “M<sub>n</sub>”[<i>Material</i>], .... are the current cost indices or reference prices for period “n”, each of which is applicable to the relevant tabulated cost element [<i>Labour, Equipment, Steel, Cement, Fuel/Lubricants, Bitumen, others</i>] on the date, specified in the Table-2 of Adjustment Data, prior to the last day of the period (to which the particular Payment Certificate relates); and</p> <p>“L<sub>o</sub>”, “E<sub>o</sub>”, “M<sub>o</sub>”, ....are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.</p> <p>(e) The cost indices or reference prices stated in the tables of adjustment data given in PCC shall be used. The base date shall be the deadline for the submission of bids.</p> <p>(f) If the Contractor fails to complete the Works within the Intended Completion date, adjustment of prices thereafter shall be made using either:</p> <p>(i) index or price applicable for each cost element tabulated in the tables of adjustment data on the specified date prior to the expiry of the Intended Completion Date, or</p> <p>(ii) the current index or price applicable for the period in question whichever is more favourable to the Employer.</p> <p>(g) The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be varied by the Project Manager if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.</p> <p>(h) Unless otherwise <b>stated in the P.C.C.</b>, the Price adjustment shall be done in each monthly Interim Payment Certificate [IPC]. The coefficients and indices are given in the Tables of Adjustment Data in Contract data.</p> <p>To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other clauses in the contract, the unit rates and prices included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs</p> |
| <b>46. Retention</b> | <p>46.1 The Employer shall retain from each payment due to the Contractor the proportion <b>stated in the PCC</b> until Completion of the whole of</p>  |

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|                               | <p>the Works</p> <p>46.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC 53.1, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected. On completion of the whole works the Contractor may substitute the balance retention money with an “on demand” Bank guarantee.</p>  |
| <b>47. Liquidated Damages</b> | <p>47.1 The Contractor shall pay liquidated damages to the Employer at the rate per day <b>stated in the PCC</b> for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestones as stated in the PCC). The total amount of liquidated damages shall not exceed the amount <b>defined in the PCC</b>. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor’s liabilities.</p> <p>47.1.1 Time is the essence of the contract and payment or deduction of liquidated damages shall not relieve the contractor from his obligation to complete the work as per agreed construction program and milestones, or from any of the Contractor’s other obligations and liabilities under the contract.</p> <p>47.2 If the Intended Completion Date including milestones is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in GCC Sub-Clause 41.1.</p> |
| <b>48. Bonus</b>              | <p>48.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the PCC for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.</p>   |
| <b>49. Advance Payment</b>    | <p>49.1 The Employer shall make advance payment to the Contractor of the amounts <b>stated in the PCC</b> by the date <b>stated in the PCC</b>, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts in Indian Rupees equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the</p>   |

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| <b>Secured Advances</b>    |      | amount of the Guarantee shall be progressively ( <i>each instalment not less than Rs. 500,000</i> ) reduced by the amounts repaid by the Contractor. Interest shall not be charged on the advance payment.  |
|                            | 49.2 | The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.   |
|                            | 49.3 | The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Liquidated Damages.  |
|                            | 49.4 | The Project Manager shall make advance payment in respect of materials intended for but not yet incorporated in the Works in accordance with conditions <b>stipulated in the PCC</b> .  |
| <b>50. Securities</b>      | 50.1 | The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount <b>specified in the PCC</b> , by a Nationalized or Schedule bank in India. The Bank Guarantee for Performance Security including additional security for unbalanced bids shall be valid until a date 28days from the date of issue of the Certificate of Completion. |
| <b>51. Dayworks</b>        | 51.1 | Not used.   |
| <b>52. Cost of Repairs</b> | 52.1 | Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.  |

## E. Finishing the Contract

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| <b>53. Completion</b>    | 53.1 | The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the whole of the Works is completed. |
| <b>54. Taking Over</b>   | 54.1 | The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.   |
| <b>55. Final Account</b> | 55.1 | The Contractor shall supply the Project Manager with a detailed   |

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|  | <p>account of the total amount that the Contractor considers payable under the Contract at the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate within 56 days of receiving the contractor's revised account.</p>  |
| <b>56. Operating and Maintenance Manuals</b> | <p>56.1 If "as built" Drawings [including a compact disk containing digitized drawings] and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates <b>stated in the PCC</b>.</p>  |
|  | <p>56.2 If the Contractor does not supply the Drawings [including a compact disk containing digitized drawings] and/or manuals by the dates <b>stated in the PCC</b> pursuant to GCC Sub-Clause 56.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount <b>stated in the PCC</b> from payments due to the Contractor.</p>  |
| <b>57. Termination</b>                       | <p>57.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract after giving fourteen (14) days written notice.</p>  |
|  | <p>57.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:</p> <ul style="list-style-type: none"> <li>(a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;</li> <li>(b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;</li> <li>(c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;</li> <li>(d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 84 days of the date of the Project Manager's certificate;</li> <li>(e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;</li> </ul> |

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|                                    | <p>(f) the Contractor does not maintain a Security, which is required;</p> <p>(g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as <b>defined in the PCC</b>; or</p> <p>(h) if the Contractor, in the judgment of the Employer, has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for or in executing the Contract, then the Client may, after giving fourteen (14) days written notice to the Contractor, terminate the Contract and expel him from the Site.</p> <p>(i) The contractor has contravened Clauses 7 and 9 of GCC.</p> <p>(j) The contractor does not adhere to the agreed construction program, agreed ESHS-MSIP [Clause 26 of GCC] and also fails to take satisfactory remedial action as per agreements reached in the management meetings [Clause 30 of GCC] for a period of 60 days.</p> <p>(k) The contractor fails to carry out of the instructions of the Project Manager within a reasonable time determined by the Project Manager in accordance with GCC Clause 15.1 and 22.</p> <p>(l) The contractor (in case of Joint Venture) has modified the composition of the joint venture and/or the responsibility of each member of the joint venture from what is stated in joint venture agreement without the prior approval of the Employer.</p> <p>57.3 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC Sub-Clause 57.2 above, the Project Manager shall decide whether the breach is fundamental or not.</p> <p>57.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.</p> <p>57.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.</p> |
| <b>58.Payment upon Termination</b> | <p>58.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received upto the date of the issue of the certificate less other recoveries due in terms of contract, less taxes to be deducted at source [TDS] as per applicable law, and less the percentage to apply to the value of the work not completed, as <b>indicated in the PCC</b>. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference</p>   |

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|   | <p>shall be a debt payable to the Employer.</p> <p>58.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received upto the date of the certificate less other recoveries due in terms of the contract and less taxes due to be deducted at source [TDS] as per applicable law.</p> |
| <b>59.Property</b>                          | <p>59.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.</p>  |
| <b>60.Release from Performance</b>          | <p>60.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.</p>  |
| <b>61.Suspension of Bank Loan or Credit</b> | <p>61.1 In the event that the Bank suspends the Loan or Credit to the Employer, from which part of the payments to the Contractor are being made:</p> <p>(a) The Employer is obligated to notify the Contractor of such suspension within 7 days of having received the Bank's suspension notice.</p> <p>(b) If the Contractor has not received sums due it within the 28 days for payment provided for in Sub-Clause 40.1, the Contractor may immediately issue a 14-day termination notice.</p>  |

## APPENDIX A TO GENERAL CONDITIONS

### Bank's Policy- Corrupt and Fraudulent Practices

**Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011 Revised July 2014:**

**“Fraud and Corruption:**

- 1.16 It is the Bank's policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.<sup>30</sup> In pursuance of this policy, the Bank:
- (a) defines, for the purposes of this provision, the terms set forth below as follows:
    - (i) “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;<sup>31</sup>
    - (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;<sup>32</sup>
    - (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;<sup>33</sup>
    - (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;<sup>34</sup>
  - (v) “obstructive practice” is
  - (aa) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a

<sup>30</sup>In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

<sup>31</sup> For the purpose of this sub-paragraph, “another party” refers to a public official acting in relation to the procurement process or contract execution. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

<sup>32</sup> For the purpose of this sub-paragraph, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

<sup>33</sup> For the purpose of this sub-paragraph, “parties” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other's bid prices or other conditions.

<sup>34</sup> For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution.

- Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
- (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 1.16(e) below.
- (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
  - (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
  - (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank’s sanctions procedures,<sup>35</sup> including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated<sup>36</sup>;
  - (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.”

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<sup>35</sup> A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank’s sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines.

<sup>36</sup> A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

## APPENDIX B

### Environmental, Social, Health and Safety (ESHS) Metrics for Progress Reports

*[Note to Employer: the following metrics may be amended to reflect the Employer's environmental, social, health and safety policies and/or the ESHS requirements of the project. The metrics that are required should be determined by the ESHS risks of the Works and not necessarily by the scale of the Works]*

*Metrics for regular reporting:*

- a. environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;
- b. health and safety incidents, accidents, injuries and all fatalities that require treatment;
- c. interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);
- d. status of all permits and agreements:
  - i. work permits: number required, number received, actions taken for those not received;
  - ii. status of permits and consents:
    - *list areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
    - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
    - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*
    - *for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).*
- e. health and safety supervision:
  - i. safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;
  - ii. number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by

- type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);
- f. worker accommodations:
    - i. number of expats housed in accommodations, number of locals;
    - ii. date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;
  - iii. actions taken to recommend/require improved conditions, or to improve conditions.
    - g. HIV/AIDS: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);
    - h. gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);
    - i. training:
      - i. number of new workers, number receiving induction training, dates of induction training;
      - ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;
      - iii. number and dates of HIV/AIDS sensitization and/or training, no. workers receiving training (this reporting period and in the past); same questions for gender sensitization, flag person training.
      - iv. number and date of GBV /SEA sensitization and/or training, number of workers receiving training on code of conduct (in the reporting period and in the past), etc.
  - j. environmental and social supervision:
    - i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;
    - ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and

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- iii. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.
  - k. *Grievances*: list new grievances (e.g. allegations of GBV / SEA) received in the reporting period and unresolved past grievances by date received, complainant, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed):
    - i. Worker grievances;
    - ii. Community grievances
  - l. Traffic and vehicles/equipment:
    - i. traffic accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;
    - ii. accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;
    - iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).
  - m. Environmental mitigations and issues (what has been done):
    - i. dust: number of working bowsters, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/spoil lorries with covers, actions taken for uncovered vehicles;
    - ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
    - iii. quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
    - iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);
    - v. spill cleanups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);

- vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
- vii. details of tree plantings and other mitigations required undertaken in the reporting period;
- viii. details of water and swamp protection mitigations required undertaken in the reporting period.
- n. compliance:
  - i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
  - ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
  - iii. compliance status of GBV/SEA prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
  - iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
  - v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

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| Following Environmental Safety Measures to be implemented by Contractor : |  |  | Appendix – C |
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| Sl. No.   | Environmental Safety measures to be implemented  | Responsibility   |              |
| i.  | ‘Consent to Establish’ and ‘Consent to Operate’ shall be obtained from State Pollution Control Board under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.  | Contractor   |              |
| ii  | The Project authority shall ensure that no rivers or tributaries are blocked due to any activities at the project site and free flow of water is maintained.   | Contractor should ensure the same  |              |
| iii   | Shoreline shall not be disturbed due to dumping. Periodical study on shore line changes shall be conducted and mitigation carried out, if necessary.   | Contractor should ensure the same.   |              |
| iv  | Dredging shall not be carried out during the fish/turtle breeding seasons.   | Contractor   |              |
| v   | All vessels used in the river will be fitted with noise control and animal exclusion devices so that aquatic life is not unduly disturbed.   | Contractor should ensure.  |              |
| vi  | Spillage of fuel / engine oil and lubricants from the construction site are a source of organic pollution which impacts aquatic life, particularly benthos. This shall be prevented by suitable precautions and also by providing necessary mechanisms to trap the spillage. | Contractor   |              |
| vii   | Construction waste including debris shall be disposed safely in the designated areas and in no case shall be disposed in the aquatic environment.  | Contractor   |              |
| viii  | Vessels shall not discharge oil or oily water such as oily bilge water containing more than 15ppm of oil.  | Contractor shall ensure and maintain record  |              |
| ix  | The project authority shall ensure that water traffic does not impact the aquatic wildlife sanctuaries that fall along the stretch of the river.   | Contractor should ensure compliance of provisions for movement of vessel in the Wildlife Sanctuary as per statutory clearances |              |
| x   | All Vessels will also have to comply with ‘Zero discharge’ standards to prevent solid or liquid waste from flowing into the river and affecting its biodiversity.  | Contractor   |              |
| xi  | The Dredging shall be carried by integrated and systematic planning by selective grid method by allowing migratory movement of Benthic fauna.  | Contractor   |              |
| xii   | All required noise and vibration control measures are to be adopted in Dredgers. Cutter suction Dredgers should be avoided as much as possible which produces more noise and vibration. No Drilling and Blasting is to be carried out.                                       | Contractor   |              |
| xiii  | Pre geo-tectonic studies has to be completed and the strata to be dredged is predetermined with complete data pertaining to hardness, compressive and tensile strengths.   | Contractor   |              |
| xiv   | Dredger type and other strata loosening methods shall be preconceived.   | Contractor   |              |
| xv  | Staggered dredging shall be carried based on turbidity monitoring to minimize the impact of turbidity.   | Contractor should comply and maintain record   |              |
| xvi   | Threshold level of turbidity, which has a minimal effect on fauna, has to be predetermined and Dredging planned accordingly.   | Contractor   |              |
| xvii  | Further silt screens needs to be used for minimizing the spread of Turbidity.  | Contractor   |              |

## Appendix – C

**Following Environmental Safety Measures to be implemented by Contractor :**

| <b>Sl. No.</b> | <b>Environmental Safety measures to be implemented</b>   | <b>Responsibility</b>  |
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| xviii          | Disposal places of Dredged sediments needs to be predetermined, along the shore by assessment of suitability, which will not affect the shoreline (erosion) and also causing impacts during monsoon and flooding.  | Contractor   |
| xix            | As much as possible, it shall not be disposed off in the river itself, and the site should be such that the dispersion is quicker by undertaking modelling studied.  | Contractor   |
| xx             | Ballast water control and management measures shall be implemented.  | Contractor   |
| xxi            | Waste and waste water reception facilities in Jetty shall be implemented.  | Contractor should dispose the waste and wastewater at designated disposal place authorized by SPCB   |
| xxii           | The Risk and Disaster Management Plan has been prepared in consonance with the manual of terminals and harbours issued by the Ministry of Environmental and Forests dated 5 <sup>th</sup> May 2010.  | Contractor should follow the risk and disaster management plan for the purpose of dredging in river accordance with the Statutory/regulatory guidelines.   |
| xxiii          | Standard Operating Procedures (SOP) and Emergency Response Plan (ERP) for onsite and offsite emergencies shall be prepared and implemented based on Hazard Identification and Risk Assessment to handle, process, store and transport of hazardous substances. | Contractor should prepare and follow the Standard Operating Procedures (SOP) and Emergency Response Plan (ERP) for onsite and offsite emergencies for dredging in river accordance with Statutory/regulatory guidelines and IWAI consent |
| xxiv           | Oil spill contingency plan shall be prepared and part of DMP to tackle emergencies. The equipment and recovery of oil from a spill shall be assessed. Guidelines given in MARPOL and shipping Acts for oil spill management shall be followed.                 | Contractor should implement the Oil Spill Contingency Plan for dredging in river accordance with Statutory/regulatory guidelines.  |
| xxv            | No diversion of the natural course of the river shall be made without prior permission from the Ministry of Water resources.   | Contractor should ensure the same.   |
| xxvi           | All the erosion control measures shall be taken at water front facilities.   | Contractor should ensure the same.   |
| xxvii          | Necessary Air Pollution Control measures shall be taken during loading, unloading, handling, transport of the material at the Berthing and water front facilities.   | Contractor   |
| xxviii         | The Vessels shall comply the emission norms prescribed from time to time.  | Contractor   |
| xxiv           | All safety measures are to be implemented in coordination with the respective state government departments such as State Forest Department, Public Works Department, State Pollution Control Board etc.  | Contractor   |

