

PROCUREMENT DOCUMENTS

**Bidding Document for
Procurement of Goods**

Procurement of:

**Coastal Flood Monitoring Stations, Software and
Hardware (Coastal Inundation & Storm monitoring
system and Comprehensive Annual maintenance)**

ICB No: BWDB-G6/2020-21

Project- BWCSRP: Component-B SHEWS

Purchaser- Bangladesh Water Development Board

Country-Bangladesh

Issued on: November 09, 2020.

Table of Contents

PART 1 – Bidding Procedures	3
Section I. Instructions to Bidders	4
Section II. Bid Data Sheet (BDS)	29
Section III. Evaluation and Qualification Criteria	34
Section IV. Bidding Forms	39
Section V. Eligible Countries	71
Section VI. Bank Policy - Corrupt and Fraudulent Practices	72
PART 2 – Supply Requirements	74
Section VII. Schedule of Requirements	75
PART 3 - Contract	158
Section VIII. General Conditions of Contract	159
Section IX. Special Conditions of Contract	181
Section X. Contract Forms	188
Annexure-A	198
Annexure-B of SCC Clause 16.1	203
Annexure-C Draft of Annual Operation and Maintenance Effectiveness Agreement	206

PART 1 – Bidding Procedures

Section I. Instructions to Bidders

Table of Contents

A. General.....	6
1. Scope of Bid.....	6
2. Source of Funds	6
3. Corrupt and Fraudulent Practices.....	7
4. Eligible Bidders	7
5. Eligible Goods and Related Services	9
B. Contents of Bidding Document	10
6. Sections of Bidding Document	10
7. Clarification of Bidding Documents	11
8. Amendment of Bidding Document	11
C. Preparation of Bids	11
9. Cost of Bidding	11
10. Language of Bid.....	11
11. Documents Comprising the Bid.....	11
12. Letter of Bid and Price Schedules.....	12
13. Alternative Bids	12
14. Bid Prices and Discounts	13
15. Currencies of Bid and Payment	15
16. Documents Establishing the Eligibility and Conformity of the Goods and Related Services	15
17. Documents Establishing the Eligibility and Qualifications of the Bidder.....	16
18. Period of Validity of Bids	16
19. Bid Security	17
20. Format and Signing of Bid.....	19
D. Submission and Opening of Bids	19
21. Sealing and Marking of Bids	19
22. Deadline for Submission of Bids	20
23. Late Bids	20
24. Withdrawal, Substitution, and Modification of Bids	20
25. Bid Opening.....	21
E. Evaluation and Comparison of Bids.....	22
26. Confidentiality	22
27. Clarification of Bids.....	22

28. Deviations, Reservations, and Omissions	23
29. Determination of Responsiveness	23
30. Nonconformities, Errors and Omissions	23
31. Correction of Arithmetical Errors	24
32. Conversion to Single Currency	24
33. Margin of Preference	24
34. Evaluation of Bids	24
35. Comparison of Bids	26
36. Qualification of the Bidder	26
37. Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids	26
F. Award of Contract.....	26
38. Award Criteria	26
39. Purchaser's Right to Vary Quantities at Time of Award.....	27
40. Notification of Award	27
41. Signing of Contract	27
42. Performance Security	28

Section I. Instructions to Bidders

A. General

1. **Scope of Bid**
 - 1.1 In connection with the Invitation for Bids, **specified in the Bid Data Sheet (BDS)**, the Purchaser, **as specified in the BDS**, issues these Bidding Documents for the supply of Goods and Related Services incidental thereto as specified in Section VII, Schedule of Requirements. The name, identification and number of lots (contracts) of this International Competitive Bidding (ICB) procurement are **specified in the BDS**.
 - 1.2 Throughout these Bidding Documents:
 - (a) the term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, telex) with proof of receipt;
 - (b) if the context so requires, “singular” means “plural” and vice versa; and
 - (c) “day” means calendar day.
2. **Source of Funds**
 - 2.1 The Borrower or Recipient (hereinafter called “Borrower”) **specified in the BDS** has applied for or received financing (hereinafter called “funds”) from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called “the Bank”) in an amount **specified in BDS**, toward the project named **in BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract for which these Bidding Documents are issued.
 - 2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with 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, to the knowledge of the Bank, is prohibited by 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).

- 3. Corrupt and Fraudulent Practices**
- 3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section VI.
- 3.2 In further pursuance of this policy, Bidders shall permit and shall cause its agents (where declared or not), sub-contractors, sub-consultants, service providers or suppliers and to permit the Bank to inspect all accounts, records and other documents relating to the submission of the application, bid submission (in case prequalified), and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.
- 4. Eligible Bidders**
- 4.1 A Bidder may be a firm that is a private entity, a government-owned entity—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. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the 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. **Unless specified in the BDS,** there is no limit on the number of members in a JV.
- 4.2 A Bidder shall not have a conflict of interest. Any Bidder 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:
- (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
 - (b) receives or has received any direct or indirect subsidy from another Bidder; or
 - (c) has the same legal representative as another Bidder; or
 - (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 Purchaser regarding this bidding process; or
 - (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

- (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
 - (g) any of its affiliates has been hired (or is proposed to be hired) by the Purchaser or Borrower for the Contract implementation; or
 - (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
 - (i) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a 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
- 4.3 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.
- 4.4 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 **specified in the BDS**.

- 4.5 Bidders that are Government-owned enterprises or institutions in the Purchaser'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 Purchaser. 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 enterprise or institution.
- 4.6 A Bidder shall not be under suspension from bidding by the Purchaser 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 A Bidder shall provide such evidence of eligibility satisfactory to the Purchaser, as the Purchaser shall reasonably request.
- 5. Eligible Goods and Related Services**
- 5.1 All the Goods and Related Services to be supplied under the Contract and financed by the Bank may have their origin in any country in accordance with Section V, Eligible Countries.
- 5.2 For purposes of this Clause, the term "goods" includes commodities, raw material, machinery, equipment, and industrial plants; and "related services" includes services such as insurance, installation, training, and initial maintenance.
- 5.3 The term "origin" means the country where the goods have been

mined, grown, cultivated, produced, manufactured or processed; or, through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.