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| <b>Section IX . Particular Conditions of Contract.</b> |  |
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| <b>A. General</b>                                      |  |
| <b>GCC 1.1 (d)</b>                                     | The financing institution is: IBRD by world Bank<br>Loan agreement : 8752-IN   |
| <b>GCC 1.1 (r)</b>                                     | The Employer is<br><br><i><b>Vice Chairman &amp; Project Director<br/>Inland Waterways Authority of India<br/>Ministry of Ports, Shipping &amp; Waterways<br/>Government of India.</b></i>   |
| <b>GCC 1.1 (v)</b>                                     | The Intended Completion Date is Three ( 3) Years <i>from the Date of Commencement of Service / Mobilisation.</i><br><i>Contract is extendable by further .....</i>   |
| <b>GCC 1.1 (y)</b>                                     | The Engineer–In–Charge for this Contract shall be <b>Director / Director ( I/C) IWAI Patna.</b>  |
|  | The Address of the Employer are:<br><br>Vice Chairman and Project Director, JMVP<br>Inland Waterways Authority of India,<br>A-13, Secot-1, Noida – 201301, Uttar Pradesh, India<br>Telex: +91 120 2544004: Facsimile: +91 120 2543976<br><br>The Address of the Contractor are:  |
|  | The Authorized Representatives are:<br><br><b>For the Employer:</b><br>Engineer in Charge & <b>Director / Director ( I/C) IWAI Patna.</b><br>Inland Waterways Authority of India<br><br><b>For the Contractor:</b><br><b>( is from successful Bidder)</b>  |
| <b>GCC 1.1 (aa)</b>                                    | <b><i>The Name of the Work:-</i></b><br><br><b><i>Fairway Maintenance on Quantity Based Dredging Of Digha-Majhaua stretch (95km) of National Waterway – 1 for a period Up to Three ( 3) Years</i></b><br><br>and dispose off the dredged material with all leads & lifts on river Bank / or at designated site by EIC or his representative in each year of the Contract Period. |

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|                     | <p><b>The identification number of the Contract is</b><br/> <b><i>IN-IWAI - 336117 - C W-RFB</i></b></p>  |
| <b>GCC 1.1 (dd)</b> | <p><b>Date of Commencement of Services/Work (Quantity Based Dredging)</b></p> <p>Within 28 days from the date of signing of the Contract, the Employer shall issue a Notice to the Contractor for commencing operations to meet the requirements of Works and Services stipulated in the Contract.</p> <p>The Contractor shall commence its activities immediately on receipt of the said Notice and notify the Employer within a period not exceeding 30 days from the date of receipt of said Notice about the mobilization of the resources at the site and pre-dredging survey. The date of first Pre-dredging survey will be the start/commencement date of the work.</p> <p>The Start Date/Date of commencement of work shall be not later than 45 days after the issuance of the Letter of Acceptance by the Employer.</p> |
| <b>GCC 1.1 (hh)</b> | <p>The Works consist of to <i>Maintain the Digha-Majhaua stretch (95km) &amp; Provide a Navigational Channel of 30m Bottom Width ( excluding tolerances) and the depth of 2.50m m for the dredged area</i> Up to Three ( 3) Years <i>Between Digha-Majhaua stretch (95km) Of National Waterway – 1 (River Ganga) through Quantity Based Dredging and dispose off the dredged material with all leads &amp; lifts on river Bank / or at designated site by EIC or his representative in each year of the Contract Period.</i></p> <p><b>Obligation of the Contractor</b></p> <p>To Provide fairway with a depth of 2.5 m on Quantity Based Dredging and disposal of the dredged material downstream at designated location and as provided in Section-VII work requirements.</p>   |
| <b>CC 1.1 (ii)</b>  | <p>The following is added as GCC 1.1. (ii)</p> <p>“ESHS” means environmental, social (including sexual exploitation and abuse (SEA) and gender based violence (GBV)), health and safety.</p>  |
| <b>GCC 1.1 (jj)</b> | <p>The following is added as GCC 1.1. (jj)</p> <p>“Sexual Exploitation and Assault” “(SEA)” stands for the following:<br/> Sexual exploitation is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another. In Bank financed operations/projects, sexual exploitation occurs when access to or benefit from a Bank financed Goods, Works, Non-consulting Services or Consulting Services is used to extract sexual gain.</p>   |

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|                   | Sexual assault is defined as sexual activity with another person who does not consent. It is a violation of bodily integrity and sexual autonomy and is broader than narrower conceptions of “rape”, especially because (a) it may be committed by other means than force or violence, and (b) it does not necessarily entail penetration.   |
| <b>GCC 2.1 a</b>  | Sectional Completions are: <b>NOT Applicable / Not Allowed</b>   |
| <b>GCC 2.2</b>    | <p>Priority of Documents</p> <p>The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:</p> <ol style="list-style-type: none"> <li>1) Agreement,</li> <li>2) Letter of Acceptance,</li> <li>3) Contractor’s Bid&amp; Priced Bill of Quantities,</li> <li>4) Particular Conditions of Contract,</li> <li>5) General Conditions of Contract including Appendices,</li> <li>6) Specifications,</li> <li>7) Drawings,</li> <li>8) Joint Venture Agreement [where applicable], and</li> <li>9) Post bid correspondences and any other document listed in the contract data (after PCC) as forming part of the contract.</li> <li>10) any other document listed in the PCC as forming part of the Contract.</li> </ol> <p>If any ambiguity or discrepancy is found in the documents, the EMPLOYER / EMPLOYER’S ENGINEER shall be the sole authority to issue any necessary clarification or instruction in this regard.</p> |
| <b>GCC 2.3(i)</b> | <p>The following documents also form part of the Contract:</p> <ol style="list-style-type: none"> <li>a) the Dredging Methodology</li> <li>b) the ESHS Management Strategies and Implementation Plans and EMP (Environment Management Plan);</li> <li>c) Labor Influx and Worker’s Camp Management Plan including the process for mitigating construction related impacts on local community;</li> <li>d) Code of Conduct (ESHS); and</li> <li>e) JV Agreement (wherever applicable).</li> </ol>   |
| <b>GCC 3.1</b>    | The language of the contract is <i>English</i> . The law that applies to the Contract is the laws of Union of India.   |
| <b>GCC 5.1</b>    | <p>The Project manager <b>may</b> delegate any of his duties and responsibilities.</p> <p>The Project Manager may delegate any of his duties and responsibilities to other suitably qualified and experienced personnel, after notifying the Contractor, and may cancel any delegation after notifying the Contractor’</p>   |

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| <b>GCC 7.1</b> | <p>The ceiling for sub-contractor is 25%. Hiding information about any sub-contracting not authorized by the Employer shall be treated as violation of Appendix A to General Conditions (Fraud and Corruption). [This is addition to what was stated in bid and incorporated in contract agreement.]</p> <p>The Contractor is specifically allowed to subcontract the following activities:</p> <p><i>a) 20% of all dredging work;</i></p> <p><i>b) Environmental and Social monitoring</i></p>  |
| <b>GCC 8.1</b> | <p>Schedule of other contractors: -</p> <p>The Contractor shall not subcontract more than 10% under his own responsibility and without prior approval of the Employer the following Works and Services defined at GCC 7.1</p> <p>For the Subcontracts beyond 10% the prior approval of the Employer shall be obtained.</p>   |
| <b>GCC 9.1</b> | <p>Key Personnel and equipment:</p> <p>Key Personnel:</p> <p>GCC 9.1 is replaced with the following:</p> <p>Key Personnel are the Contractor’s personnel named in this GCC 9.1 of the Particular Conditions of Contract. The Contractor shall employ the Key Personnel identified in its Bid, to carry out the Works. The contractor shall not change Key personnel indicated in their bid.</p> <p>If, for any reason beyond the reasonable control of the contractor, it becomes necessary to replace any of the key personnel, the contractor shall provide a replacement a person of equivalent or better qualification and experience with the approval of EIC/Project Manager.</p> <p>The Contractor shall have a Code of Conduct for the Contractor’s Personnel, and shall ensure that each Contractor’s Personnel is provided a copy of this Code of Conduct, written in a language comprehensible to that person, and shall seek to obtain that person’s signature acknowledging receipt of the same.</p> <p>The Contractor shall also ensure that the Code of Conduct is visibly displayed in multiple locations on the Site and any other place where the Works will be carried out, as well as in areas outside the Site accessible to the local community and project affected people. The posted Code of Conduct shall be provided in languages comprehensible to Contractor’s Personnel, Employer’s Personnel and the local community.</p> <p>[insert the name/s of each Key Personnel agreed by the Employer prior to Contract signature, Schedule of Key Personnel and equipment as indicated in</p> |

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|                           | accepted bid & construction methodology].  |
| <b>GCC 9.2 (e)</b>        | <p>The following is inserted after GCC 9.2 (d) as GCC 9.2 (e), (f), and (g):</p> <p>“(e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works;</p> <p>(f) has been recruited from the Employer’s Personnel without due clearance;</p> <p>(g) breaches the Code of Conduct for the Contractor’s Personnel (ES).”</p>   |
| <b>GCC 9.10</b>           | <p>The following is inserted as GCC 9.10:</p> <p>“The Contractor shall provide the Contractor’s Personnel information and documentation that are clear and understandable regarding their terms and conditions of employment. The information and documentation shall set out their rights under relevant labour Laws applicable to the Contractor’s Personnel (which will include any applicable collective agreements), including their rights related to hours of work, wages, overtime, compensation and benefits, as well as those arising from any requirements in the Specification; and shall also include the Code of Conduct for Contractor’s Personnel. The Contractor’s Personnel shall be informed when any material changes to their terms or conditions of employment occur.”</p> |
| <b>GCC 9.11</b>           | <p>The following is inserted as GCC 9.11:</p> <p>“The Contractor shall provide appropriate training to relevant Contractor’s Personnel on ES aspects of the Contract, including appropriate sensitization on prohibition of SEA, and health and safety training. As stated in the Specification or as instructed by the Project Manager, the Contractor shall also allow appropriate opportunities for the relevant Contractor’s Personnel to be trained on ES aspects of the Contract by the Employer’s Personnel.</p> <p>The Contractor shall provide training on SEA, including its prevention, to any of its personnel who has a role to supervise other Contractor’s Personnel.</p>   |
| <b>GCC 13.1</b>           | <p>The Contractor shall take out and maintain in effect the following insurances in the sums and deductibles shown below:</p> <p>(i) Third Party motor vehicle: As per M V Act_</p> <p>(ii) Third Party liability: <u>as per vessel Inland Act.</u></p> <p>(iii) <u>Group Insurance Cover for the persons on Vessel / Board.</u></p> <p>(iii) Employer’s liability and workers’ compensation: <u>Nil</u></p> <p>(iv) Professional liability: <u>Twice the value of contract for the entire period of the contract</u></p> <p>(v) Loss or damage to equipment and property: <u>Minimum INR 10,000,000/- for each accident for the currency of the contract</u></p>  |
| <b>GCC 13.5 Insurance</b> | <p>The following is inserted after GCC 13.4:</p> <p><b>1. Insurance of Works</b></p> <p>Contractor is required to take Contractor’s All Risk Policy or erection all risk policy (as the case may be) from an approved insurance company in the joint</p>   |

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|  | <p>name with the Employer and bear all costs towards the same for the full period of execution of works including the defect liability period for the full amount of contract against all loss of damage from whatever cause arising other than excepted risks for which he is responsible under the terms of the contract and in such manner that the Employer and the contractor are covered during the period of construction of works and/or also covered during the period of defect liability for loss or damage</p> <p>a) The work and the temporary works to the full value of such works.</p> <p>b) The materials, construction plant, centering, shuttering and scaffolding materials and other things brought to the site for their full value.</p> <p>Whenever required by the Employer, the contractor shall produce the policy or the policies of insurance and the receipts for payment of the current premium.</p> <p><b>2. Insurance under Workmen Compensation Act</b></p> <p>Contractor is required to take insurance cover under the Workman Compensation Act, 1923 as amended from time to time from an approved insurance company and pay premium charges thereof. Wherever required by the Employer the contractor shall produce the policy or the policies of Insurance and the receipt of payment of the current premiums.</p> <p><b>3. Third Party Insurance</b></p> <p>Contractor is required to take third party insurance cover for an amount of 5% (five percent) of contract value from an approved insurance company for insurance against any damage, injury or loss which may occur to any person or property including that of the Employer, arising out of the execution of the works or temporary works. Wherever required by the Employer the contractor shall produce the policy or the policies of Insurance and the receipt of payment of the current premiums. In case of failure of the contractor to obtain contractors all risk policy, insurance under workman compensation act and third party insurance as described above within one month from the date of commencement of work, running account payments of the contractor shall be withheld till such time the aforesaid insurance covers are obtained by the contractor. If the Contractor could not effect a comprehensive insurance cover against risks which he may be required to effect under the terms of the contract, then he shall give his attention to get the best insurance cover available and even in case of effecting a wider insurance cover than the one which the subsidiary of the General Insurance Company could offer, such an insurance is ought to be done after the Employers approval, by or through the subsidiary of the General Insurance Company.</p> <p><b>4. Indemnify the Employer</b></p> <p>The Contractor shall at all times indemnify the Employer against all claims, damages or compensation under the provision of Payment of Wages Act-1936, Minimum Wages Act-1948, Employer's liability Act-1938, the Workmen's Compensation Act-1947, Industrial Disputes Act-1947 and Maternity Benefit Act-1961 or any modifications thereof or any other law in force or as consequence of any accident or injury to any workman or other persons in or about the works, whether in the employment of the contractor or not, against all</p> |
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costs, charges and expenses of any suit, action or proceedings arising out of such incident or injury and against all sum or sums which may with the consent of the contractor be paid to compromise or compound any such claim. Without limiting his obligations and liabilities as above provided, the contractor shall insure against all claims, damages or compensation payable under the Workmen's Compensation Act 1923 or any modification thereof or any other law relating thereto."

#### **5.Damage to Persons and Property**

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:

- (a) death of or injury to any person, or
- (b) loss of or damage to any property (other than the Works), which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause 6.

#### **6.Exceptions**

The "exceptions" referred to in Sub-Clause 5 are:

- (a) the permanent use or occupation of land by the Works, or any part thereof,
- (b) the right of the Employer to execute the Works, or any part thereof, on, over, under, in or through any land,
- (c) damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract, and
- (d) death of or injury to persons or loss of or damage to property resulting from any act or neglect of the Employer, his agents, servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the Employer, his servants or agents or other contractors for the injury or damage.

#### **7.Indemnity by Employer**

The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause.6.

#### **8.Cross Liabilities**

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insured.

#### **9.Accident or Injury to Workmen**

The Employer shall not be liable for in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or any Subcontractor, other than death or injury resulting from

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|                 | <p>any act or default of the Employer, his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, other than those for which the Employer is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.</p> <p><b>10.Evidence and Terms of Insurances</b></p> <p>The Contractor shall provide evidence to the Employer as soon as practicable after the respective insurances have been taken out but in any case prior to the start of work at the Site that the insurances required under the Contract have been effected and shall, within 84 days of the Commencement Date, provide the insurance policies to the Employer. When providing such evidence and such policies to the Employer, the Contractor shall notify the Engineer of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Award. The Contractor shall effect all insurances for which he is responsible with insurers and in terms approved by the Employer.</p> <p><b>11.Adequacy of Insurances</b></p> <p>The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurances at all times in accordance with the terms of the Contract and shall, when required, produce to the Employer the insurance policies in force and the receipts for payment of the current premiums.</p> <p><b>12.Remedy on Contractor's Failure to Insure</b></p> <p>If the Contractor fails to effect and keep in force any of the insurances required under the Contract, or fails to provide the policies to the Employer within the period required by Sub-Clause 21.10, then and in any such case the Employer may effect and keep in force any such insurances and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.</p> <p><b>13.Compliance with Policy Conditions</b></p> <p>In the event that the Contractor or the Employer fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.</p> <p><b>14.Source of Insurance</b></p> <p>The Contractor shall place all insurance relating to the Contract (including, but not limited to, the insurance referred to 13.2 with insurers from India.</p> |
| <b>GCC 14.1</b> | <p>Site Data are:</p> <p>The relevant drawings with chain-ages are placed in the documents.</p>   |
| <b>GCC 15.2</b> | <p>The following is added as sub-clause 15.2:</p>   |

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|  | <p>“If so instructed by Project Manager, the Contractor shall submit to the Project Manager for review, a health and safety manual, specifically prepared for the Works, the Site and other places (if any) where the Contractor intends to execute the Works. The manual shall be in addition to any other similar document required under applicable health and safety regulations and Laws. The health and safety manual and its updates shall be reviewed along with the Contractor’s Environmental and Social Management Plan (C-ESMP) described in sub-clause 16.2.”</p> <p>Delete GCC sub-clauses 15.2.1 and GCC 15.2.2.</p>   |
| <b>GCC 16.1</b><br><b>(add new</b><br><b>16.2)</b> | <p><b>ESHS Management Strategies and Implementation Plans</b></p> <p>The following is inserted as a new sub-clause 16.2:</p> <p>“<b>16.2</b> The Contractor shall not carry out any Works, including mobilization and/or pre-construction activities (e.g. limited clearance for haul roads, site accesses and work site establishment, geotechnical investigations or investigations to select ancillary features such as quarries and borrow pits), unless the Project Manager is satisfied that appropriate measures are in place to address environmental, social, health and safety risks and impacts. At a minimum, the Contractor shall apply the Management Strategies and Implementation Plans and Code of Conduct, submitted as part of the Bid and agreed as part of the Contract. The Contractor shall submit, on a continuing basis, for the Project Manager’s prior approval, such supplementary Management Strategies and Implementation Plans as are necessary to manage the ESHS risks and impacts of ongoing works. These Management Strategies and Implementation Plans collectively comprise the Contractor’s Environmental and Social Management Plan (C-ESMP). The C-ESMP shall be approved prior to the commencement of construction activities (e.g. excavation, earth works, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). The approved C-ESMP shall be reviewed, periodically (but not less than every six (6) months), and updated in a timely manner, as required, by the Contractor to ensure that it contains measures appropriate to the Works activities to be undertaken. The updated C-ESMP shall be subject to prior approval by the Project Manager.”</p> |
| <b>GCC 20.1</b>                                    | <p>The Start Date shall be not later than 45 days after the issuance of the Letter of Acceptance by the Employer.</p> <p>The Site Possession Date(s) shall be: <b><i>Digha-Majhaua stretch (95km)</i></b><br/>The Site Possession Date(s) shall be: Date on which Contractor starts mobilization</p>  |
| <b>GCC 22.1</b>                                    | <p>During the quantity based dredging period, the Dredging quantity will be measured on monthly basis by conduction the joint pre-dredging and post dredging surveys. The employer has engaged a third party supervision agency (TSSC-III) who shall be participating in the Joint Pre &amp; Post Survey. The monthly dredged quantities shall be certified by TSSC-III for further submission to EIC &amp; employer.</p>   |
| <b>GCC 23.1 &amp;</b>                              | <p>Name of the agreed Adjudicator ..... (<i>insert name</i>)</p>  |