B. Contents of Bidding Document

6. Sections of Bidding Document

- 6.1 The Bidding Documents consist of Parts 1, 2, and 3, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

- Section I. Instructions to Bidders (ITB)
- Section II. Bidding Data Sheet (BDS)
- Section III. Evaluation and Qualification Criteria
- Section IV. Bidding Forms
- Section V. Eligible Countries
- Section VI. Bank Policy-Corrupt and Fraudulent Practices

PART 2 Supply Requirements

- Section VII. Schedule of Requirements

PART 3 Contract

- Section VIII. General Conditions of Contract (GCC)
- Section IX. Special Conditions of Contract (SCC)
- Section X. Contract Forms

- 6.2 The Invitation for Bids issued by the Purchaser is not part of the Bidding Document.
- 6.3 Unless obtained directly from the Purchaser, the Purchaser is not responsible for the completeness of the document, responses to requests for clarification, the Minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Purchaser 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 or documentation as is required by the Bidding Documents.

- 7. Clarification of Bidding Documents**
- 7.1 A Bidder requiring any clarification of the Bidding Document shall contact the Purchaser in writing at the Purchaser's address **specified in the BDS**. The Purchaser will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of bids within a period **specified in the BDS**. The Purchaser shall forward copies of its response to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so **specified in the BDS**, the Purchaser shall also promptly publish its response at the web page **identified in the BDS**. Should the clarification result in changes to the essential elements of the Bidding Documents, the Purchaser shall amend the Bidding Documents following the procedure under ITB 8 and ITB 22.2.
- 8. Amendment of Bidding Document**
- 8.1 At any time prior to the deadline for submission of bids, the Purchaser may amend the Bidding Documents by issuing addenda.
- 8.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Documents from the Purchaser in accordance with ITB 6.3. The Purchaser shall also promptly publish the addendum on the Purchaser's web page in accordance with ITB 7.1.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Purchaser may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2.

C. Preparation of Bids

- 9. Cost of Bidding**
- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 10. Language of Bid**
- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in the language **specified in the BDS**. 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 into the language **specified in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents Comprising the**
- 11.1 The Bid shall comprise the following:

- Bid**
- (a) Letter of Bid in accordance with ITB 12;
 - (b) completed schedules, in accordance with ITB 12 and 14
 - (c) Bid Security or Bid-Securing Declaration, in accordance with ITB 19.1;
 - (d) Alternative bids, if permissible, in accordance with ITB 13;
 - (e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
 - (f) documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the contract if its bid is accepted;
 - (g) documentary evidence in accordance with ITB 17 establishing the Bidder's eligibility to bid;
 - (h) documentary evidence in accordance with ITB 16, that the Goods and Related Services to be supplied by the Bidder are of eligible origin;
 - (i) documentary evidence in accordance with ITB 16 and 30, that the Goods and Related Services conform to the Bidding Documents;
 - (j) any other document **required in the BDS**.
- 11.2 In addition to the requirements under ITB 11.1, 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.
- 11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.
- 12. Letter of Bid and Price Schedules**
- 12.1. The Letter of Bid and Price Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. All blank spaces shall be filled in with the information requested.
- 13. Alternative Bids**
- 13.1. Unless otherwise **specified in the BDS**, alternative bids shall not be considered.

14. Bid Prices and Discounts

- 14.1 The prices and discounts quoted by the Bidder in the Letter of Bid and in the Price Schedules shall conform to the requirements specified below.
- 14.2 All lots (contracts) and items must be listed and priced separately in the Price Schedules.
- 14.3 The price to be quoted in the Letter of Bid in accordance with ITB 12.1 shall be the total price of the bid, excluding any discounts offered.
- 14.4 The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.
- 14.5 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account, **unless otherwise specified in the BDS**. A bid submitted with an adjustable price quotation shall be treated as nonresponsive and shall be rejected, pursuant to ITB 29. However, if in accordance with the BDS, prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract, a bid submitted with a fixed price quotation shall not be rejected, but the price adjustment shall be treated as zero.
- 14.6 If so specified in ITB 1.1, bids are being invited for individual lots (contracts) or for any combination of lots (packages). Unless otherwise **specified in the BDS**, prices quoted shall correspond to 100 % of the items specified for each lot and to 100% of the quantities specified for each item of a lot. Bidders wishing to offer discounts 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. Discounts shall be submitted in accordance with ITB 14.4 provided the bids for all lots (contracts) are opened at the same time.
- 14.7 The terms EXW, CIP, and other similar terms shall be governed by the rules prescribed in the current edition of Incoterms, published by The International Chamber of Commerce, **as specified in the BDS**.
- 14.8 Prices shall be quoted as specified in each Price Schedule included in Section IV, Bidding Forms. The dis-aggregation of price components is required solely for the purpose of facilitating the comparison of bids by the Purchaser. This shall not in any way limit the Purchaser's right to contract on any of the terms offered. In quoting prices, the Bidder shall be free to use transportation through carriers registered in any eligible country,

in accordance with Section V, Eligible Countries. Similarly, the Bidder may obtain insurance services from any eligible country in accordance with Section V, Eligible Countries. Prices shall be entered in the following manner:

- (a) For Goods manufactured in the Purchaser's Country:
 - (i) the price of the Goods quoted EXW (ex-works, ex-factory, ex warehouse, ex showroom, or off-the-shelf, as applicable), including all customs duties and sales and other taxes already paid or payable on the components and raw material used in the manufacture or assembly of the Goods;
 - (ii) any Purchaser's Country sales tax and other taxes which will be payable on the Goods if the contract is awarded to the Bidder; and
 - (iii) the price for inland transportation, insurance, and other local services required to convey the Goods to their final destination (Project Site) **specified in the BDS.**
- (b) For Goods manufactured outside the Purchaser's Country, to be imported:
 - (i) the price of the Goods, quoted CIP named place of destination, in the Purchaser's Country, as **specified in the BDS;**
 - (ii) the price for inland transportation, insurance, and other local services required to convey the Goods from the named place of destination to their final destination (Project Site) **specified in the BDS;**
- (c) For Goods manufactured outside the Purchaser's Country, already imported:
 - (i) the price of the Goods, including the original import value of the Goods; plus any mark-up (or rebate); plus any other related local cost, and custom duties and other import taxes already paid or to be paid on the Goods already imported.
 - (ii) the custom duties and other import taxes already paid (need to be supported with documentary evidence) or to be paid on the Goods already imported;
 - (iii) the price of the Goods, obtained as the difference

between (i) and (ii) above;

(iv) any Purchaser's Country sales and other taxes which will be payable on the Goods if the contract is awarded to the Bidder; and

(v) the price for inland transportation, insurance, and other local services required to convey the Goods from the named place of destination to their final destination (Project Site) **specified in the BDS.**

(d) for Related Services, other than inland transportation and other services required to convey the Goods to their final destination, whenever such Related Services are specified in the Schedule of Requirements:

(i) the price of each item comprising the Related Services (inclusive of any applicable taxes).