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| <b>GCC 23.2</b> | <i>before signing contract).</i>   |
|                 | The Appointing Authority is: <b>Indian Council of Arbitration</b>  |
| <b>GCC 24.3</b> | Daily rate and types of reimbursable expenses to be paid to the Adjudicator: <i>[insert daily fees [not less than Rs. 10,000 per day] and reimbursable expenses – boarding/lodging/travel etc.].</i>   |
| <b>GCC 24.4</b> | <p>The procedure for adhoc arbitration will be as follows:</p> <ul style="list-style-type: none"> <li>(a) In case of Dispute or difference arising between the Employer and a Contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 Arbitrators one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as Presiding Arbitrator. In case of failure of the two Arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the Arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the* Indian Council of Arbitration/ President of the Institution of Engineers (India)/The International Centre for Alternative Disputes Resolution (India).</li> <li>(b) If one of the parties fails to appoint its Arbitrator in pursuance of sub-clause (a) above within 30 days after receipt of the notice of the appointment of its Arbitrator by the other party, then the *Indian Council of Arbitration/ shall appoint the Arbitrator. A certified copy of the order of the* Indian Council of Arbitration/President of the Institution of Engineers (India)/The International Centre for Alternative Disputes Resolution (India), making such an appointment shall be furnished to each of the parties.</li> <li>(c) Arbitration may be commenced prior to or after completion of the Works, provided that the obligations of the Employer, the Project Manager, the Contractor and the Adjudicator shall not be altered by reason of the arbitration being conducted during the progress of the Works.</li> <li>(d) Arbitration proceedings shall be held at <b>New Delhi</b> and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.</li> <li>(e) The decision of the majority of Arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation, etc. of its proceedings as also the fees and expenses paid to the Arbitrator</li> </ul> |

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|                        | <p>appointed by such party or on its behalf shall be borne by each party itself.</p> <p>(f) Deleted</p> <p>(g) The Arbitrator should give final award within 180 days of starting of the proceedings</p> <p>(h) Performance under the contract shall continue during the arbitration proceedings and payments due to the contractor by the Employer shall not be withheld, unless they are the subject matter of the arbitration proceedings.</p>   |
| <b>B. Time Control</b> |   |
| <b>GCC 26.1</b>        | The Contractor shall submit for approval a Program for the Works within 14 days of delivery of the Letter of Acceptance.  |
| <b>GCC 26.2</b>        | <p>ESHS Reporting</p> <p>Inserted at the end of GCC 26.2</p> <p>“In addition to the progress report, the Contractor shall also provide a report on the Environmental and Social (ES) metrics set out in Appendix B. In addition to Appendix B reports, the Contractor shall inform the Project Manager immediately of any allegation, incident or accident in the Site, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer’s Personnel or Contractor’s Personnel. This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; or any allegation of SEA. In case of SEA, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, or sexual assault), gender and age of the person who experienced the alleged incident should be included in the information.</p> <p>The Contractor, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Project Manager of any such incident or accident on the Subcontractors’ or suppliers’ premises relating to the Works which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer’s Personnel or Contractor’s, its Subcontractors’ and suppliers’ personnel. The notification shall provide sufficient detail regarding such incidents or accidents. The Contractor shall provide full details of such incidents or accidents to the Project Manager within the timeframe agreed with the Project Manager.</p> <p>The Contractor shall require its Subcontractors to immediately notify the Contractor of any incidents or accidents referred to in this Sub-clause.”</p> |
| <b>GCC 26.3</b>        | <p>The period between Program updates is 90 days.</p> <p>The amount to be withheld for late submission of an updated Program is Rs. 500,000</p>   |

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| <b>GCC 26.4</b>           | Any revision in Program should only be agreed in writing.  |
| <b>GCC 27.1</b>           | Intended Completion Date: The Intended Completion Date is Three years from the “Date of Commencement of Services ( <b>Quantity Based Dredging</b> )”.  |
| <b>GCC 27.2</b>           | <p>Extension of Contract beyond Three ( 3) Years</p> <p>The Contract is extendable for further period of 2 Years based on satisfactory performance. For the purpose of rates, the same shall be worked out based on the average of the lump sum quoted amounts for three years in the awarded cost (their bid) with existing Terms and Conditions. Price Adjustment shall be payable as per existing Terms &amp; Conditions for this extended period.</p>  |
| <b>GCC 30</b>             | Venue of management meeting will be IWAI – NOIDA   |
| <b>C. Quality Control</b> |  |
| <b>GCC 34.3</b>           | The Defects Liability Period is: [NIL ] days. – Not Applicable   |
| <b>D. Cost Control</b>    |  |
| <b>GCC 37</b>             | the payment shall be based on actual certified quantities. Based on Pre-& Post Survey.   |
| <b>GCC 38.2</b>           | <p>In GCC 38.2, add the following after the first sentence:</p> <p>“The Contractor shall also provide a description of the varied work performed or to be performed, including details of the resources and methods adopted or to be adopted by the Contractor, and sufficient ES information to enable an evaluation of ES risks and impacts of the Variation.”</p> <p>“The Contractor shall also provide information of any ESHS risks and impacts of the Variation.”</p>  |
| <b>GCC 40.1</b>           | <p>GC 40.1 to be read as:</p> <p><b>Payment: Quantity Based dredging</b></p> <p>The Contractor shall submit monthly Running Account Bills (RA Bills) on or before 10<sup>th</sup> of the month for the quantity and / or work executed for the month. The Contractor shall be paid monthly as per the RA Bills submitted for the quantity dredged on certified quantities with all obligations completed within one month from submission of bill.</p> <p>The contractor will submit the RA Bill in triplicate for shoal dredged corresponding to a length and quantity to the Engineer-in-Charge, which could be decided after the pre and post dredging survey depending on length of shoal to be dredged.</p> <p>The running bills for dredging shall be accompanied with 3 sets each of pre and post</p> |

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|                 | dredging survey charts and also detailed calculations of dredging quantity (both area of shoal and volume dredged also including the width of the channel).   |
| <b>GCC 40.3</b> | <p><b>Measurements during Quantity Based dredging</b></p> <p>The quantity of dredged materials during quantity-based dredging period, progress shall be measured by pre and post dredging surveys in 1:1200 scale.</p> <p>If a shoal is completed more than a single cycle of the billing, then the dredging quantity for the purpose of monthly bill shall be as per actual quantity dredged as per Pre-Post Survey &amp; the 6% of the bill shall be retained towards retention.</p> <p>However, this retention money shall be released after completion of the shoal to the satisfaction of EIC.</p>   |
| <b>GCC 40.7</b> | <p>Add new GCC 40.7:</p> <p>“40.7 if the Contractor was, or is, failing to perform any ESHS obligations or work under the Contract, the value of this work or obligation, as determined by the Project Manager, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Project Manager, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following:</p> <ul style="list-style-type: none"> <li>(i) failure to comply with any ESHS obligations or work described in the Works’ Requirements which may include: working outside site boundaries, excessive dust, failure to keep public roads in a safe usable condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion;</li> <li>(ii) failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ESHS issues, or anticipated risks or impacts;</li> <li>(iii) failure to implement the C-ESMP e.g. failure to provide required training or sensitization;</li> <li>(iv) failing to have appropriate consents/permits prior to undertaking Works or related activities;</li> <li>(v) failure to submit ESHS report/s (as described in Appendix C), or failure to submit such reports in a timely manner;</li> <li>(vi) failure to implement remediation as instructed by the Engineer within the specified timeframe (e.g. remediation addressing non-compliance/s).</li> </ul> |
| <b>GCC 41.1</b> | <p>The Payment of the Contract Price will be made in – INR</p> <p>The amount, exclusive of GST which will be payable extra by the Employer as legally</p>   |

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|                                | <p>applicable, in INR</p> <p>Interest rate for Delayed payment is for Local currency: SBI Prime Lending Rate + 2% per annum.</p>   |  |   |                  |
| <b>GCC 41.4</b>                | <p>Add new GCC 41.4</p> <p>During the non-working season, when dredgers is idle due ti non-availability of Shoal a payment of Rs 5.00 Lacs ( Five Lacs) per Dredger deployed shall be paid by the employer, which shall be recovered from the subsequent bills of working seasons.</p> <p>This payment shall be recovered in full from next RA Bill for the actual work executed.</p>  |  |   |                  |
| <b>GCC 45.1 &amp; 45.1 (h)</b> | <p><b>Price Adjustment:</b></p> <p>The contract “is” subject to price adjustment in accordance with GCC Clause 45 and following information regarding coefficients [specify “does” or “does not” apply] [Price adjustment is mandatory for all contract with completion time exceeding 18 months.]</p> <p>The price Adjustment will be done monthly basis</p> <p>The amounts certified in each Running Account Bill/payment certificate, after deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the amounts due to the Operator.</p> <p>The Price adjustment factor for the Works &amp; Services rendered in a month shall be determined using the coefficients/weightings of relevant Indices as under:</p> |  |   |                  |
|                                | <b>Index</b>   | <b>Index Description</b>   | <b>Source of Index</b>  | <b>Weightage</b> |
|                                | L  | <b>Labour</b> –All India (CPI) Consumer Price Index for Industrial Workers | Labour Bureau, Ministry & Employment, Government of India                             | 0.278            |
|                                | F  | <b>High Speed Diesel</b> -All India Wholesale Price Index                  | Office of the Economic Advisor to the Govt. of India. Ministry of Commerce & Industry | 0.50             |
|                                | <p><b>Price Adjustment Factor <math>P_c = 0.222 + 0.278 \times L_m/L_0 + 0.50 \times F_m/F_0</math></b></p> <p>Price Adjustment for Works &amp; Services rendered in a month = <math>R \times (P_c - 1)</math></p> <p>where</p> <p><math>L_m</math> = CPI for the month in which the Works &amp; Services have been provided</p> <p><math>L_0</math> = CPI for the month preceding the deadline for bid submission</p> <p><math>F_m</math> = WPI for the month in which the Works &amp; Services have been provided</p> <p><math>F_0</math> = WPI for the month preceding the deadline for bid submission</p>  |  |   |                  |

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|                 | R = Running Account Bill amount for Works & Services rendered in a month after making deductions (a) as stipulated in PC 47.1.1 for failure to achieve LAD and Channel Bottom Width, and (b) towards repayment of Advance Payment.  |
| <b>GCC 46.1</b> | <p>The proportion of payments retained (Retention Money) shall be 6% from each bill subject to the maximum of 5% of final contract price.</p> <p>Which shall be released after completion of dredging of a particular shoal and issuance of completion certificate of that Shoal by EIC.</p>  |
| <b>GCC 47.1</b> | <p><b><i>The liquidated damages for the whole of the Works are 10% ( TEN Percent) of the final Contract Price. The Quantity of 16.32 Lac Cum is to be dredged during the lean season of ( 7) seven months ( November to May ) except for flood seasons ( June to October) for the contract period Up to Three ( 3) Years</i></b></p> <ol style="list-style-type: none"> <li>The Engineer in-charge or his representative will allocate the next shoal to be dredged along with the pre-dredging survey chart and estimated quantity to be dredged along with the estimated time of completion of that shoal.</li> <li>After the pre-dredging survey is carried out and quantity of dredging and time required for dredging is assessed, EIC will intimate the same in writing to the contractor.</li> <li>If the contractor fails to maintain the required progress or to complete the shoal allocated within the estimated time of completion or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the authority on account of such breach, pay as agreed liquidated damages the amount calculated at the rates stipulated here under.</li> <li>The liquidated damages will be calculated on the delay of particular location (shoal) on the value of dredging carried out on that location (shoal). <ol style="list-style-type: none"> <li>Liquidated Damages- For the first one month after the end date of the shoal LD @ 1.5% per month (pro-rata on day basis) will be levied. This will be computed on the value of the dredging to be carried out on <b>that location (Shoal)</b>.<br/>Thereafter i.e. delay more than one month will attract LD @ 1.5 % per month of delay on <b>contract value</b> and to be computed on per day basis</li> </ol> </li> <li>Provided always that the total amount of compensation for delay to be paid under this condition <b>shall not exceed 10% of the Awarded Value of work.</b></li> <li>Engineer-In- Charge's decision in writing shall be final &amp; binding, may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified or that the work remains incomplete.</li> <li>Engineer-in-charge will make available to the contractor the site to enable the contractor to commence &amp; proceed with the execution of the work in accordance with agreed program. If there is any delay in making available any area of the</li> </ol> |

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|                   | <p>work the EIC shall grant reasonable extension of time for completion of work. But the contractor shall not claim any compensation whatsoever on this account.</p> <p>h. The amount of liquidated damages may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the authority.</p> <p>i. <i>The condition of persistent failure to execute the CONTRACT, and when the Total Amount of the Payment reduction &amp; Liquidated Damages applied under the contract reach's TEN ( 10 % ) percent of the Contract Amount, the owner reserves the right to issue the NOTICE OF TERMINATION OF CONTRACT.</i></p>  |
| <b>GCC 47.1.2</b> | <p><b>Fore Closure of Contract</b></p> <p>If at any time after acceptance of the tender the Authority decides to abandon or reduce the scope of the works for reasons whatsoever and hence does not require the whole or any part of the works to be carried out, the Engineer-in-Charge (with the prior approval of competent authority) shall give notice in writing to that effect to the contractor.</p> <p>However, pro-rata payment shall be made for the completed works, as agreed mutually.</p>  |
| <b>GCC 48.1</b>   | <b>Deleted</b>  |
| <b>GCC 49.1</b>   | <p>The amount of the Advance Payment is ten (10) percent of the Contract Price. The Advance payment will be made after verification of the unconditional Bank Guarantee submitted against Advance Payment Security.</p> <p><b>Repayment of Advance:</b></p> <p>The advance shall be recovered in equal 24 Months from the monthly Running Account bills submitted from the 2<sup>nd</sup> RA Bill from the Date of Commencement / Mobilization of Works irrespective of the RA bill amount. In case, the monthly RA bill for any month is less than the advance amount to be recovered, then the same shall be recovered from the subsequent RA bill along with the recovery of advance for that month.</p> <p>If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination of the Contract, the whole of the balance then outstanding shall immediately become due and payable by the Contractor to the Employer.</p> <p>The advance payment security (demand guarantee) shall be issued by a reputable bank or financial institution selected by the Contractor and shall be in the Advance Payment Security Form included in Contract Forms, or in another form approved by the Employer.</p> <p>The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been fully repaid.</p> <p>The amount of the security shall be reduced in proportion to the value of the Works and Services executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has</p> |