15. Currencies of Bid and Payment

15.1 The currency(ies) of the bid and the currency(ies) of payments shall be **as specified in the BDS.** The Bidder shall quote in the currency of the Purchaser's Country the portion of the bid price that corresponds to expenditures incurred in the currency of the Purchaser's country, unless otherwise **specified in the BDS.**

15.2 The Bidder may express the bid price in any currency. If the Bidder wishes to be paid in a combination of amounts in different currencies, it may quote its price accordingly but shall use no more than three foreign currencies in addition to the currency of the Purchaser's Country.

16. Documents Establishing the Eligibility and Conformity of the Goods and Related Services

16.1 To establish the eligibility of the Goods and Related Services in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.

16.2 To establish the conformity of the Goods and Related Services to the Bidding Documents, the Bidder shall furnish as part of its Bid the documentary evidence that the Goods conform to the technical specifications and standards specified in Section VII, Schedule of Requirements.

16.3 The documentary evidence may be in the form of literature, drawings or data, and shall consist of a detailed item by item description of the essential technical and performance characteristics of the Goods and Related Services, demonstrating substantial responsiveness of the Goods and Related Services to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of the Section VII,

Schedule of Requirements.

- 16.4 The Bidder shall also furnish a list giving full particulars, including available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods during the period **specified in the BDS** following commencement of the use of the goods by the Purchaser.
- 16.5 Standards for workmanship, process, material, and equipment, as well as references to brand names or catalogue numbers specified by the Purchaser in the Schedule of Requirements, are intended to be descriptive only and not restrictive. The Bidder may offer other standards of quality, brand names, and/or catalogue numbers, provided that it demonstrates, to the Purchaser's satisfaction, that the substitutions ensure substantial equivalence or are superior to those specified in the Section VII, Schedule of Requirements.
- 17. Documents Establishing the Eligibility and Qualifications of the Bidder**
- 17.1 To establish Bidder's their eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid, included in Section IV, Bidding Forms.
- 17.2 The documentary evidence of the Bidder's qualifications to perform the contract if its bid is accepted shall establish to the Purchaser's satisfaction:
- (a) that, if **required in the BDS**, a Bidder that does not manufacture or produce the Goods it offers to supply shall submit the Manufacturer's Authorization using the form included in Section IV, Bidding Forms to demonstrate that it has been duly authorized by the manufacturer or producer of the Goods to supply these Goods in the Purchaser's Country;
 - (b) that, if **required in the BDS**, in case of a Bidder not doing business within the Purchaser's Country, the Bidder is or will be (if awarded the contract) represented by an Agent in the country equipped and able to carry out the Supplier's maintenance, repair and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications; and
 - (c) that the Bidder meets each of the qualification criterion specified in Section III, Evaluation and Qualification Criteria.
- 18. Period of Validity of Bids**
- 18.1. Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Purchaser in accordance with ITB22.1. A bid valid for a shorter period shall

be rejected by the Purchaser as nonresponsive.

- 18.2. In exceptional circumstances, prior to the expiration of the bid validity period, the Purchaser 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 Clause 19, it shall also be extended for a corresponding 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.
- 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:
 - (a) In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor **specified in the BDS**.
 - (b) In the case of adjustable price contracts, no adjustment shall be made.
 - (c) In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above.

19. Bid Security

- 19.1. The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a bid security, as **specified in the BDS**, in original form and, in the case of a bid security. In the amount and currency **specified in the BDS**.
- 19.2. A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.
- 19.3. If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:
 - (a) an unconditional guarantee issued by a bank or financial institution (such as an insurance, bonding or surety company);
 - (b) an irrevocable letter of credit;
 - (c) a cashier's or certified check; or
 - (d) another security **specified in the BDS**,from a reputable source from an eligible country. If the

- unconditional guarantee is issued by a financial institution located outside the Purchaser's Country, the issuing financial institution shall have a correspondent financial institution located in the Purchaser's Country to make it enforceable. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Purchaser prior to bid submission. The bid security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.
- 19.4. If a Bid Security is specified pursuant to ITB 19.1, any bid not accompanied by a substantially responsive Bid Security shall be rejected by the Purchaser as non-responsive.
- 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 the Performance Security pursuant to ITB 42.
- 19.6. 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.
- 19.7. The Bid Security may be forfeited or the Bid Securing Declaration executed:
- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder ; or
 - (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB41; or
 - (ii) furnish a performance security in accordance with ITB 42.
- 19.8. The bid security or Bid- Securing Declaration of a JV must be in the name of the JV that submits the bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the bid security or Bid-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITB 4.1 and ITB 11.2.
- 19.9. If a bid security is **not required in the BDS**, pursuant to ITB 19.1, and
- (a) if a Bidder withdraws its bid during the period of bid

validity specified by the Bidder on the Letter of Bid, or

- (b) if the successful Bidder fails to: sign the Contract in accordance with ITB41; or furnish a performance security in accordance with ITB 42;

the Borrower may, **if provided for in the BDS**, declare the Bidder ineligible to be awarded a contract by the Purchaser for a period of time **as stated in the BDS**.

20. Format and Signing of Bid

- 20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it "ORIGINAL." Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall submit copies of the bid, in the number **specified in the BDS** and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
- 20.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation **as specified in the BDS** and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.
- 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 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

- 21.1. The Bidder shall enclose the original and all copies of the bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL", "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope.
- 21.2. The inner and outer envelopes shall:
 - (a) bear the name and address of the Bidder;
 - (b) be addressed to the Purchaser in accordance with ITB 24.1;

- (c) bear the specific identification of this bidding process indicated in ITB1.1; and
 - (d) bear a warning not to open before the time and date for bid opening.
- 21.3. If all envelopes are not sealed and marked as required, the Purchaser will assume no responsibility for the misplacement or premature opening of the bid.
- 22. Deadline for Submission of Bids**
 - 22.1. Bids must be received by the Purchaser at the address and no later than the date and time **specified in the BDS**. When **specified in the BDS**, bidders shall have the option of submitting their bids electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures **specified in the BDS**.
 - 22.2. The Purchaser may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB 8, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
- 23. Late Bids**
 - 23.1. The Purchaser shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Purchaser after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.
- 24. Withdrawal, Substitution, and Modification of Bids**
 - 24.1. A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization (the power of attorney) in accordance with ITB 20.2, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:
 - (a) prepared and submitted in accordance with ITB 20 and 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” or “MODIFICATION;” and
 - (b) received by the Purchaser prior to the deadline prescribed for submission of bids, in accordance with ITB 22.
 - 24.2. Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

- 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.

25. Bid Opening

- 25.1. Except as in the cases specified in ITB 23 and 24, the Purchaser shall publicly open and read out in accordance with ITB 25.3 all bids received by the deadline at the date, time and place **specified in the BDS** in the presence of Bidders' designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be as **specified in the BDS**.
- 25.2. First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. If the withdrawal envelope does not contain a copy of the "power of attorney" confirming the signature as a person duly authorized to sign on behalf of the Bidder, the corresponding bid will be opened. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening. Only bids that are opened and read out at Bid opening shall be considered further.
- 25.3. All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Prices, per lot (contract) if applicable, including any discounts and alternative bids; the presence or absence of a Bid Security, if required; and any other details as the Purchaser may consider appropriate. Only discounts and alternative bids read out at Bid opening shall be considered for evaluation. The Letter of Bid and the Price Schedules are to be initialed by representatives of the Purchaser attending bid opening in the manner **specified in the BDS**. The Purchaser shall neither discuss the merits of any bid nor reject any bid (except for late bids, in accordance with ITB 25.1).

- 25.4. The Purchaser shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot (contract) if applicable, including any discounts, and alternative bids; and the presence or absence of a Bid Security, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

E. Evaluation and Comparison of Bids

- 26. Confidentiality**
- 26.1 Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to bidders or any other persons not officially concerned with the bidding process until information on Contract Award is communication to all Bidders in accordance with ITB 40.
- 26.2 Any effort by a Bidder to influence the Purchaser in the evaluation or contract award decisions may result in the rejection of its Bid.
- 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 Purchaser on any matter related to the bidding process, it should do so in writing.
- 27. Clarification of Bids**
- 27.1 To assist in the examination, evaluation, comparison of the bids, and qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder in respect to its Bid and that is not in response to a request by the Purchaser shall not be considered. The Purchaser'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 Purchaser in the Evaluation of the bids, in accordance with ITB 31.
- 27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Purchaser's request for clarification, its bid may be rejected.

- 28. Deviations, Reservations, and Omissions**
- 28.1 During the evaluation of bids, the following definitions apply:
- (a) “Deviation” is a departure from the requirements specified in the Bidding Documents;
 - (b) “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and
 - (c) “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Documents
- 29. Determination of Responsiveness**
- 29.1 The Purchaser’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB 11.
- 29.2 A substantially responsive Bid is one that meets the requirements of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:
- (a) if accepted, would
 - (i) affect in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Documents, the Purchaser’s rights or the Bidder’s obligations under the Contract; or
 - (b) if rectified, would unfairly affect the competitive position of other bidders presenting substantially responsive bids.
- 29.3 The Purchaser shall examine the technical aspects of the bid submitted in accordance with ITB 16 and ITB 17, in particular, to confirm that all requirements of Section VII, Schedule of Requirements have been met without any material deviation or reservation, or omission.
- 29.4 If a bid is not substantially responsive to the requirements of Bidding Documents, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
- 30. Nonconformities, Errors and Omissions**
- 30.1 Provided that a Bid is substantially responsive, the Purchaser may waive any nonconformities in the Bid.
- 30.2 Provided that a bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or

documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

30.3 Provided that a bid is substantially responsive, the Purchaser shall rectify quantifiable nonmaterial nonconformities related to the Bid 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.

31. Correction of Arithmetical Errors

31.1 Provided that the Bid is substantially responsive, the Purchaser shall correct arithmetical errors on the following basis:

- (a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;
- (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
- (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.

31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1, shall result in the rejection of the Bid.

32. Conversion to Single Currency

32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted in a single currency as **specified in the BDS**.

33. Margin of Preference

33.1 **Unless otherwise specified in the BDS**, a margin of preference shall not apply.

34. Evaluation of Bids

34.1 The Purchaser shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

34.2 To evaluate a Bid, the Purchaser shall consider the following:

- (a) evaluation will be done for Items or Lots (contracts), as **specified in the BDS**; and the Bid Price as quoted in accordance with clause 14;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 14.3;
 - (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
 - (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3;
 - (f) the additional evaluation factors are specified in Section III, Evaluation and Qualification Criteria;
- 34.3 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.
- 34.4 If these Bidding Documents allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated price of the lot (contract) combinations, including any discounts offered in the Letter of Bid Form, is specified in Section III, Evaluation and Qualification Criteria
- 34.5 The Purchaser's evaluation of a bid will exclude and not take into account:
- (a) in the case of Goods manufactured in the Purchaser's Country, sales and other similar taxes, which will be payable on the goods if a contract is awarded to the Bidder;
 - (b) in the case of Goods manufactured outside the Purchaser's Country, already imported or to be imported, customs duties and other import taxes levied on the imported Good, sales and other similar taxes, which will be payable on the Goods if the contract is awarded to the Bidder;
 - (c) any allowance for price adjustment during the period of execution of the contract, if provided in the bid.
- 34.6 The Purchaser's evaluation of a bid may require the consideration of other factors, in addition to the Bid Price quoted in accordance with ITB 14. These factors may be related to the characteristics, performance, and terms and conditions of

purchase of the Goods and Related Services. The effect of the factors selected, if any, shall be expressed in monetary terms to facilitate comparison of bids, unless otherwise **specified in the BDS** from amongst those set out in Section III, Evaluation and Qualification Criteria. The criteria and methodologies to be used shall be as specified in ITB 34.2 (f).