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|                   | <p>been recovered by the Employer. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid. The security shall be returned to the Contractor immediately after its expiration.</p>  |
| <b>GCC 50.1</b>   | <p>An Environmental, Social, Safety and Health (ESHS) Performance Security shall be provided to the Employer.]</p> <p>The Performance Security and an Environmental, Social, Safety and Health (ESHS) Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in the amounts specified in the PCC (for GCC 50.1), and shall be issued by a Nationalized or Scheduled bank in India. The Performance Security including additional security for unbalanced bids, and the ESHS Performance Security, shall be valid until a date 28 days from the date of issue of the Certificate of Completion.”</p>   |
| <b>GCC 50.1.1</b> | <p>The Performance Security of shall be submitted in two separate Bank Guarantees in the Standard Form of Bank Guarantee of the Employer as detailed here under.</p> <ul style="list-style-type: none"> <li>(ii) The Performance Security amount is <b>5% percent</b> of the Contract Amount</li> <li>(iii) Environmental, Social, Health and Safety (ESHS) Performance Security amount is <b>1.5 Percent</b> of Contract Amount.</li> <li>(iv) Plus additional security for unbalanced bids ( if any) to be decided during evaluation of bids and informed to Bidders at the time of Pre-award discussions.</li> </ul> <p><i>“ The Bank Guarantee issued in paper form shall become operative only when the Bank Guarantee advice transmitted through SFMS is advised to the Beneficiary by the Advising Bank.</i></p> <p><i>The details of the Advising Bank are as under:-</i></p> <p><i>Name of the Bank: Canara Bank</i></p> <p><i>Branch Name &amp; Address: Morna Noida, B 16/17, Ground Floor</i><br/> <i>Sector-18 , Noida ( 2013010 U.P</i></p> <p><i>IFSC Code: CNRB0018778.</i></p> <p>The standard forms of Performance Security, and if applicable ESHS performance security, acceptable to the Employer shall be unconditional Bank Guarantees from Scheduled or Nationalized banks in India of the types as presented in Section X of the Bidding Documents.</p> <p>Throughout this bidding document the term 'performance security', unless the context clearly indicates otherwise, means and includes both 'the performance security and the ESHS performance security' to be submitted by the successful bidder in the amounts specified above.</p> <p>The Performance Security shall be issued by a reputable bank or financial institution</p> |

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|                                  | <p>selected by the Contractor, and shall be in the Performance Security Form included in Section IX, Annex to the Particular Conditions – Contract Forms, or in another form approved by the Employer. The ESHS Performance Security shall be issued by a reputable bank selected by the Contractor, and shall be in the ESHS Performance Security Form included in Section IX, Annex to the Particular Conditions – Contract Forms, or in another form approved by the Employer. A foreign institution providing a Performance Security or ESHS Performance Security shall have a correspondent financial institution located in the Employer’s Country. The performance security and the ESHS performance security, of a Joint Venture shall be in the name of the Joint Venture specifying the names of all the members.</p> <p>The Contractor shall ensure that the Performance Security and the ESHS Performance Security are valid and enforceable until the Contractor has executed and completed the Works and Services and other obligations (including defect liability and satisfactory performance of the ESHS obligations) under the Contract. If the terms of the Performance Security and ESHS Performance Security specify expiry dates, and the Contractor has not yet executed and completed the Works and Services and other obligations under the Contract, by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security and the ESHS Performance Security until the Works and Services and all other obligations under the Contract have been completed.</p> <p>The term ‘performance security’, unless the context clearly indicates otherwise or unless the ESHS performance security is not required to be submitted, means and includes both ‘the performance security and the ESHS performance security’ submitted by the successful bidder..</p> |
| <b>E. Finishing the Contract</b> |   |
| GCC 54.1                         | <p>Taking over - Not Applicable.</p> <p>Partial completion shall not be accepted, and no partial completion certificate shall be issued.</p>  |
| GCC 56.1 & 56.2                  | <p>Not Applicable</p> <p>The operating and Maintenance manuals &amp; as built drawing are not required</p>  |
| GCC 57.2(l)                      | <p>Hiding any information regarding changes in roles and responsibilities of JV members, which is not authorized by the Employer, shall also be treated as violation of Appendix A to General Conditions (Fraud and Corruption).</p>  |
| GCC 57.6                         | <p>Foreclosure of Contract - Added</p> <p>If at any time after acceptance of the tender the Authority decides to abandon or reduce the scope of the works for reasons whatsoever and hence does not require the whole or any part of the works to be carried out, the Engineer-in- Charge (with the prior approval of competent authority) shall give notice in writing to that effect to the contractor. However, pro-rata payment shall be made for the completed works, as agreed mutually</p>   |

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| <b>GCC 57.2 (g)</b>   | deleted  |
| <b>GCC 58.1</b>   | The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is 20%.  |
| <b>GCC 59.1</b>   | Not Applicable   |
| <b>In addition to be above, the following shall also form part of GCC / SCC</b> |  |
| <b>GCC 62.0</b><br>Force Majeure  | <p>62.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, insofar as they directly affect the execution of the Services and Works included in this Contract and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:</p> <ul style="list-style-type: none"> <li>(a) war, hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war;</li> <li>(b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts;</li> <li>(c) confiscation, nationalization, mobilization, commandeering, requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority;</li> <li>(d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague;</li> <li>(e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster;</li> <li>(f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.</li> </ul> <p>62.2 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.</p> <p>62.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GC Clause 64.</p> <p>62.4 The party or parties affected by the event of Force Majeure shall use reasonable</p> |

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|   | <p>efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under GC Sub-Clause 38.6.</p> <p>62.5 No delay or nonperformance by either party hereto caused by the occurrence of any event of Force Majeure shall</p> <ul style="list-style-type: none"> <li>(a) constitute a default or breach of the Contract;</li> <li>(b) give rise to any claim for damages or additional cost or expense occasioned thereby;</li> </ul> <p>if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.</p> <p>62.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which either party may terminate the Contract by giving a notice to the other, but without prejudice to either party's right to terminate the Contract under GC Clause 59.</p> <p>62.7 In the event of termination pursuant to GC Sub-Clause 38.6, the rights and obligations of the Employer and the Contractor shall be as specified in GC Sub-Clauses 59.1.2 and 59.1.3.</p> <p>62.8 Notwithstanding GC Sub-Clause 38.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.</p> |
| <b>GCC 63</b><br><b>Surveys and Levels</b>    | <p>63.1 Before the works of any part thereof begin, the Contractor shall survey and take levels of the site of the works both above and below water level / Chart Datum level, and agree all particulars on which the measurements of the works are to be based. Such particulars shall be recorded and after agreement; the drawings shall be signed by the Employer / Engineer-In-Charge and the Contractor. Similar procedure is to be followed in post dredging survey.</p> <p>63.2 Failing such surveys and agreements being prepared and/or signed by the Contractor, the survey carried out by the Engineer shall be final and binding on the Contractor.</p>   |
| <b>GCC 64</b><br><b>Setting out the Works</b> | <p>64.1 The Employer shall furnish the relevant existing grid points with bench Mark with reference to permanent bench marks. It shall be Contractor's responsibility to the set out the necessary central points on land and to set out alignment. The Contractor shall have in his employees, an efficient survey team for this purpose and the accuracy of such setting out works shall be Contractor's sole responsibility.</p> <p>64.2 Before beginning the work the Contractor shall work out the control points on ground which, are pre requisite for carrying out hydrographic surveys, accurately,</p>   |

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|   | <p>with suitable markers as approved by Employer. All these points and markings shall be checked and approved by Employer's Representative before starting the work.</p> <p>64.3 The Contractor shall also provide necessary equipment, labour and other facilities for proper checking of triangulation / bench mark stations and inspection of the points during the survey and dredging operations at no cost to the Employer.</p> <p>64.4 The Contractor shall give Engineer-in Charge not less than 24 hours' notice in writing of his intention to set out or give levels for any part of the works so that arrangements may be made for checking the work.</p> <p>64.5 Work shall be suspended for such times as necessary for checking lines and levels on any part of the works.</p> <p>64.6 The Contractor shall at his own expense provide all assistance which Engineer-in Charge may require for checking the setting out.</p>   |
| <p><b>GCC 65</b></p> <p><b>Conditions for Dredging Operations</b></p> | <p>65.1 No shifting charges will be paid to the contractor for shifting the dredger and its accessories from one shoal to another shoal or from one area / canal to another area / canal specified above.</p> <p>65.2 Normal barge and vessels / crafts movement in the channel shall not be interrupted by the dredging operation.</p> <p>65.3 The decision of EIC to accept the work done with or without the Liquidated damages shall be final and binding.</p> <p>The measurement of depth in the navigation channel shall be carried out by conducting Thalweg surveys every fortnight jointly by the Contractor and the representative of IWAI under the supervision of Engineer-in-charge or his nominee &amp; its chart should be plotted by the contractor in presence of Engineer representatives. In case of shortcomings observed by the Engineer-in-charge or his nominee, the cross-sectional survey is to be carried out and the cross-sectional interval shall be 10 m apart and soundings shall be taken continuously and plotted at 4 m interval on the cross-section. The cross-section shall be extended up to 20 m beyond the limits of the channel on either side.</p> <p>65.4 No idle time charges will be paid to the contractor on any account. Local issues / hindrances, if any, would be addressed by the Contractor. IWAI would facilitate with local/govt. agencies.</p> <p>65.5 The Contractor shall arrange the transits, buoys, lights, mooring etc. at their own cost as required for dredging and also for cautioning other vessels in the waterway.</p> <p>65.6 The Employer / Engineer-in-charge or his representative will inspect, co-ordinate, measure and certify the dredging work. He has the right to inspect at any time during the contract period for which contractor's authorized agent shall be available at site during such inspection.</p> <p>65.7 The Contractor shall provide the boat from shore to dredger and back to shore</p> |

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|  | <p>during inspection &amp; supervision by the Employer / Engineer-in-Charge or his representative.</p> <p>65.8 The Contractor may execute the work round the clock and on all days including Sundays and Public Holidays except National Holidays subject to such restriction as may be imposed by State Govt./local body.</p> <p>65.9 If the Contractor's personnel or any outside labour employed to work during execution of Contract, breaks or damages / destroys any vessel, craft, net, fishing stakes etc. building, road, kerb, water pipe, fence, bund, wires, trees, crop, fruit or cultivated ground during the period of agreement, the same shall be made good by the Contractor at his own expenses or in default the IWAI may cause the same to be made good by other sources and deduct the expenses from any sums that may be then or at any time thereafter may become due to the contractor.</p> <p>65.10 The rate of dredging quoted per cum will squarely and totally include all the charges to be paid to the contractor by the Authority. The rate quoted shall include all taxes, duties and any other levies. No additional payment on any such account shall be payable by IWAI. No extra charges for the idling the dredger during the monsoon period will be paid to the Contractor. However, GST which will be quoted separately by the Bidder will be reimbursed to the Bidder on producing proofs of payment.</p> <p>65.11 The right to award / split up work or to reject the offer without assigning any reason is reserved with the Authority.</p> <p>65.12 The Contractor will submit to the authority a bill in triplicate for channel dredged corresponding to a length/quantity acceptable to the Engineer-in-Charge which could be decided after the pre-dredging survey depending on length of each shoal to be dredged. The bills shall be accompanied with 3 sets each of pre and post dredging survey charts and also detailed calculations on dredging quantity.</p> <p>65.13 The Contractor is fully responsible for solving the disputes with the local fishermen w.r.t. removal of fishing nets, stakes, from the dredged channel. Similarly, all disputes with regard to the dumping of dredge spoil, any prior permission or arrangement on deemed fit for avoiding bank erosion or damage to any property or agriculture would be handled by contractor. The Authority shall not be responsible for solving the disputes related to execution of the dredging. However, on request IWAI may extend the assistance for solving the issues only through the concerned official/dept. of the state or local bodies.</p> <p>65.14 The Contractor shall be responsible for finding out the dumping area in consultation with state PWD &amp; IWAI. Any arrangement with respect to the bund around the identified dumping area is to be made by the Contractor at his cost. Any dispute with local, land owner on the dumping of dredging spoil to be sorted out by the Contractor.</p> <p>65.15 The contractor may change the type, numbers, size and make of dredgers</p> |
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|  | <p>indicated in the proposal with the prior written approval of the Engineer-in-charge with the sole objective to increase the dredging capacity &amp; improving the progress.</p> <p>65.16 If the dredger goes out of order, the contractor should arrange for replacement of the same with a similar capacity and suitable dredger with the approval of EIC to ensure continuity of work.</p> <p>65.17 The Employer may engage the agency on behalf of the Contractor as per the state/central Govt organization on pollution or coastal management authority to carry out the test of the dredged material at regular interval for the regulating the dumping activities. In case of any adverse report, the Contractor shall comply the instruction of EIC.</p> <p>65.18 During execution of the work, if any environmental degradation occurs, consequent on dumping of dredged material, re-conveyance of the material shall be done by the Contractor at his cost, without claiming additional payment from IWAI.</p> <p>65.19 If the dredging is stopped continuously for more than 3 days due to law and order, the Contractor has to report to EIC the same and take actions mutually in accordance with prevailing local laws for removal of such problem and proceeding further with the work to mutual benefit.</p> <p>65.20 Any charge incurred on testing of the dredged material, testing / analyzing the quality of water for adopting environmental safe guards, minimizing detrimental impacts, enhancing the beneficial aspects of the project and for effective management of the environmental resources affected by the project shall be met by the Contractor. No additional charges on any account shall be payable by IWAI.</p> <p>65.21 In case of any anomaly with reference to interfacing chain age and interfacing of the issues relating to execution amongst the adjacent contractors, decision of EIC would be final and binding on both the adjacent contractors executing the project.</p> <p>65.22 In case the dredged quantity is in excess of 20% of the estimated quantity in pre dredging survey, the report of the same along with all relevant details are to be referred to the Engineer-in-Charge. This Reporting and referring to the Engineer-in-Charge is to be done within 15 days of part completion or completion of the shoal. No dispute, whatsoever arising thereafter will be entertained on this account</p> |
| <b>GCC 66<br/>Standard and<br/>Standard<br/>Products</b> | <p><b>66.1 Standards</b></p> <p>Save in so far otherwise specified in the Contract the relevant provisions of the appropriate Bureau of Indian Standards shall apply for all materials and workmanship. Where BIS Standards may not be available, the following Standards shall also be referred to and adopted.</p>   |

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|  | <ul style="list-style-type: none"> <li>- BS : British Standard Specification</li> <li>- CP : British Standard Code of Practice</li> <li>- ASTM : Standard of American Society for Testing Materials.</li> </ul> <p><b>66.2Standard Products</b></p> <p>If mention is made in the Contract of named products of individual manufacturers, this is an indication of the standard type and workmanship of goods, which are satisfactory to the Engineer. The Contractor may substitute similar products of at least equal quality and suitability, subject to the approval of the Engineer.</p> <p>Proposals by the Contractor for the supply of manufactured products shall be accompanied by certification that the manufacturer's products are approved by the relevant standards authority.</p> |
|  | <b>Appendix-I Salient features of Labour &amp; Environment Protection Laws.</b>  |
|  | <b>Appendix-II Salient features of some of the Major Laws that are Applicable for Protection of Environment.</b>   |
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## Appendix 1

### **Salient Features of Labour & Environment Protection Laws<sup>37</sup>**

#### **SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK**

- (a) Employees Compensation Act 1923: The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment.
- (b) Payment of Gratuity Act 1972: gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- (c) Employees P.F. and Miscellaneous Provision Act 1952 (since amended): The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
  - (i) Pension or family pension on retirement or death, as the case may be.
  - (ii) Deposit linked insurance on the death in harness of the worker.
  - (iii) Payment of P.F. accumulation on retirement/death etc.
- (d) Maternity Benefit Act 1961: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- (e) Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013: This Act defines sexual harassment in the workplace, provides for an enquiry procedure in case of complaints and mandates the setting up of an Internal Complaints Committee or a Local Complaints Committee
- (f) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.
- (g) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.

<sup>37</sup>This list is only illustrative and not exhaustive. Bidders and Contractors are responsible for checking the correctness and completeness of the list. The law as current on the date of bid opening will apply.