- | | |
|---|--|
| 35. Comparison of Bids | 35.1 The Purchaser shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 34.2 to determine the lowest evaluated bid. The comparison shall be on the basis of CIP (place of final destination) prices for imported goods and EXW prices, plus cost of inland transportation and insurance to place of destination, for goods manufactured within the Borrower's country, together with prices for any required installation, training, commissioning and other services. The evaluation of prices shall not take into account custom duties and other taxes levied on imported goods quoted CIP and sales and similar taxes levied in connection with the sale or delivery of goods. |
| 36. Qualification of the Bidder | <p>36.1 The Purchaser shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.</p> <p>36.2 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.</p> <p>36.3 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Purchaser shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.</p> |
| 37. Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids | 37.1 The Purchaser 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 bids submitted and specifically, bid securities, shall be promptly returned to the Bidders. |

F. Award of Contract

- | | |
|---------------------------|--|
| 38. Award Criteria | 38.1 Subject to ITB 37.1, the Purchaser shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be |
|---------------------------|--|

qualified to perform the Contract satisfactorily.

**39. Purchaser's
Right to Vary
Quantities at
Time of Award**

- 39.1 At the time the Contract is awarded, the Purchaser reserves the right to increase or decrease the quantity of Goods and Related Services originally specified in Section VII, Schedule of Requirements, provided this does not exceed the percentages **specified in the BDS**, and without any change in the unit prices or other terms and conditions of the bid and the Bidding Documents.

**40. Notification of
Award**

- 40.1 Prior to the expiration of the period of bid validity, the Purchaser shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification letter (hereinafter and in the Conditions of Contract and Contract Forms called the "Letter of Acceptance") shall specify the sum that the Purchaser will pay the Supplier in consideration of the supply of Goods (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price"). At the same time, the Purchaser shall also notify all other Bidders of the results of the bidding and shall publish in *UNDB online* the results identifying the bid and lot (contract) numbers and the following information:

- (i) name of each Bidder who submitted a 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 successful Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.

- 40.2 Until a formal Contract is prepared and executed, the notification of award shall constitute a binding Contract.

- 40.3 The Purchaser shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected.

**41. Signing of
Contract**

- 41.1 Promptly after notification, the Purchaser shall send the successful Bidder the Contract Agreement.
- 41.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Purchaser.

41.3 Notwithstanding ITB 41.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the products/goods, systems or services to be supplied, where such export restrictions arise from trade regulations from a country supplying those products/goods, systems or services, the Bidder shall not be bound by its bid, always provided however, that the Bidder can demonstrate to the satisfaction of the Purchaser and of the Bank that signing of the Contract Agreement has not been prevented by any lack of diligence on the part of the Bidder in completing any formalities, including applying for permits, authorizations and licenses necessary for the export of the products/goods, systems or services under the terms of the Contract.

**42. Performance
Security**

42.1 Within twenty-eight (28) days of the receipt of notification of award from the Purchaser, the successful Bidder, if required, shall furnish the Performance Security in accordance with the GCC, subject to ITB 34.5, using for that purpose the Performance Security Form included in Section X, Contract Forms, or another Form acceptable to the Purchaser. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Purchaser. A foreign institution providing a bond shall have a correspondent financial institution located in the Purchaser's Country.

42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Purchaser may award the Contract to the next lowest evaluated Bidder, whose bid is substantially responsive and is determined by the Purchaser to be qualified to perform the Contract satisfactorily.

Section II. Bid Data Sheet (BDS)

The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

ITB Clause Reference	A. General
ITB 1.1 (Scope of Bid)	The reference number of the Invitation for Bids is: WCS/G6/2020/4027 Dated: 09/11/2020.
ITB 1.1 (Scope of Bid)	The Purchaser is: Bangladesh Water Development Board represented by Project Director, Bangladesh Weather and Climate Services Regional Project (BWCSR): Component-B Strengthening Hydrological Information Services and Early Warning Systems (SHEWS).
ITB 1.1 (Scope of Bid)	The name of the ICB is: Coastal Inundation & Storm monitoring system and Comprehensive Annual maintenance. The identification number of the ICB is: BWDB-G6 The number and identification of lots (contracts) comprising this ICB is: Single Lot
ITB 2.1 (Source of funds)	The Borrower is: People's Republic of Bangladesh
ITB 2.1 (Source of funds)	Loan or Financing Agreement amount: USD 113.00million (for BWDB Component USD 36.00 million)
ITB 2.1 (Source of funds)	The name of the Project is: Bangladesh Weather and Climate Services Regional Project (BWCSR): Component-B Strengthening Hydrological Information Services and Early Warning Systems (SHEWS)
ITB 4.1 (Eligible Bidders)	Maximum number of members in the JV shall be: 02 (two).
IITB 4.4 (Eligible Bidders)	A list of debarred firms and individuals is available on the Bank's external website: http://www.worldbank.org/debarr .
	B. Contents of Bidding Documents
ITB 7.1 (Clarification of Bidding Documents)	For <u>Clarification of bid purposes</u> only, the Purchaser's address is: Attention: Mashiur Rahman, Project Director Address: Firoz Tower, 152/3/B, Panthapath Floor/ Room number: 2 nd Floor City: Dhaka ZIP Code: 1205 Country: Bangladesh

	Telephone: +88 02 58153785-86 Facsimile number: Not Available Electronic mail address: pd.bwcsrp.shews@gmail.com Requests for clarification should be received by the Employer no later than: 14 (fourteen) days prior to the deadline for submission of bids.
ITB 7.1 (Clarification of Bidding Documents)	Clarifications will not be published in the website
	C. Preparation of Bids
ITB 10.1 (Language of Bid)	The language of the bid is: English. All correspondence exchange shall be in English language. Language for translation of supporting documents and printed literature is English.
ITB 11.1 (j) (Documents Comprising the Bid)	1. Manufacturer's catalogue/brochure/leaflets or any other similar documents of the offered product. 2. Supply record of the manufacturer for last 7 years using the table in Section III. 3. The following details shall also be provided by Bangladeshi Bidders: a. Valid Trade Licence; b. TIN Certificate; c. VAT Registration Certificate. 4. In case the Bidder appoints an agent to act on behalf of the Bidder for this procurement, An Agreement signed between the Bidder and the agent, clearly mentioning specific roles and responsibilities of the Agent and the Bidder.
ITB 13.1 (Alternative Bids)	Alternative Bids shall not be considered.
ITB 14.5 (Bid Prices and Discounts)	The prices quoted by the Bidder shall not be subject to adjustment during the performance of the Contract.
ITB 14.6	Prices quoted for each lot (contract) shall correspond to 100 percent of the items specified for each lot (contract). Prices quoted for each item of a lot shall correspond to 100 percent of the quantities specified for this item of a lot.
ITB 14.7 (Bid Prices and Discounts)	The Incoterms edition is: Incoterms 2020.
ITB 14.8(b)(i)	Place of Destination: Hazrat Shah Jalal International Air Port, Dhaka.

(Bid Prices and Discounts)	Customs Duties and Value Added Taxes (CD-VAT) of the imported Goods under the Contract (incurred at the port of entry) will be paid by the Purchaser. However, the supplier shall work in close contact with purchaser's appointed Clearing & Forwarding (C & F) Agent to avoid complexity and all sorts of demurrage.
ITB 14.8 (a) (iii);(b)(ii) and (c)(v)(Bid Prices and Discounts)	"Final destination (Remote Sites as per Annexure- A in Schedule of Requirement in Section VII.)"
ITB 15.1 (Currencies of Bid and payment)	The prices shall be quoted by the bidder in: any freely convertible currency up to a maximum of three foreign currencies. The Bidder is required to quote in Bangladesh Taka (BDT) for the portion of the bid price that corresponds to expenditures incurred in Bangladesh Taka (BDT).
ITB 16.4	Period of time the Goods are expected to be functioning (for the purpose of spare parts): 10 (Ten) years.
ITB 17.2 (a) (Documents Establishing the Eligibility and Qualifications of the Bidder)	1. Manufacturer's authorization certificate is required for the items: (i) GSM/GPRS data transmission Modem; (ii) Data Logger; & (iii) All meteorological and hydrological Sensors. (Line Item no. 1.1, 1.2 and 2.1 of List of Goods and Delivery Schedule, Section-VII).
ITB 17.2 (b) (Documents Establishing the Eligibility and Qualifications of the Bidder)	After sales service is: required. In case a Bidder not doing business within the Purchaser's Country, the Bidder is, or will be (if awarded the contract) represented by an Agent in the purchaser's country equipped and able to carry out the Supplier's maintenance, repair and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications. The agent should have three (03) years similar (similar means experience in monitoring systems in outdoor environment for hydrological / meteorological / groundwater/telemetry system for providing goods and services) service experience in purchaser's country. In case of, any member of joint venture is from the purchaser's country, the representation through the agent is not allowed. Bidder should open local office and service centre in the country within 6 months of award of contract. The service centre should have facilities to repair the equipment or have enough inventories of spare parts to replace the equipment within 3 days during warranty and AMC period.
ITB 18.1 (Period of Validity)	The bid validity period shall be 120 days.

of Bids)	
ITB 18.3 (a) (Period of Validity of Bids)	The bid price shall be adjusted by the following factor(s): Not Applicable
ITB 19.1 (Bid Security)	<i>A Bid Security shall be required.</i> The amount of the Bid Security shall be United States Dollar 20,000.00 or an equivalent amount in any freely convertible currency.
ITB 19.3 (Bid Security)	(c) Not applicable
ITB 19.9	Not Applicable
ITB 20.1	In addition to the original of the bid, the number of copies is: One (01) along with a softcopy.
ITB 20.2 (Format and Signing of Bid)	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of attorney to sign the bid in accordance with ITB clause 20, with supporting document that the person(s) signing the power of attorney has the authority to delegate his/her authority to other person (for example, constitutional document or board resolution). In case the Bidder authorizes a person who is not the payroll employee of the Bidder, the Bidder and the authorized person must have an Agent Agreement with specific roles and responsibilities with respect to this procurement.
	D. Submission and Opening of Bids
ITB 22.1 (Deadline for Submission of Bids)	For <u>bid submission purposes</u> only, the Purchaser's address is Attention: Project Director Bangladesh Weather and Climate Services Regional Project (BWCSRP) Component-B: Strengthening Hydrological Information Services and Early Warning Systems (SHEWS) Address: Firoz Tower, 152/3/B, Panthapath Floor/ Room number: 2 nd Floor City: Dhaka, ZIP Code: 1205 Country: Bangladesh The deadline for bid submission is: Date: December 23, 2020 Time: 15.00 Local (GMT+ 6 hours) Bidders shall not have the option of submitting their bids electronically.
ITB 25.1 (Bid Opening)	The bid opening shall take place at: Street Address: Firoz Tower, 152/3/B Panthapath. Floor/ Room number: 2 nd Floor. City: Dhaka. Country: Bangladesh. Date: December 23, 2020 Time: 15.30 Local (GMT+ 6 hours)
ITB 25.3	The Letter of Bid and Price Schedules shall be initialed by 03 (three)