- (h) Payment of Wages Act 1936: It lays down the mode, manner and by what date the wages are to be paid, what deductions can be made from the wages of the workers.
- (i) Equal Remuneration Act 1976: The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- (j) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. Some of the State Governments have reduced this requirement from 20 to 10. The Act provides for payments of annual bonus subject to a minimum of 8.33% of the wages drawn in the relevant year. It applies to skilled or unskilled manual, supervisory, managerial, administrative, technical or clerical work for hire or reward to employees who draw a salary of Rs. 10,000/- per month or less. To be eligible for bonus, the employee should have worked in the establishment for not less than 30 working days in the relevant year. The Act does not apply to certain establishments.
- (k) Industrial Disputes Act 1947: the Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations, a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- (l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- (m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in the Building and Construction Industry.
- (n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.
- (o) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Building and Other Construction Workers Welfare Cess Act, 1996 (BOCWW Cess Act): All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under these Acts. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be notified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First –Aid facilities, Ambulance, Housing

accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

- (p) Factories Act 1948: the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing processes, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power.
- (q) Weekly Holidays Act -1942
- (r) Bonded Labour System (Abolition) Act, 1976: The Act provides for the abolition of bonded labour system with a view to preventing the economic and physical exploitation of weaker sections of society. Bonded labour covers all forms of forced labour, including that arising out of a loan, debt or advance.
- (s) Employer's Liability Act, 1938: This Act protects workmen who bring suits for damages against employers in case of injuries endured in the course of employment. Such injuries could be on account of negligence on the part of the employer or persons employed by them in maintenance of all machinery, equipment etc. in healthy and sound condition.
- (t) Employees State Insurance Act 1948: The Act provides for certain benefits to insured employees and their families in case of sickness, maternity and disablement arising out of an employment injury. The Act applies to all employees in factories (as defined) or establishments which may be so notified by the appropriate Government. The Act provides for the setting up of an Employees' State Insurance Fund, which is to be administered by the Employees State Insurance Corporation. Contributions to the Fund are paid by the employer and the employee at rates as prescribed by the Central Government. The Act also provides for benefits to dependents of insured persons in case of death as a result of an employment injury.
- (u) The Personal Injuries (Compensation Insurance) Act, 1963: This Act provides for the employer's liability and responsibility to pay compensation to employees where workmen sustain personal injuries in the course of employment.
- (v) Industrial Employment (Standing Order) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

## Appendix. II

**SALIENT FEATURES OF SOME OF THE MAJOR LAWS THAT ARE  
APPLICABLE FOR PROTECTION OF ENVIRONMENT.**

1. The Environment (Protection) Act, 1986 and as amended: This provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.
2. The Forest Conservation Act, 1980, as amended, and Forest (Conservation) Rules, 1981 as amended: These provides for protection of forests by restricting conversion of forested areas into non- forested areas and prevention of deforestation, and stipulates the procedures for cutting any trees that might be required by the applicable rules. Permissions under the Act also stipulates the norms and compliance requirements of the employer and any contractor on behalf of the employer.
3. State Tree Preservation Acts as may be in force: These provide for protection of trees of important species. Contractors will be required to obtain prior permission for full or partial cutting, uprooting, or pruning of any such trees.
4. The Wildlife (Protection) Act, 1972, and as amended: This provides for protection of wildlife through notifying National Parks and Sanctuaries and buffer areas around these zones; and to protect individuals of nationally important species listed in the Annex of the Act.
5. The Biological Diversity Act, 2002: This provides for conservation of biological diversity, sustainable use of components of biological diversity, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.
6. The Public Liability Insurance Act, 1991 as amended and The Public Liability Insurance Rules, 1991 as amended: These provide for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.
7. The Ancient Monuments and Archaeological Sites and Remains Act, 1958 and the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, the Ancient Monuments and Archaeological Sites and Remains Rules, 1959 amended 2011, the National Monuments Authority Rules, 2011 and the similar State Acts: These provide for conservation of cultural and historical remains found in India. Accordingly, area within the radii of 100m and 300m from the "protected property" are designated as "protected area" and "controlled area" respectively. No development activity (including building, mining, excavating, blasting) is permitted in the "protected area" and development activities likely to damage the protected property is not permitted in the "controlled area" without prior

permission of the Archaeological Survey of India (ASI) or the State Departments of Art and Culture or Archaeology as applicable.

8. The Environmental Impact Assessment Notification, 2006 and as amended: This provides for prior environmental clearance for new, modernization and expansion projects listed in Schedule 1 of the Notification. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any environmental management plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
9. The Water (Prevention and Control of Pollution) Act, 1974 as amended, and the Water (Prevention and Control of Pollution) Rules, 1975 as amended: These provide for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates waste water, and observe the required standards of establishment and operation of these items of work or installations; as well as install and operate all required waste water treatment facilities.
10. The Water (Prevention and Control of Pollution) Cess Act, 1977 and The Water (Prevention and Control of Pollution) Cess Rules, 1978: These provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution under the Water (Prevention and Control of Pollution) Act, 1974.
11. The Air (Prevention and Control of Pollution) Act, 1981 as amended, and the Air (Prevention and Control of Pollution) Rules, 1982: These provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates air pollution such as batching plants, hot mix plants, power generators, backup power generation, material handling processes, and observe the required standards of establishment and operation of these items of work or installations.
12. Noise Pollution (Control and Regulation) Rules, 2000, and as amended: This provides for standards for noise for day and night for various land uses and specifies special standards in and around sensitive receptors of noise such as schools and hospitals. Contractors will need to

- ensure compliance to the applicable standards, and install and operate all required noise control devices as may be required for all plants and work processes.
13. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996: This provides for Requirement of preparation of on-site and off-site Disaster Management Plans for accident-prone areas.
  14. The Explosives Act 1884 and the Explosives Rules, 2008: These provide for safe manufacture, possession, sale, use, transportation and import of explosive materials such as diesel, Oil and lubricants etc.; and also for regulating the use of any explosives used in blasting and/or demolition. All applicable provisions will need compliance by the contractors.
  15. The Petroleum Rules, 2002: This provides for safe use and storage of petroleum products, and will need to be complied by the contractors.
  16. The Gas Cylinder Rules 2004 and amendments: This provides for regulations related to storage of gas, and possession of gas cylinder more than the exempted quantity. Contractors should comply with all the requirements of this Rule.
  17. Manufacture, Storage and Import of Hazardous Chemical Rules of 1989 and as amended: These provide for use and storage of hazardous material such as highly inflammable liquids like HSD/LPG. Contractors will need to ensure compliance to the Rules; and in the event where the storage quantity exceeds the regulated threshold limit, the contractors will be responsible for regular safety audits and other reporting requirements as prescribed in the Rules.
  18. Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016: These provide for protection of general public from improper handling storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal. Contractors will need to obtain permission from the State Pollution Control Boards and other designated authorities for storage and handling of any hazardous material; and will to ensure full compliance to these rules and any conditions imposed in the permit.
  19. The Bio Medical Waste Management Rules, 2016: This provides for control, storage, transportation and disposal of bio-medical wastes. As and where the contractor has any first aid facility and dispensaries, established in either temporary or permanent manner, compliance to these Rules are mandatory.
  20. Construction and Demolition Waste Management Rules, 2016: This provides for management of construction and demolition waste (such as building materials possible to be reused, rubble and debris or the like); and applies to all those waste resulting from construction, re-modelling, repair or demolition of any civil structure. Contractor will need to prepare a waste disposal plan and obtain required approval from local authorities, if waste generation is more than 20 tons in any day or 300 tons in any month during the contract period; and ensure full compliance to these rules and any conditions imposed in the regulatory approval.

21. The E-Waste (Management) Rules, 2016: This provides for management of E-wastes (but not covering lead acid batteries and radio-active wastes) aiming to enable the recovery and/or reuse of useful material from e-waste, thereby reducing the hazardous wastes destined for disposal and to ensure the environmentally sound management of all types of waste of electrical and electronic equipment. This Rule applies to every manufacturer, producer, consumer, bulk consumer, collection centers, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational.
22. Plastic waste Management Rules, 2016: This provides for control and management of the plastic waste generated from any activity. Contractors will ensure compliance to this Rule.
23. The Batteries (Management and Handling) Rules 2001: This provides for ensuring safe disposal and recycling of discarded lead acid batteries likely to be used in any equipment during construction and operation stage. Rules require proper control and record keeping on the sale or import of lead acid batteries and recollection of the used batteries by registered recyclers to ensure environmentally sound recycling of used batteries. Contractors will ensure compliance to this Rule.
24. The Ozone Depleting Substances (Regulation and Control) Rules, 2000 and as amended: This provides for regulation of production and consumption of ozone depleting substances in the country, and specifically prohibits export to or import from countries not specified in the Rules, and prohibits unless specifically permitted, any use of ozone depleting substance.
25. The Coastal Regulation Zone Notifications, 1991 and as amended: This provides for regulation of development activities within the 500m of high tide line in coastal zone and 100m of stretches of rivers and estuaries influenced by tides. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
26. The Motor Vehicle Act 1988 as amended (and State Motor Vehicle Acts as may be in force) and the Motor Vehicle Rules, 1989, and as amended (and State Motor Vehicle Rules as may be in force): To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution. Contractors will be required to ensure full compliance to these rules.
27. Easement Act, 1882: This provides for the rights of landowners on groundwater. Contractors will need to ensure that other landowners' rights under the Act is not affected by any groundwater abstraction by the contractors.
28. State Groundwater Acts and Rules as may be in force and the Guidelines for Groundwater Abstraction for drinking and domestic purposes in Notified Areas and Industry/Infrastructure project proposals in Non-Notified areas, 2012: These provide for regulating extraction of

ground water for construction/industrial and drinking and domestic purposes. Contractors will need to obtain permission from Central/State Groundwater Boards prior to groundwater abstraction through digging any bore well or through any other means; and will to ensure full compliance to these rules and any conditions imposed in the permit.

29. The Mines Act, 1952 as amended; the Minor Mineral and concession Rules as amended; and the State Mineral (Rights and Taxation) Acts as may be in force: These provide for for safe and sound mining activity. The contractors will procure aggregates and other building materials from quarries and borrow areas approved under such Acts. In the event the contractors open any new quarry and/or borrow areas, appropriate prior permission from the State Departments of Minerals and Geology will need to be obtained. Contractors will also need to ensure full compliance to these rules and any conditions imposed in the permit.
30. The Insecticides Act, 1968 and Insecticides Rules, 1971 and as amended: These provide for regulates the manufacture, sale, transport, distribution, export, import and use of pesticides to prevent risk to human beings or animals, and for matters connected therewith. No one should import or manufacture; sell, stock or exhibit foe sale; distribute, transport, use: (i) any misbranded insecticides, (ii) any insecticide the sale, distribution or use of which is for the time being prohibited under the Act; and (iii) any insecticide except in accordance with the condition on which it was registered under the Act.
31. National Building Codes of India, 2005 and as amended: This provides guidelines for regulating the building construction activities in India. The code mainly contains administrative regulations, development control rules and general building requirements; stipulations regarding materials, structural design and construction; and building and plumbing services. Contractors will be required to comply with all Bureau of Indian Standards Codes dealing with: (i) use and disposal of asbestos containing materials in construction; (ii) paints containing lead; (iii) permanent and temporary ventilations in workplace; (iv) safety, and hygiene at the workplace; (v) prevention of fire; (vi) prevention of accidents from faulty electrical gadgets, equipment and accessories; and all other such codes incidental to the Contract.

### **Appointment of Adjudicator**

#### **Suggested Draft of Letter of Appointment of Adjudicators in civil works contracts**

Sub: \_\_\_\_\_ (Name of the Contract)

#### **To**

Name and address of the Adjudicator

We hereby confirm your appointment as Adjudicator for the above contract to carry out the assignment specified in this Letter of Appointment.

For administrative purpose \_\_\_\_\_ (*name of the officer representing the Employer*) has been assigned to administer the assignment and to provide the Adjudicator with all relevant information needed to carry out the assignment on behalf of both the Employer and the contractor. The services will be required during the period of contract for the work of (Name of the Contract) \_\_\_\_\_.

The Adjudicator shall visit the worksite once in 3 (three) months till the completion of the work indicated above or as specifically requested by Employer/ Contractor for the period upto the end of defects liability period with prior intimation to the Employer and the contractor. The duration of each visit shall ordinarily be for one day only. These durations are approximate and (*Name of the Employer and Name of the Contractor*) may find it necessary to postpone or cancel the assignment and/or shorten or extend the duration.

The appointment will become effective upon confirmation of letter by you. The appointment of Adjudicator shall be liable for termination under a 30 (thirty) days written notice from the date of issue of the notice, if both Employer and the Contractor so desire. Also the appointment shall automatically stand terminated 14 days after the defect notice / correction period as stated in Clauses 23 and 24 of the Conditions of Contract is over.

The Adjudicator will be paid a fee of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) per each day of visit at the worksite. The actual expenses for boarding and traveling in connection with the assignment will be reimbursed to the Adjudicator. The Adjudicator will submit a pre-receipted bill in triplicate to the Employer indicating the date of the visit, fees for the visit and a proof in support of the actual expenditure [only for items valued above Rs. 200 each] incurred by him against boarding, lodging and traveling expenses after performing the visit on each occasion. The Employer will make the admissible payment (both the Employer's and the Contractor's share) to the Adjudicator within 30 days of the receipt of the bill. The Contractor's share on this account (half the paid amount) will be recovered by the Employer from the Contractor's bills against the work.

In accepting this assignment, the Adjudicator should understand and agree that he is responsible for any liabilities and costs arising out of risks associated with travel to and from the place of emergency repatriation, loss or damage to personal/professional effects and property. The Adjudicator is advised to effect personal insurance cover in respect of such risks if he does not

***Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023***

already have such cover in place. In this regard, the Adjudicator shall maintain appropriate medical, travel, accident and third-party liability insurance. The obligation under this paragraph will survive till termination of this appointment.

Procedures for resolution of disputes by the Adjudicator is described in the contract of \_\_\_\_\_ (name of the contract) between the Employer and the contractor vide clause no.24 of the General Conditions of Contract. Your recommendation should be given in the format attached, within 28 days of receipt of a notification of dispute.

The Adjudicator will carry out the assignment in accordance with the highest standard of professional and ethical competence and integrity, having due regard to the nature and purpose of the assignment, and will conduct himself in a manner consistent herewith. After visiting the worksite, the Adjudicator will discuss the matter with the Employer and if necessary with the Contractor before arriving at any decision.

The Adjudicator will agree that all knowledge and information not within the public domain, which may be acquired while carrying out this service shall be all time and for all purpose, regarded as strictly confidential and held in confidence, and shall not be directly or indirectly disclosed to any party whatsoever, except with the permission of the Employer and the contractor. The Adjudicator's decision should be communicated in the form of a speaking order specifying the reasons.

The Adjudicator will agree that any manufacturing or construction firm with which he might be associated with, will not be eligible to participate in bidding for any goods or works resulting from or associated with the project of which this consulting assignment forms a part

Read and Agreed

Name of Adjudicator  
Signature

Place:

Date:

|   |  |
|---|--|
| <p style="text-align: center;">Name of Employer<br/>Signature of authorized representative of<br/>Employer</p>  | <p style="text-align: center;">Name of the Contractor<br/>Signature of authorized representative of<br/>Contractor</p> |
| <p>Attachment: Copy of contract document between the Employer and contractor and format for recommendation.</p> |  |

## SUMMARY OF ADJUDICATOR'S RESPONSIBILITIES

The Adjudicator has the following principal responsibilities:

1. Visit the site periodically.
2. Keep abreast of job activities and developments.
3. Encourage the resolution of disputes by the parties.
4. When a dispute is referred to it, conduct a hearing (no legal presentation), complete its deliberations, and prepare a recommendations in a professional and timely manner(as per sample format)

## Sample Format of Adjudicator's Recommendation

### [Project Name] Recommendation of Adjudicator

Dispute No. XX [NAME OF DISPUTE]

Hearing Date: \_\_\_\_\_

#### **Dispute**

Description of dispute. A one or two sentence summation of the dispute.

#### **Contractor's Position**

A short summation of the contractor's position as understood by the Adjudicator.

#### **Employer's Position**

A short summation of the Employer's position as understood by the Adjudicator.

#### **Recommendation**

The Adjudicator's specific recommendation for settlement of the dispute. (*The recommended course is consistent with the explanation*).

#### **Explanation**

(*This section could also be called Considerations, Rationale, Findings, Discussion, and so on.*)

The Adjudicator's description of how each recommendation was reached.

Respectfully submitted,

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

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

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

---

## **Section X - Contract Forms**

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security, ESHS performance security if applicable, and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

### **Table of Forms**

**Letter of Acceptance**

**Issue of Notice to Proceed with the Work**

**Contract Agreement**

**Performance Security**

**Environmental, Social, Health and Safety (ESHS) Performance Security**

**Advance Payment Security**

**Retention Money Security**

## Letter of Acceptance

*[letterhead paper of the Employer]*

*[The Letter of Acceptance shall be the basis for formation of the Contract as described in ITB Clause 43. This Standard Form of Letter of Acceptance shall be filled in and sent to the successful Bidder only after evaluation of bids has been completed, subject to any review by the World Bank required under the Loan Agreement.]*

*[insert date]*

Identification No and Title of Contract: *[insert identification number and title of the Contract]*

To: *[insert name and address of the Contractor]*

This is to notify you that your Bid dated *[insert date]* for execution of the *[insert name of the Contract and identification number, as given in the PCC]* for the Contract Price ..... *[insert amount in numbers and words]* as corrected and modified<sup>38</sup> in accordance with the Instructions to Bidders is hereby accepted by our Agency.

*[insert one of the following (a) or (b) options]*

- (a) We accept that *[insert name proposed by bidder]* be appointed as the Adjudicator.<sup>39</sup>
- (b) We do not accept that *[insert name proposed by bidder]* be appointed as Adjudicator, and by sending a copy of this Letter of Acceptance to *[insert name of the Appointing Authority]*, we are hereby requesting *[insert name]*, the Appointing Authority, to appoint the Adjudicator in accordance with GCC 23.<sup>40</sup>

We note that as per your bid, you do not intend to subcontract any component of work.

[OR]

We note that as per your bid, you propose to employ M/s. .... as sub-contractor for executing .....

*[Delete whatever is inapplicable]*

---

<sup>38</sup> Delete “corrected and” or “and modified” if not applicable. See Notes on Standard Form of Agreement, next page.

<sup>39</sup> To be used only if the Contractor disagrees in the Bid with the Adjudicator proposed by the Employer in the Instructions to Bidders, and has accordingly offered another candidate.

<sup>40</sup> To be used only if the Contractor disagrees in the Bid with the Adjudicator proposed by the Employer in the ITB, has accordingly offered another candidate, and the Employer does not accept the counterproposal.

You are hereby requested to furnish Performance Security, plus additional security for unbalanced bids in terms of ITB clause 40, and ESHS Performance Security~~[Delete ESHS Performance Security if it is not required under the contract]~~in the form detailed in ITB Clause 45 for amounts<sup>41</sup> of Rs. \_\_\_\_\_ and Rs. \_\_\_\_\_ within 21 days of the receipt of this letter of acceptance, and visit this office to sign the contract, failing which action as stated in ITB Clause 45.2 will be taken. The securities shall be valid upto 28 days from the date of completion i.e. upto ..... and shall be as per the Performance Security Form and the ESHS Performance Security Form~~[Delete reference to the ESHS Performance Security Form if it is not required under the contract]~~, included in Section X - Contract Forms, of the bidding document.

We have reviewed the construction methodology submitted by you alongwith the bid in response to ITB Clause 16 and our comments are given in the attachment. You are requested to submit a revised Program including ESHS requirements as per Clause 26 of General Conditions of Contract within 14 days of receipt of this letter of acceptance.

Yours faithfully,

Authorized Signature.....

Name and Title of Signatory.....

Name of Agency.....

---

<sup>41</sup>Insert amounts for (i) Performance Security, plus additional security for unbalanced bids; and (ii) ESHS Performance Security respectively.

## Issue of Notice to proceed with the work

(letterhead of the Employer)

\_\_\_\_\_ (date)

To

\_\_\_\_\_ (name and address of the Contractor)

\_\_\_\_\_

\_\_\_\_\_

Dear Sirs:

Pursuant to your furnishing the requisite securities as stipulated in ITB clause 45.1, insurance policy as per GCC 13, construction methodology as stated in letter of acceptance and signing of the contract agreement for the construction of \_\_\_\_\_ @ a Bid Price of Rs. \_\_\_\_\_, you are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

(Signature, name and title of signatory  
authorized to sign on behalf of  
Employer)

**Attachment: Contract Agreement**

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

## Contract Agreement

THIS AGREEMENT made the . . . . .day of . . . . ., . . . . ., between . . . . .  
*[name of the Employer]*. . . . . (hereinafter “the Employer”), of the one part, and . . . . . *[name of the Contractor]*. . . . .(hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as . . . . .*[name of the Contract]*. . . . .should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
  - (a) this Agreement
  - (b) the Letter of Acceptance
  - (c) the Contractor’s Bid including completed schedules and priced bill of quantities,
  - (d) the Addenda No’s . . . . . *[insert addenda numbers if any]*. . . . .
  - (e) the Particular Conditions of contract
  - (f) the General Conditions of contract;
  - (g) the Specifications
  - (h) the Drawings; and
  - (i) Construction Program, Methodology, Quality Assurance Program, ESHS Management Strategies and Implementation Plans, and Code of Conduct (ESHS)
  - (j) Joint Venture Agreement [for JVs only]
  - (k) Any other document listed in PCC as forming part of the Contract
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of India on the day, month and year indicated above.

|   |  |   |  |
|---|--|---|--|
| Signed by:                              |  | Signed by:                              |  |
| for and on behalf of the Employer       |  | for and on behalf the Contractor        |  |
| in the presence of:                     |  | in the presence of:                     |  |
| Witness, Name, Signature, Address, Date |  | Witness, Name, Signature, Address, Date |  |

## Performance Security - Bank Guarantee

**[including Additional Performance Security for unbalanced bids]**

*[Guarantor letterhead or SWIFT identifier code]*

Performance Guarantee No.....*[insert guarantee reference number]*

Date.....*[insert date of issue of the guarantee]*

To: \_\_\_\_\_ *[name of Employer]*  
\_\_\_\_\_ *[address of Employer]*

WHEREAS \_\_\_\_\_ *[name and address of Contractor<sup>42</sup>]* (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ to execute \_\_\_\_\_ *[name of Contract and brief description of Works]* (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, upto a total of \_\_\_\_\_ *[amount of guarantee<sup>43</sup>]* \_\_\_\_\_ *[in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of \_\_\_\_\_ *[amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until .....<sup>44</sup>, and any demand for payment under it must be received by us at this office on or before that date.

Signature and seal of the guarantor \_\_\_\_\_  
Name of Bank \_\_\_\_\_  
Address \_\_\_\_\_  
Date \_\_\_\_\_

<sup>42</sup>*In the case of a JV, insert the name of the Joint Venture*

<sup>43</sup>*An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract less provisional sum if any, plus additional performance security for unbalanced bids if any, and denominated in Indian Rupees.*

<sup>44</sup>*Insert the date twenty-eight days after the expected completion date as described in GC Clause 53.1. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee"*

**Tender Document for Digha-Majhaua (95 km)**

**On Qty Based Dredging Contract**

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*Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

## Environmental, Social, Health and Safety (ESHS) Performance Security - Bank Guarantee

*[Guarantor letterhead or SWIFT identifier code]*

ESHS Performance Guarantee No.....*[insert guarantee reference number]*

Date.....*[insert date of issue of the guarantee]*

To: \_\_\_\_\_ *[name of Employer]*

\_\_\_\_\_ *[address of Employer]*

WHEREAS \_\_\_\_\_ *[name and address of Contractor<sup>45</sup>]* (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ to execute \_\_\_\_\_ *[name of Contract and brief description of Works]* (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with Environmental, Social, Health and/or Safety (ESHS) obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, upto a total of \_\_\_\_\_ *[amount of guarantee<sup>46</sup>]* \_\_\_\_\_ *[in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of \_\_\_\_\_ *[amount of guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until .....<sup>47</sup>, and any demand for payment under it must be received by us at this office on or before that date.

Signature and seal of the guarantor \_\_\_\_\_

Name of Bank \_\_\_\_\_

Address \_\_\_\_\_

Date \_\_\_\_\_

<sup>45</sup>*In the case of a JV, insert the name of the Joint Venture*

<sup>46</sup>*An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract less provisional sum if any, and denominated in Indian Rupees.*

<sup>47</sup>*Insert the date twenty-eight days after the expected completion date as described in GC Clause 53.1. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee"*

**Tender Document for Digha-Majhaua (95 km)**

**On Qty Based Dredging Contract**

**27.02.2023**

## **Advance Payment Security Demand Guarantee**

*[Guarantor letterhead or SWIFT identifier code]*

Advance Payment Guarantee No.....*[insert guarantee reference number]*

Date.....*[insert date of issue of the guarantee]*

To: \_\_\_\_\_ *[name of Employer]*  
\_\_\_\_\_ *[address of Employer]*  
\_\_\_\_\_ *[name of Contract]*

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Sub-clause 49.1 ("Advance Payment") of the above-mentioned Contract, \_\_\_\_\_ *[name and address of Contractor<sup>48</sup>]* (hereinafter called "the Contractor") shall deposit with \_\_\_\_\_ *[name of Employer]* a bank guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of \_\_\_\_\_ *[amount of guarantee<sup>49</sup>]* \_\_\_\_\_ *[in words]*.

We, the \_\_\_\_\_ *[bank or financial institution]*, as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to \_\_\_\_\_ *[name of Employer]* on his first demand without whatsoever right of objection on our part and without his first claim to the Contractor, in the amount not exceeding \_\_\_\_\_ *[amount of guarantee]* \_\_\_\_\_ *[in words]*.

We further agree that no change or addition to or other modification of the terms of the Contract or of Works to be performed thereunder or of any of the Contract documents which may be made between \_\_\_\_\_ *[name of Employer]* and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until \_\_\_\_\_ *[name of Employer]* receives full repayment of the same amount from the Contractor. Consequently any demand for payment under this guarantee must be received by us at this office on or before that date.

Yours truly,

Signature and seal: \_\_\_\_\_  
Name of Bank: \_\_\_\_\_  
Address: \_\_\_\_\_  
Date: \_\_\_\_\_

<sup>48</sup>In the case of a JV, insert the name of the Joint Venture

<sup>49</sup>An amount shall be inserted by the bank representing the amount of the Advance Payment, and denominated in Indian Rupees.

**Retention Money Security**  
**Demand Guarantee**  
*[Guarantor letterhead or SWIFT identifier code]*

\_\_\_\_\_ *[Bank's name and address of issuing branch or office]*

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

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

**RETENTION MONEY GUARANTEE NO.:** \_\_\_\_\_

We have been informed that \_\_\_\_\_ *[name of contractor<sup>50</sup>]* (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ *[reference number of the contract]* dated \_\_\_\_\_ with you, for the execution of \_\_\_\_\_ *[name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment, payment of \_\_\_\_\_ *[insert the second half of the Retention Money]* is to be made against a Retention Money guarantee.

At the request of the contractor, we \_\_\_\_\_ *[name of Bank]* hereby irrevocably undertake to pay you the sum or sums not exceeding in total an amount of \_\_\_\_\_ *[amount in Rupees]* (\_\_\_\_\_) *[amount in words<sup>51</sup>]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract without cavil or argument.

It is a condition for any claim and payment under this guarantee to be made that the payment of the second half of the Retention Money referred to above must have been received by the Contractor on its account number \_\_\_\_\_ at \_\_\_\_\_ *[name and address of Bank]*.

This guarantee shall expire, at the latest, 21 days after the date when the Employer has received a copy of the Defects Liability Certificate issued by the Project Manager. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

\_\_\_\_\_  
*[Signature(s) and seal of the guarantor]*

<sup>50</sup>In the case of a JV, insert the name of the Joint Venture

<sup>51</sup>The Guarantor shall insert an amount representing the amount of the second half of the Retention Money or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money, the difference between half of the Retention Money and the amount guaranteed under the Performance Security.

# **“CAPACITY AUGMENTATION OF NATIONAL WATERWAY.1”**

**(Jal Marg Vikas Project)**

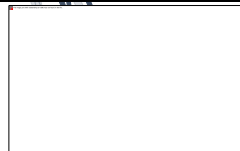
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## **ENVIRONMENTAL IMPACT ASSESSMENT REPORTS**

### **VOLUME - 8: Environmental Management Plan (EMP) for Maintenance Dredging**

**May 2016**  
(Revised September 2016)

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**EQMS India Pvt. Ltd. In JV IRG Systems South Asia Pvt. Abnaki Infrastructure Applications  
with & Integrated Development Pvt. Ltd.**

*Tender Document for Digha-Majhaua (95 km)  
On Qty Based Dredging Contract  
27.02.2023*

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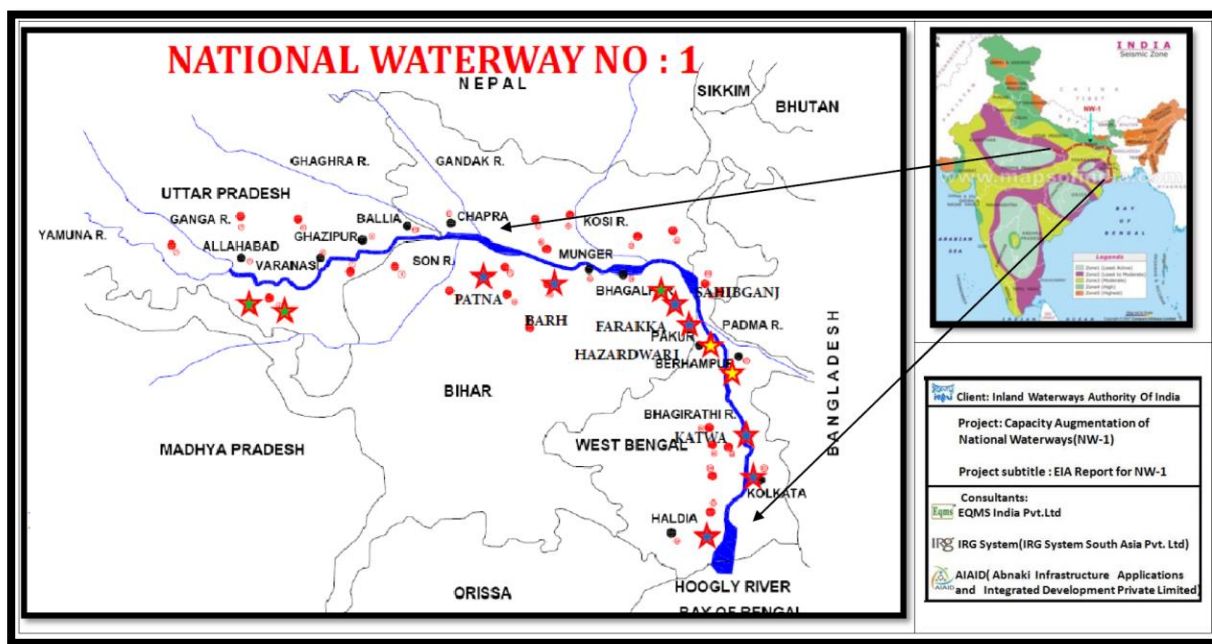
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## CHAPTER 1. EMP FOR MAINTENANCE DREDGING

### 1.1. Introduction

Inland waterways Authority of India (IWAI) has proposed to augment the navigation capacity of waterway NW-1 (Haldia to Allahabad) and continue to maintain the entire stretch. Under this project, IWAI has proposed to develop the infrastructure facility like Multimodal terminals, Navigation aids for day & night navigation, River information system with all hardware and software, Ro-Ro jetties, Bank & slope protection, River training works, Equipment like tow barges, inland vessels, survey vessels including rescue boats & survey equipment and Dredging of the navigation channel, to augment the navigation capacity of the waterway. Location map of NW-1 is given in Figure 1.1.

To improve the navigation in national waterways-1 IWAI has proposed a project “Capacity Augmentation of the Nation Waterway 1 (1620 kms, with minimum water depth of 2.5-3 m) between Haldia and Allahabad”. For which dredging is required at different locations along the NW-1 and to be carried out so as to maintain the least available depth (LAD).



**Figure 1.1 : Location Map**

### 1.2. Description of Environment

The NW-1 stretch starts from Haldia to Allahabad (1620 KM long) on Ganga - Bhagirathi - Hooghly river system. The Hooghly river portion of the waterway from Haldia to Nabadwip is under tidal influence. From Nabadwip to Jangipur the NW-1 stretch is formed by Bhagirathi river. Bhagirathi river flow is regulated through barges at Farakka and Jangipur. From Farakka upstream the navigable route depends upon the main Ganga river flow. The Feeder Canal and the navigation lock at Farakka become the link between the Bhagirathi and main Ganga upstream of Farakka Barrage. NW-1 is passing through four states namely

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UP, Bihar, Jharkhand and West Bengal. The salient environmental features around NW-1 within, 500m, 2km and 10km stretches are summarised in **Table 1.1**.

**Table 1.1 : Salient Environmental Features along NW-1 Alignment**

| S. No. | Environmental Features   | Within NW-1 (500 M)   | Within 2 km area around NW-1  | Within 10 km area around NW-1  |
|--------|--|---|---|--|
| 1      | <b>Ecological Environment</b>                                    |   |   |  |
| A      | Presence of National Park/Biosphere Reserves, Tiger reserve etc. | None  | None  | None   |
|        | Presence of Wildlife Sanctuary                                   | Yes<br>1. Kashi Turtle Sanctuary at Varanasi<br>2. Vikramshila Dolphin Sanctuary Kahalgaon to Sultanganj<br>3. Hilsa Sanctuary stretch in west Bengal | None  | Yes<br>Udhwa lake sanctuary in Jharkhand (about 9 km away from NW-1) |
| B      | Reserved /Protected Forests                                      | None  | None  | Yes (Bethuadahari RF, Bahadurpur RF & RF near Rajmahal Hills)        |
| C      | Wetland of state and national interest                           | None  | None  | Yes (Udhwa Bird sanctuary)   |
| D      | Migratory route for wild terrestrial animals                     | None  | None  | None   |
| E      | Presence of Schedule-I Terrestrial Fauna                         | None  | Yes<br>Migratory birds near Farakka Barrage and surrounding   | Yes<br>Migratory birds at important birds' areas                     |
| F      | Presence of Schedule-I Aquatic Fauna                             | Yes<br>Dolphin, and Turtle  | None  | None   |
| G      | Important Bird Area  | Vikramshila sanctuary area  | Yes<br>1. Danapur Cantonment area<br>2. Mokama tal<br>3. Kurseala river course and diyara floodplain. | Yes<br>Udhwa lake sanctuary  |

| S. No. | Environmental Features       | Within NW-1 (500 M)  | Within 2 km area around NW-1         | Within 10 km area around NW-1 |
|--------|------------------------------|--|--------------------------------------|-------------------------------|
|        |                              |  | 4. Farakka Barrage and surround area |                               |
| H      | Seismicity                   | NW-1 falls in Zone-III (moderate risk) and zone IV (high damage risk zone) as per Seismic Zoning Map of India  |                                      |                               |
| B.     | Social Environment           |  |                                      |                               |
| I      | Physical Setting             | Rural, Industrial and Urban  |                                      |                               |
|        | Densely populated area       | Allahabad, Sirsa, Mirzapur, Chunar, Varanasi, Zamania, Ghazipur, Gahmar, Buxar, Ballia, Chappra, Patna, Barh, Bihat, Munger, Bhgalpur, Kahalgaon, Sahibganj, Farakka, Berhampore, Katwa, Kalna, Kolkatta and Haldia are densely populated areas.   |                                      |                               |
| J      | Physical Sensitive Receptors | Yes<br>Ghats, Temples, Schools, Colleges and Hospitals are present all along the NW-1.   |                                      |                               |
| K      | Archaeological Monuments     | Yes<br>There are 9 archaeological sites located within 300 m area of the NW-1 and these are Kardmeshwar Mahadeva Mandir, Ramnagar fort, archaeological excavation site, Varanasi, Manmahal and observatory, St. John's Church, Temple of Gour Chandra and Krishnachandra at Chatra (Gaur Chandra Ghat), Hazardwari Palace, Sindhi Dalan and Jami Masjid. |                                      |                               |

### 1.3. Environmental Management Plans

Major activities associated with the project are construction and operation of the civil interventions, barge movement and maintenance dredging. Barge movement and maintenance dredging will be carried out during the operation phase of the project only whereas development of civil interventions will have components distributed during design, construction and operation phases. Civil interventions include construction of jetty, terminals, river training works, bend corrections, barge maintenance facility, and RO-RO jetties. A detailed environmental management plan for each associated development for all the three phases of the project, i.e. design/pre-construction, construction and operation phase is prepared as applicable. EMP lists the activities involved, associated impact with each activity on environment, suggestive mitigation measures, allocated environment budget for impact mitigation, implementation plan covering monitoring, reporting and implementation and supervisory responsibility.