(Bid Opening)	representatives of the Purchaser conducting Bid opening. Procedure: Each Bid shall be initialed by all representatives and shall be numbered, any modification to the unit or total price shall be initialed by the Representative of the Employer.
E. Evaluation and Comparison of Bids	
ITB 32.1 (Conversion to Single Currency)	The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: Bangladesh Taka. The source of exchange rate shall be: Bangladesh Bank webpage at “http://www.bangladesh-bank.org/econdata/exchangerate.php” and the rate shall be the BC selling exchange rate. If the exchange rates are not available from the above source on the particular date, the exchange rates published in the Wall Street Journal would be used for currency conversion in US Dollar. The date for the exchange rate shall be 14(fourteen) days prior to the bid submission deadline.
ITB 33.1 (Margin of Preference)	A margin of domestic preference shall apply. The application methodology is defined in Section III Evaluation and Qualification Criteria. Group A Bidder will provide detail of the cost breakdown of items in its bid if the Bidder wishes to get margin of preference.
ITB 34.2 (a) (Evaluation of Bids)	Evaluation will be done for all items together (contract). Bids will be evaluated by lot(contract). If a Price Schedule shows items listed but not priced, their prices shall be assumed to be included in the prices of other items. An item not listed in the Price Schedule shall be assumed to be not included in the bid and such bid shall be treated as non-responsive.
ITB 34.6 (Evaluation of Bids)	No other evaluation factor shall be considered in the bid evaluation
F. Award of Contract	
ITB 39.1 (Purchaser’s Right to Vary Quantities at Time of Award)	The maximum percentage by which quantities may be increased is: 15% The maximum percentage by which quantities may be decreased is: 15%

**Section III. Evaluation and Qualification
Criteria**

Contents

1. Margin of Preference (ITB 33) 35

2. Evaluation (ITB 34) 36

1. Margin of Preference (ITB 33)

If the Bidding Data Sheet so specifies, the Purchaser will grant a margin of preference to goods manufactured in the Purchaser's country for the purpose of bid comparison, in accordance with the procedures outlined in subsequent paragraphs.

Bids will be classified in one of three groups, as follows:

- (a) **Group A:** Bids offering goods manufactured in the Purchaser's Country, for which (i) labor, raw materials, and components from within the Purchaser's Country account for more than thirty (30) percent of the EXW price; and (ii) the production facility in which they will be manufactured or assembled has been engaged in manufacturing or assembling such goods at least since the date of bid submission.
- (b) **Group B:** All other bids offering Goods manufactured in the Purchaser's Country.
- (c) **Group C:** Bids offering Goods manufactured outside the Purchaser's Country that have been already imported or that will be imported.

To facilitate this classification by the Purchaser, the Bidder shall complete whichever version of the Price Schedule furnished in the Bidding Documents is appropriate provided, however, that the completion of an incorrect version of the Price Schedule by the Bidder shall not result in rejection of its bid, but merely in the Purchaser's reclassification of the bid into its appropriate bid group.

The Purchaser will first review the bids to confirm the appropriateness of, and to modify as necessary, the bid group classification to which bidders assigned their bids in preparing their Bid Forms and Price Schedules.

All evaluated bids in each group will then be compared to determine the lowest evaluated bid of each group. Such lowest evaluated bids shall be compared with each other and if as a result of this comparison a bid from Group A or Group B is the lowest, it shall be selected for the award.

If as a result of the preceding comparison, the lowest evaluated bid is a bid from Group C, all bids from Group C shall be further compared with the lowest evaluated bid from Group A after adding to the evaluated price of goods offered in each bid from Group C, for the purpose of this further comparison only, an amount equal to 15% (fifteen percent) of the respective CIP bid price for goods to be imported and already imported goods. Both prices shall include unconditional discounts and be corrected for arithmetical errors. If the bid from Group A is the lowest, it shall be selected for award. If not, the lowest evaluated bid from Group C shall be selected as paragraph above."

Group A Bidder will provide detail of the cost breakdown of items in its bid if the Bidder wishes to get margin of preference.

2. Evaluation (ITB 34)

2.1. Evaluation Criteria (ITB 34.6)

No additional factors shall be taken into account in the bid evaluation. The evaluation of bids shall be in accordance with ITB 34 and based on the Bid Price quoted in accordance with ITB Clause 14.8 in the applicable Price Schedules provided in Section IV (list of price schedules shown below for ease of reference).

(i) Price Schedule A: Goods Manufactured Outside the Purchaser's Country, to be imported; AND

(ii) Price Schedule B: Goods Manufactured Outside the Purchaser's Country, already imported; AND

(iii) Price Schedule C: Goods Manufactured in the Purchaser's Country; AND

(iv) Price and Completion Schedule: Related services (Part-1 and Part-2, of 2 parts).

2.2. Multiple Contracts (ITB 34.4) -Not applicable for this procurement.

2.3. Alternative Bids (ITB 13.1)-Not applicable for this procurement.

3. Qualification (ITB 36)

3.1 Postqualification Requirements (ITB 36.1)

After determining the lowest-evaluated bid in accordance with ITB 35.1, the Purchaser shall carry out the post-qualification of the Bidder in accordance with ITB 36, using only the requirements specified. Requirements not included in the text below shall not be used in the evaluation of the Bidder's qualifications.

(A) Financial Capability of the Bidder

The Bidder will furnish documentary evidence that it meets the following financial requirements:

(i) Average Annual Turnover

Bidder shall have annual turnover at least USD 0.6 (zero point six) million or equivalent over a period of best 03 (three) years within last 05 (five years) i.e. 05 years counting backward from the date of publication of IFB;

Bidder shall submit audited financial reports along with the bid, if Annual Turnover remains mentioned in the audited financial reports or if not required by the law of the Applicant's country, other financial statements (third party statements enough to substantiate annual turnover) acceptable to the Employer, for the last five (5) years to substantiate average annual turnover.

(ii) Liquid Asset

The Bidder at the time of bid submission should have at least the amount of USD **0.5 (zero point five) million or equivalent** liquid asset or working capital or credit facilities or their combination.

Bidder as a Joint Venture

In case of joint venture, all parties combined must meet the financial requirement stipulated in (i) and (ii) above. While, each partner to the joint venture must meet at least 30% of the financial requirements as mentioned above.

(B) Experience and Technical Capacity of the Bidder

The Bidder will furnish documentary evidence that it meets the following requirements:

(i) General Experience:

- (a) The Bidder should have at least five (05) years of experience in supplying and commissioning equipment related to Hydrological monitoring services of rivers / reservoirs (i.e. years counting backward from the date of IFB publication).
- (b) In case of the joint venture, at least one JV partner must meet the experience criteria mentioned above. The other JV partner must have at least five (05) years of experience in supplying and commissioning equipment/ providing operations and maintenance services, related to telemetric Hydrological / Meteorological monitoring services.