#### 1.3.1. Environmental Management Plan for Maintenance Dredging

Maintenance dredging will be carried out during operation phase of the project to maintain LAD for navigation. Maintenance dredging will be carried out as per the availability of the depth naturally and depth required for movement of the cargo depending on the size of the cargo planned to ply in the stretch. The design consultant estimates estimation of the required amount of maintenance dredging in different stretch of the waterway. An analysis has been done during EIA study to

establish the environmental, biological and social sensitivity of the waterway and a dredging and dredge disposal management plan is prepared which is presented in **Table 1.2**. Environment Management Plan for Dredging Activity is given in **Table 1.3**.

**Table 1.2 :Dredging and Disposal Management Plan for NW-1**

| Stretch/Dredging Quantity & Quality/Proposed Disposal Location   | Biological, cultural, social and religious Sensitivity  | Aquatic sensitivity                                  |   | Management Measures  |
|--|---|--|---|--|
|  |   | Sensitive zone                                       | Breeding & Spawning Period and grounds*   |  |
| Stretch: Haldia to Farakka<br>Dredged Qty: 3620000 cum<br>between Tribeni to Farakka<br>Dredged Quality: Not contaminated<br>Disposal Location: In river/shoals/scours | Imp. Bird area- Farakka Barrage and adjoining area (Surrounding NW-1)<br>Archaeological locations- St. John's Church (300 m, E), Temple of Gour Chandra and Krishna Chandra at Chatra-Gaur Chandra Ghat (0 m, W) & Hazardwari Palace (30 m, E)<br>Fest & Festivals: Ganga Sagar Mela at Sagar (January)   | Hilda Sanctuary (Within NW-1)- 4 locations           | Peak spawning season for Hilsa is July-August<br>Breeding & Spawning grounds for Hilsa: Stretch between Nischintpur (Kolkata) & Diamond Harbour, Hoogly ghat & Kalna and Lalbagh to Farakka <sup>52</sup> | Dredging should be regulated during July-August<br>Dredge disposal should not be carried out within Sanctuary area and other defined sensitive locations<br>Dredge disposal should be carried out at minimum distance of 100 m from bank<br>Dredging & disposal should not be carried out during time & location of festivals    |
| Stretch: Farakka to Barh<br>Dredged Qty: 3960000 cum<br>Dredged Quality: Not contaminated<br>Disposal Location: In river/shoals/scours                                 | Imp. Bird Area- Udhwa Lake Bird Sanctuary (9 km, W), Vikramshila Gangetic Dolphin Sanctuary-VGDS (within NW-1), Mokama Taal (Barah) Wetlands (Along NW-1) & Kurseala River Course and Diyara Flood Plains (Along NW-1)<br>Archaeological locations- Sindhi Dalan (300 m, W) & Jama Masjid (140 m, W)<br>Religious locations: Community Temple at Sahibganj Terminal site (to be shifted)<br>Fest & Festivals: Chatt (Oct-Nov) | Vikramshila Gangetic Dolphin Sanctuary (within NW-1) | Major Birth season for Dolphin is October to March <sup>53</sup><br>Breeding Ground: Very shallow waters for giving birth   | Dredging should be stopped if Dolphins are sighted<br>Dredge disposal should not be carried out within Sanctuary area and other defined sensitive locations<br>Dredge disposal should be carried out at minimum distance of 100 m from bank<br>Dredging & disposal should not be carried out during time & location of festivals |
| Stretch: Barh to Patna<br>Dredged Qty: 16,00,000 cum<br>Dredged Quality: Not contaminated<br>Disposal Location: In river/shoals/scours                                 | Fest & Festivals: Chat (Oct-Nov)  | None   | Peak spawning season for Indian Major Carps is May-August<br>Breeding & Spawning grounds: Shallow waters and areas inundated during monsoon season <sup>54</sup>  | Dredging should be stopped if any dolphin or big aquatic species is sighted<br>Dredging should be avoided during May-August<br>Dredge disposal should be carried out at minimum distance of 100 m from bank<br>Dredging & disposal should not be carried out during time & location of festivals                                 |
| Stretch: Patna to Buxar  | Imp. Bird Area- Danapur cantonment area (2 km, S)   | None   | Peak spawning season for Indian   | Dredging should be stopped if any dolphin or big aquatic   |

<sup>52</sup>Perspectives of reproductive biology and spawning behavior of Indian shad (*Tenulosa ilisha*)-A global review, Utpal Bhaumik, Former Divisional Head, Riverine Ecology and Fisheries, Central Inland Fisheries Research Institute, Barrackpore, India

<sup>53</sup>Ganges River Dolphins, WWF

([http://wwf.panda.org/what\\_we\\_do/endangered\\_species/cetaceans/about/river\\_dolphins/ganges\\_river\\_dolphin/](http://wwf.panda.org/what_we_do/endangered_species/cetaceans/about/river_dolphins/ganges_river_dolphin/))

<sup>54</sup> Genetic Resources of Indian Major Carps, Their Distribution and Characterization, FAO

(<http://www.fao.org/docrep/006/x3850e/X3850E02.htm>)

| Stretch/Dredging Quantity & Quality/Proposed Disposal Location   | Biological, cultural, social and religious Sensitivity  | Aquatic sensitivity                  |   | Management Measures  |
|--|---|--------------------------------------|---|--|
|  |   | Sensitive zone                       | Breeding & Spawning Period and grounds*   |  |
| Dredged Qty: 27,70,000 cum<br>Dredged Quality: Not contaminated<br>Disposal Location: In river/shoals/scours                               | Fest & Festivals: Chatt (Oct-Nov)   |                                      | Major Carps is May-August Breeding & Spawning grounds: Shallow waters and areas inundated during monsoon season                                 | species is sighted Dredging should be avoided during May-August Dredge disposal should be carried out at minimum distance of 100 m from bank Dredging & disposal should not be carried out during time & location of festivals   |
| Stretch: Buxar to Varanasi<br>Dredged Qty: 29,00,000 cum<br>Dredged Quality: Not contaminated<br>Disposal Location: In river/shoals/scours | Archaeological locations- Kardmeshwar Mahadeva Mandir (240 m, W), Ramnagar, fort (40 m, E), archaeological excavation site, Varanasi (130 m, E) & Manmahal and observatory (40 m, W)<br>Cultural locations: Ghats<br>Fest & Festivals: Ganga Mahotsav at Varanasi (Oct-Nov) & Dhrupad Mela at Tulsi Ghat of Varanasi (Feb to March) | None                                 | Peak spawning season for Indian Major Carps is May-August Breeding & Spawning grounds: Shallow waters and areas inundated during monsoon season | Dredging should be stopped if any dolphin or big aquatic species is sighted Dredging should be avoided during May-August Dredge disposal should be carried out at minimum distance of 100 m from bank Dredging & disposal should not be carried out during time & location of festivals                              |
| Stretch: Varanasi to Allahabad<br>Dredged Qty: Nil<br>Dredged Quality: NA<br>Disposal Location: NA   | Fest & Festivals: Ganga Mahotsav at Varanasi (Oct-Nov), Dhrupad Mela at Tulsi Ghat of Varanasi (Feb to March) & kumbh at Allahabad (Jan-Feb)  | Kashi Turtle Sanctuary (within NW-1) | Spawning season for River Turtles: March-April Breeding & Spawning grounds: Wetlands/River banks  | Dredging should be regulated during July-August Dredge disposal should not be carried out within Sanctuary area and other defined sensitive locations Dredge disposal should be carried out at minimum distance of 100 m from bank Dredging & disposal should not be carried out during time & location of festivals |

\*Map Showing locations of breeding 7 spawning grounds is given in **Figure 1.2-1.6**

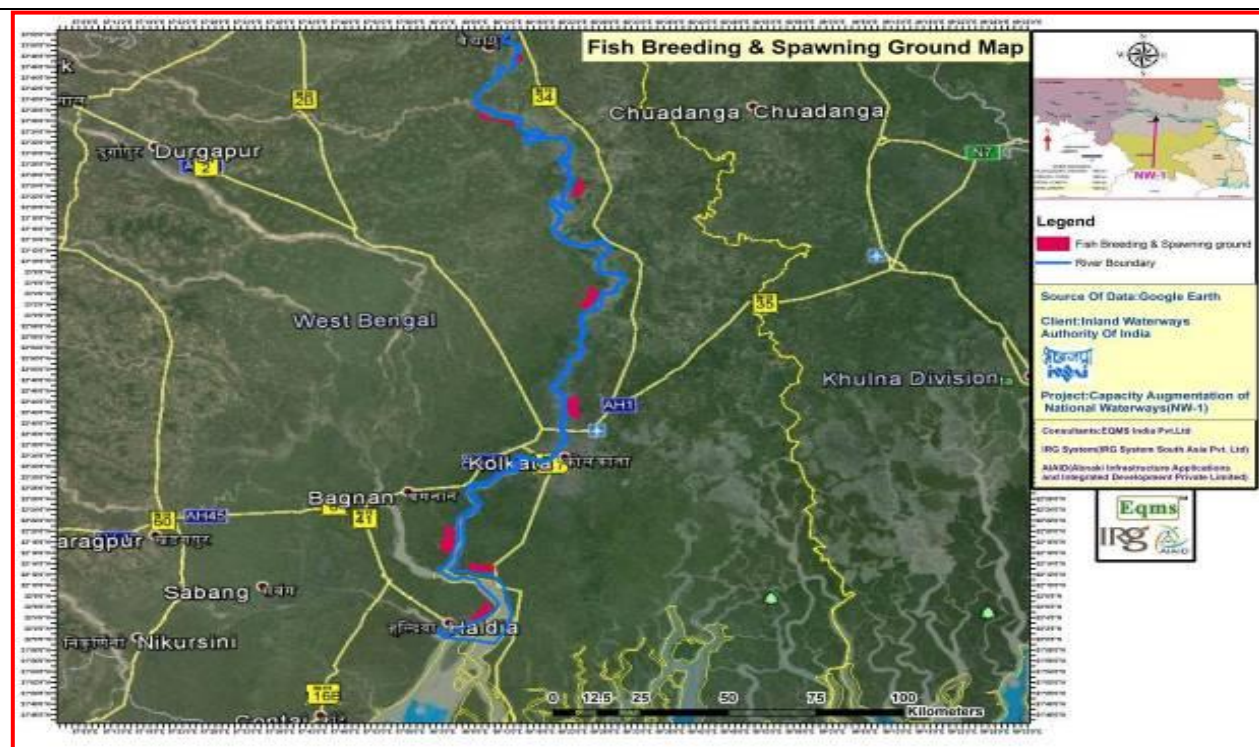


Figure 1.2 : Fish Breeding and Spawning Grounds along NW-1 (Haldia to Baidyapur Stretch)



Figure 1.3 : Fish Breeding and Spawning Grounds along NW-1 (Baidyapur to Sahibganj Stretch)



Figure 1.4 : Fish Breeding and Spawning Grounds along NW-1 (Sahibganj to Patna Stretch)



Figure 1.5 : Fish Breeding and Spawning Grounds along NW-1 (Patna to Allahabad Stretch)

## : Environmental Management Plan for Maintenance Dredging

| Environmental Management Plan for Maintenance Dredging |   |  |                      |            |                              |                              |             |
|--|---|--|----------------------|------------|------------------------------|------------------------------|-------------|
| Environmental Issue /Component                         | Remedial Measure  | Reference to laws and Contract Documents | Approximate Location | Time Frame | Indicative / Mitigation Cost | Institutional Responsibility |             |
|  |   |  |                      |            |                              | Implementation               | Supervision |
| 1. Physical Environment                                |   |  |                      |            |                              |                              |             |
| Impact on Soil quality & River Bed sediments           | <ul style="list-style-type: none"><li>Standards should be developed by concerned authorities for onshore and off-shore dredged material disposal and development of the process to ensure its compliance</li><li>Dredged material shall be checked for toxicity and contamination prior its disposal for prevention of contamination of water and its impacts on aquatic life. International standards for judging onshore &amp; off-shore disposal of dredged material are given in <b>Annexure 1.1</b>.</li><li>If any stage on land disposal of dredge material is planned, then dewatering of the dredged sediments should be carried out prior to on land disposal.</li><li>If dredge material is found contaminated at any particular location, then it should be disposed on land after decontamination. On land disposal of dredged material should be carried out only at approved TSDF site such as approved TSDF site of Haldia Dock Complex at Sagar. The contaminated dredge material shall be collected in the leak proof container for decontamination and disposal to the landfill site.</li><li>The disposal facilities should be designed with adequate liners to contained the leachate and also should have provision of leachate collection and testing to periodically check the functionality of the disposal site.</li><li>Dredge material should not be disposed in river banks, Disposal should be inline with the dredging sensitivity analysis defined at Table 1.2 above .</li><li>If dredged material is disposed on land, then the care should be taken that the tail water is collected and made free from sediments prior to its discharge back to surface water body.</li></ul> |  |                      |            |                              |                              |             |

| Environmental Issue /Component | Remedial Measure  | Reference to laws and Contract Documents | Approximate Location | Time Frame                | Indicative / Mitigation Cost              | Institutional Responsibility |                            |
|--------------------------------|---|--|----------------------|---------------------------|---|------------------------------|----------------------------|
|                                |   |  |                      |                           |   | Implementation               | Supervision                |
| <b>Water Quality</b>           | <ul style="list-style-type: none"> <li>• Attempt shall be made to minimizing and optimizing the dredging requirements by effective assessment and study of the Thalweg profiles of the river. This can be achieved some of the following measures: <ul style="list-style-type: none"> <li>○ Increase use of bandalling which helps in diverting the flow of river towards the channel and reduces the quantity of dredging</li> <li>○ Low draft vessels should be deployed which will reduce the requirement of dredging</li> </ul> </li> <li>• Dredged material shall be checked for toxicity and contamination prior its disposal onshore for prevention of contamination of water and its impacts on aquatic life. Standards for judging onshore &amp; off-shore disposal of dredged material are given in <b>Annexure 1.1</b>.</li> <li>• Dredging should not be carried out during very low flow seasons so as to minimize the dispersion of fine sediments</li> <li>• Usage of silt or air bubble screens/curtains should be explored to minimize the sediment release during dredging operations. Silt/air bubble screens can hang from surface floats or stands attached to the bottom and held upright by sub-surface floats (PIANC). The use of silt curtains is reported to considerably reduce the loss of suspended sediments from the dredge area, by up to 75% where current velocities are very low. However, they are generally ineffective in areas with high current velocities which exceed 0.5 m/s (UK Marine SACs Projects).</li> <li>• To minimize the sediment dispersal during disposal of dredge sediments, it should be place as close to the bed possible preferable at a level of 1m above the bed to minimise the dispersal of sediments.</li> <li>• Provision shall be made of emergency response equipment like floating blooms to deal with any emergency of oil spills or leakages. Regular servicing and maintenance of dredgers should be taken up so as to prevent any leakage of the dredged material. Leakage detection of the sediment transportation pipe shall be carried out regularly to prevent any sediment loss and water pollution at leakage location. Corrective actions should be taken immediately after detection of such leaks.</li> <li>• Cutter head of CSD should be selected</li> </ul> | Water Act, 1974                          | Within River         | During Dredging Operation | Part of Project Cost (IWAI & Contractor ) | Contractor                   | IWAI/PMU/PMC <sup>55</sup> |

<sup>55</sup> It is proposed to set up Project Unit (PMU) in IWAI to manager social and environmental aspect of NW1 augmentation. PMC (Project Management Consultants) anticipated to be appointed for project management and quality check.

| Environmental Issue /Component  | Remedial Measure   | Reference to laws and Contract Documents                         | Approximate Location | Time Frame      | Indicative / Mitigation Cost             | Institutional Responsibility |   |
|---|--|--|----------------------|-----------------|--|------------------------------|---|
|   |  |  |                      |                 |  | Implementation               | S |
|   | <p>according to material to be dredged so as to maximize the dredged material transport from dredging point to suction mouth and prevention of sediment loss and re-suspension.</p> <ul style="list-style-type: none"> <li>Ratio of cutter revolutions and pump velocity should be adjusted to ensure that cutter advancement rate is not greater than the ability of the suction pump to remove the material that is cut. This will prevent the suspension of the dredged material.</li> <li>Dredge cuts and lifts should be designed so as to prevent undercutting of material and hence a collapse of material locally at the cutter head, leading to an increase in the sediment being disturbed by dredging.</li> <li>If dredge material is found contaminated at any particular location that it should be disposed off-shore. Off-shore disposal of dredged material should be carried out only at approved TSDF site such as approved TSDF site of Haldia Dock Complex at Sagar.</li> <li>Dredge material if disposed on river banks or on land caution should be exercised as per the Dredging and Disposal Management Plan for NW-1 given at Table 1.2 above.</li> <li><i>If dredged material is disposed at land, then the care should be taken that the tail water is collected and made free from sediments prior its discharge back to surface water body. Regular monitoring of the excess water should be done in case dredged material is disposed on land. This will help in assessing the efficiency of sediment trap system provided at site and controlling contamination of water by minimizing the sediments.</i></li> <li>Sensitivity along NW-1 for dredge disposal is discussed in Table 1.2 above. Dredge material if disposed on river banks or on land caution should be exercised as per the Dredging and Disposal Management Plan is prepared for entire for NW-1 considering the sensitivities discussed in Table 1.2</li> </ul> |  |                      |                 |  |                              |   |
| <b>2. Biological Environment</b>  |  |  |                      |                 |  |                              |   |
| Aquatic Ecology- Removal of benthic communities, increasing underwater noise levels, increasing sediments/turbidity, release of | <ul style="list-style-type: none"> <li>Dredging plan including timeframe should be prepared for each stretch prior initiating dredging activity. No dredging should be undertaken within VGDS, Turtle sanctuary. No dredging shall be carried out in winter season (November to February) along Mokama Taal to minimize impact on aquatic species and avifauna.</li> <li>Dredging operations should not be carried out during the breeding and spawning season of the valued aquatic species which is from June to August (Monsoon season). Bends and meandering locations are the most potential breeding grounds and are indicated at Figure</li> </ul>  | Wildlife Protection Act, 1972 & 1993 and Bio-diversity Act, 2002 | Within River         | During Dredging | Part of Project Cost (IWAI & Contractor) | Contractor                   | P |

| Environmental Issue /Component  | Remedial Measure  | Reference to laws and Contract Documents                         | Approximate Location                                     | Time Frame                | Indicative / Mitigation Cost              | Institutional Responsibility |               |
|---|---|--|--|---------------------------|---|------------------------------|---------------|
|   |   |  |  |                           |   | Implementation               | Supervision   |
| locked pollutants in sediment, disposal of dredged material, increasing depth | <p>No. 1.2-1.6</p> <ul style="list-style-type: none"> <li>Dredging if required to be taken at critical stretches (Turtle and Dolphin Sanctuaries) as mention above then dredgers should be provided with turtle and Dolphin deflectors. This would prevent the sucking of the animals (fish or turtle) swimming nearby. But such dredgers are inefficient and costly.</li> <li>Measures like provision of bubble curtains or creation of agitation in water should be carried out prior carrying out dredging operations so as to provide avoidance time and let the species move away from dredging point. and to prevent any injury/mortality. Dredging operations should be halted in case of sighting of aquatic mammal in adjoin locations.</li> <li>Contractors should submit SOPs and action time chart with risk management plan prior to any dredging work. Dredging sub-contractor should follow the defined safety procedures to avoid accidents and spills, and IWAI should ensure that other vessel users are provided with adequate information and instruction to avoid conflict with the dredgers.</li> </ul> |  |  |                           |   |                              |               |
| Avifauna (Migratory & water birds)  | <ul style="list-style-type: none"> <li>Dredging operations should be restricted to day time only, i.e. 6:00 Am-10:00 Pm only to minimize noise impacts on the avifauna near Important Bird Areas listed at Table 1.2 and located close to river.</li> <li>Dredgers should be equipped with the noise reduction/masking equipment to reduce the noise generation inside and outside water. Noise from dredgers can be reduced at source (dredger) by isolation of exhaust system, by keeping engine room doors shut and by shielding.</li> </ul>   | Wildlife Protection Act, 1972 & 1993 and Bio-diversity Act, 2002 | Within River & bird areas along NW-1                     | During Dredging           | Part of Project Cost (IWAI & Contractor ) | Contractor                   | IWAI/PM U/PMC |
| <b>3. Socio-Economic Environment</b>  |   |  |  |                           |   |                              |               |
| Location of Socio-economic importance and socio-economic environment          | <ul style="list-style-type: none"> <li>Dredging operations should be restricted to day time only, i.e. 6:00 Am-10:00 Pm only to minimize noise impacts on the residents of nearby settlements. Dredgers should be equipped with the noise reduction/masking equipment to reduce the noise generation</li> <li>Dredgers should be placed in consultation with the fishermen so as to minimize the impact on their equipment/gears and their fishing activities</li> <li>Dredging should not be carried out in the areas close to Ghats in Varanasi and buffer of 2 km should be maintained for dredging during time of religious gatherings during Chat and Kumbh festivals.</li> <li>In case contaminated dredged material is disposed on land, then it should be disposed at approved TSDF sites to prevent any harm to community residing in nearby areas. One of such approved TSDF site is located Sagar (Haldia Dock Complex site)</li> <li>Material to be disposed on land may create nuisance odour due to exposure of anaerobic sediments with</li> </ul>   | --   | Area near the dredging operations and dredging locations | During dredging operation | Part of project cost (IWAI/Contractor)    | Contractor                   | IWAI/PM U/PMC |

| Environment<br>al Issue<br>/Component | Remedial Measure  | Reference to<br>laws and<br>Contract<br>Documents | Approximate<br>Location | Time<br>Frame | Indicative /<br>Mitigation<br>Cost | Institutional Respo |   |
|---------------------------------------|---|---|-------------------------|---------------|------------------------------------|---------------------|---|
|                                       |   |   |                         |               |                                    | Implementation      | S |
|                                       | <p>air. Thus if land disposal is involved than disposal site should not be in upwind direction of any settlement area or sensitive locations like hospitals, schools etc.</p> <ul style="list-style-type: none"> <li>• Log book should be maintained for recording the accidents at site/mortality of the any marine mammal should be maintained. Analysis shall be carried out to assess the reason for the accident/mortality and measures should be taken to prevent repetition of the event.</li> <li>• Contractors having experience of dredging and well trained staff should only be allowed to carry out dredging. This will help in prevention of spillage of dredged material or any accidents during the dredging operations</li> <li>• Dredging plan should be prepared by contractor and submitted to IWAI for approval prior to carrying out dredging operations. Dredging plan should be reviewed considering its location w.r.t environmental sensitive locations/archaeological locations/cultural festival/pollution influx in the area/dredged material quality &amp; texture/available depth etc. as given in this EIA report and through local sources and past experience.</li> <li>• Contractors should submit method statement &amp; risk assessment plan prior to carrying out any dredging work. Dredger should follow the defined safety procedures to avoid accidents and spills, and IWAI should ensure that other vessel users are provided with adequate information and instruction to avoid conflict with the dredgers.</li> <li>• Post-dredging monitoring of the sediment nature, rate of sedimentation shall be made part of contractor's job as best dredging practise. This will provide information which can be taken into consideration before the next maintenance dredge is carried out.</li> <li>• Re-use of dredged material should be explored if dredged material is not contaminated. Economically and environmentally feasible options can be adopted to minimize the dredge spoil burdens. Some of such measures include</li> <li>• Dredged sediment can be used for beach nourishment/development of artificial beach/deposition on shoal &amp; thus enrichment of habitat <ul style="list-style-type: none"> <li>○ Dredged material can be explored for its usage for coast/bank protection purpose/flood protection</li> <li>○ Use of dredged material can be explored for land filling, as construction material for road foundations, dikes, mounds, noise/wind barriers.</li> </ul> </li> </ul> |   |                         |               |                                    |                     |   |

### Appendix 3.1 Annexure 1.1: Standards for onshore & off-shore disposal of dredged material

**Criteria for Disposal of Harmful Bottom Sediments:** No specific standards are defined in India for disposal of dredged material. If dredged material is toxic / harmful then these sediments should either be disposed off in landfill or in Sea. Criteria followed in Japan are given in the **Table 1**.

**Table 1: Criteria for Harmful Bottom Sediments, Japan (unit: mg/l)**

| Contaminated Material      | Dumping in Landfills (mg/l) | Dumping at sea (mg/l) |
|----------------------------|-----------------------------|-----------------------|
| Alkyl mercuric compounds   | Not detectable              | Not detectable        |
| Mercury and its compounds  | 0.005                       | 0.005                 |
| Cadmium and its compounds  | 0.1                         | 0.1                   |
| Lead and its compounds     | 1                           | 1                     |
| Organophosphorus compounds | 1                           | 1                     |
| Chromium (VI) compounds    | 0.5                         | 0.5                   |
| Arsenic and its compounds  | 0.5                         | 0.5                   |
| Cyanogen compounds         | 1                           | 1                     |
| PCB                        | 0.003                       | 0.003                 |
| Copper and its compounds   | -                           | 3                     |
| Zinc and its compounds     | -                           | 5                     |
| Fluoride                   | -                           | 15                    |

**Note: Criteria are based on the examination of dissolution of contaminated materials**

*Source: Assessment of the Environmental Impact of Port Development, United Nations, New York, 1992*

**Criteria for Off-shore dumping of Dredged material:** No criteria are defined for off-shore disposal of dredged material in India, thus reference to the UN standards can be made and is given in **Table 2**.

**Table 2: Criteria for Off-Shore Dumping of Dredged Material (unit: ppm or ppb)**

| Substance                      | Canada                      | USA  |
|--------------------------------|-----------------------------|--|
| PCB (ppb)                      | 100                         | 380  |
| Hg (ppm)                       | 0.5                         | 0.15   |
| Cd (ppm)                       | 0.60                        | 0.7  |
| Zn (ppm)                       | 169                         | 105  |
| Cu (ppm)                       | 45                          | 68   |
| As (ppm)                       | (5 – 25)                    | 12.5   |
| Pb (ppm)                       | 45                          | 33   |
| Organochlorine pesticide (ppb) | 10<br>for any compound      | 5.0<br>Sum of DDT, DDE and DDD   |
| Polyaromatic hydrocarbon (ppb) | (1,000) Sum of 16 compounds | 680 Sum of six low mol. Wt. compounds<br>2,690 Sum of 10 high mol. Wt. compounds |

*Source: Assessment of the Environmental Impact of Port Development, United Nations, New York, 1992*

| Appendix – I  |  |  |
|---|--|--|
| Following Environmental Safety Measures to be implemented by Contractor : |  |  |
| Sl. No.   | Environmental Safety measures to be implemented  | Responsibility   |
| i.  | ‘Consent to Establish’ and ‘Consent to Operate’ shall be obtained from State Pollution Control Board under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.  | Contractor   |
| ii  | The Project authority shall ensure that no rivers or tributaries are blocked due to any activities at the project site and free flow of water is maintained.   | Contractor should ensure the same  |
| iii   | Shoreline shall not be disturbed due to dumping. Periodical study on shore line changes shall be conducted and mitigation carried out, if necessary.   | Contractor should ensure the same.   |
| iv  | Dredging shall not be carried out during the fish/turtle breeding seasons.   | Contractor   |
| v   | All vessels used in the river will be fitted with noise control and animal exclusion devices so that aquatic life is not unduly disturbed.   | Contractor should ensure.  |
| vi  | Spillage of fuel / engine oil and lubricants from the construction site are a source of organic pollution which impacts aquatic life, particularly benthos. This shall be prevented by suitable precautions and also by providing necessary mechanisms to trap the spillage. | Contractor   |
| vii   | Construction waste including debris shall be disposed safely in the designated areas and in no case shall be disposed in the aquatic environment.  | Contractor   |
| viii  | Vessels shall not discharge oil or oily water such as oily bilge water containing more than 15ppm of oil.  | Contractor shall ensure and maintain record  |
| ix  | The project authority shall ensure that water traffic does not impact the aquatic wildlife sanctuaries that fall along the stretch of the river.   | Contractor should ensure compliance of provisions for movement of vessel in the Wildlife Sanctuary as per statutory clearances |
| x   | All Vessels will also have to comply with ‘Zero discharge’ standards to prevent solid or liquid waste from flowing into the river and affecting its biodiversity.  | Contractor   |
| xi  | The Dredging shall be carried by integrated and systematic planning by selective grid method by allowing migratory movement of Benthic fauna.  | Contractor   |
| xii   | All required noise and vibration control measures are to be adopted in Dredgers. Cutter suction Dredgers should be avoided as much as possible which produces more noise and vibration. No Drilling and Blasting is to be carried out.                                       | Contractor   |
| xiii  | Pre geo-tectonic studies has to be completed and the strata to be dredged is predetermined with complete data pertaining to hardness, compressive and tensile strengths.   | Contractor   |
| xiv   | Dredger type and other strata loosening methods shall be preconceived.   | Contractor   |
| xv  | Staggered dredging shall be carried based on turbidity monitoring to minimize the impact of turbidity.   | Contractor should comply and maintain record   |
| xvi   | Threshold level of turbidity, which has a minimal effect on fauna, has to be predetermined and Dredging planned accordingly.   | Contractor   |
| xvii  | Further silt screens needs to be used for minimizing the spread of   | Contractor   |

**Following Environmental Safety Measures to be implemented by Contractor :**

| <b>Sl. No.</b> | <b>Environmental Safety measures to be implemented</b>   | <b>Responsibility</b>  |
|----------------|--|--|
|                | Turbidity.   |  |
| xviii          | Disposal places of Dredged sediments needs to be predetermined, along the shore by assessment of suitability, which will not affect the shoreline (erosion) and also causing impacts during monsoon and flooding.  | Contractor   |
| xix            | As much as possible, it shall not be disposed off in the river itself, and the site should be such that the dispersion is quicker by undertaking modelling studied.  | Contractor   |
| xx             | Ballast water control and management measures shall be implemented.  | Contractor   |
| xxi            | Waste and waste water reception facilities in Jetty shall be implemented.  | Contractor should dispose the waste and wastewater at designated disposal place authorized by SPCB   |
| xxii           | The Risk and Disaster Management Plan has been prepared in consonance with the manual of terminals and harbours issued by the Ministry of Environmental and Forests dated 5 <sup>th</sup> May 2010.  | Contractor should follow the risk and disaster management plan for the purpose of dredging in river accordance with the Statutory/regulatory guidelines.   |
| xxiii          | Standard Operating Procedures (SOP) and Emergency Response Plan (ERP) for onsite and offsite emergencies shall be prepared and implemented based on Hazard Identification and Risk Assessment to handle, process, store and transport of hazardous substances. | Contractor should prepare and follow the Standard Operating Procedures (SOP) and Emergency Response Plan (ERP) for onsite and offsite emergencies for dredging in river accordance with Statutory/regulatory guidelines and IWAI consent |
| xxiv           | Oil spill contingency plan shall be prepared and part of DMP to tackle emergencies. The equipment and recovery of oil from a spill shall be assessed. Guidelines given in MARPOL and shipping Acts for oil spill management shall be followed.                 | Contractor should implement the Oil Spill Contingency Plan for dredging in river accordance with Statutory/regulatory guidelines.  |
| xxv            | No diversion of the natural course of the river shall be made without prior permission from the Ministry of Water resources.   | Contractor should ensure the same.   |
| xxvi           | All the erosion control measures shall be taken at water front facilities.   | Contractor should ensure the same.   |
| xxvii          | Necessary Air Pollution Control measures shall be taken during loading, unloading, handling, transport of the material at the Berthing and water front facilities.   | Contractor   |
| xxviii         | The Vessels shall comply the emission norms prescribed from time to time.  | Contractor   |
| xxiv           | All safety measures are to be implemented in coordination with the respective state government departments such as State Forest Department, Public Works Department, State Pollution Control Board etc.  | Contractor   |