(ii) Specific Experience:

- (a) Successful completion of contracts related to Hydrological monitoring involving sensors, data loggers and telemetry with a total value of at least **USD 0.6 (zero point six) million in 01 (one) contract** within the last five years (years counting backward from the date of publication of the IFB).
- (b) Successful supply and installation of at least 30 Hydrological monitoring sites involving sensors, data loggers and telemetry **in 01 (one) contract** within the last five years (years counting backward from the date of publication of the IFB).
- (c) In case of a joint venture, each joint venture member should meet at least 15 % of the requirement specified in the specific experience (mentioned above in sub-sections (a) and (b)).

C) Manufacturing Capability and Capacity

If the bidder /JVpartnersis/are not the manufacturer of all or any of the thehydro-met equipment (i.e. listed in table-1), the bidder /JV shall furnish a legally enforceable authorization from manufacturer assuring full guarantee and warranty obligations as per GCC and SCC for the goods offered;

If the bidder or JVpartner, himself is a manufacturer of the hydro-meteorological equipment, then a self-authorization suffices for the respective equipment manufactured by bidder.

Further, bidder or JV should furnish the documentary evidence from the manufacturer of the hydro-meteorological equipment to establish that the manufacturer has manufactured and supplied the quantity of the hydro-meteorological equipment of similar make and model as proposed in this bid, as per Table-1 below in any two of the year during a period of last 7 years from the last date of submission of bid document. In case the bidder / JV manufactures some equipment and propose to procure remaining equipment from different manufactures, the above conditions should be met by bidder /JV partner for the equipment manufactured by them and respective manufacturer should meet the condition for the equipment to be procured from different manufacturers.

Table-1 Compliance for equipment manufacturer

Sl. No	Item	Total quantity as per schedule of requirement	Minimum number of required total quantity in any two of last 7 years	Supplier's Supply Record with date and Certificate
1.	Automatic Radar Water Level Gauge (AWLG) sensor	20	10	
2	Surface Velocity Radar (SVR) with Radar Type Water Level sensor	20	10	
3	Data loggers with 2 (Analogue input) AI channels	40	20	
4	GSM & GPRS Telemetry Modem	40	20	

Section IV. Bidding Forms

Table of Forms

Letter of Bid.....	40
Bidder Information Form	43
Bidder's JV Members Information Form	44
Price Schedule: A. Goods Manufactured Outside the Purchaser's Country, to be Imported	46
Price Schedule: B. Goods Manufactured Outside the Purchaser's Country, already Imported	49
Price Schedule: C. Goods Manufactured in the Purchaser's Country	52
Price and Completion Schedule: Related Services Part 1 of 2 Parts	55
Price and Completion Schedule: Related Services Part 2 (Annual Operation & Maintenance Services) of 2 Parts.....	60
Form of Bid Security	64
Form of Bid Security (Bid Bond).....	66
Form of Bid-Securing Declaration	68
Manufacturer's Authorization	69
Manufacturer's/Distributor's Authorization for IT Equipment.....	70

Letter of Bid

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

Note: All italicized text is for use in preparing this form and shall be deleted from the final products.

Date: **[insert date (as day, month and year) of Bid Submission]**

ICB No.: **[insert number of bidding process]**

Invitation for Bid No.: **[insert identification]**

Alternative No.: ***[insert identification No if this is a Bid for an alternative]***

To: ***[insert complete name of Purchaser]***

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB 8)___;
- (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 Purchaser based on execution of a Bid Securing Declaration in the Purchaser's country in accordance with ITB 4.6
- (d) We offer to supplying conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Goods:**[insert a brief description of the Goods and Related Services]**;
- (e) The total price of our Bid, excluding any discounts offered in item (f) below is:

In case of only one lot, total price of the Bid [insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies];

In case of multiple lots, total price of each lot [insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies];

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, indicating the various amounts and the respective currencies];

- (f) 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]:
- (g) Our bid shall be valid for a period of *[specify the number of calendar days]* 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;
- (h) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
- (i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.2(e), other than alternative bids submitted in accordance with ITB 13;
- (j) We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by a member of the World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Employer's country laws or official regulations or pursuant to a decision of the United Nations Security Council;
- (k) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB 4.5;¹
- (l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: **[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]**

Name of Recipient	Address	Reason	Amount

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

- (m) 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; and

¹*Bidder to use as appropriate*² The amount of the Bond shall be denominated in the currency of the Purchaser's country or the equivalent amount in a freely convertible currency.

- (n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (o) 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

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.

Bidder Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: *[insert date (as day, month and year) of Bid Submission]*

ICB No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

Page _____ of _____ pages

1. Bidder's Name <i>[insert Bidder's legal name]</i>
2. In case of JV, legal name of each member : <i>[insert legal name of each member in JV]</i>
3. Bidder's actual or intended country of registration: <i>[insert actual or intended country of registration]</i>
4. Bidder's year of registration: <i>[insert Bidder's year of registration]</i>
5. Bidder's Address in country of registration: <i>[insert Bidder's legal address in country of registration]</i>
6. Bidder's Authorized Representative Information Name: <i>[insert Authorized Representative's name]</i> Address: <i>[insert Authorized Representative's Address]</i> Telephone/Fax numbers: <i>[insert Authorized Representative's telephone/fax numbers]</i> Email Address: <i>[insert Authorized Representative's email address]</i>
7. Attached are copies of original documents of <i>[check the box(es) of the attached original documents]</i> ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.3. ☐ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. ☐ In case of Government-owned enterprise or institution, in accordance with ITB 4.5 documents establishing: • Legal and financial autonomy • Operation under commercial law • Establishing that the Bidder is not dependent agency of the Purchaser
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Bidder's JV Members Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture]].

Date: *[insert date (as day, month and year) of Bid Submission]*

ICB No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

Page _____ of _____ pages

1. Bidder's Name: <i>[insert Bidder's legal name]</i>
2. Bidder's JV Member's name: <i>[insert JV's Member legal name]</i>
3. Bidder's JV Member's country of registration: <i>[insert JV's Member country of registration]</i>
4. Bidder's JV Member's year of registration: <i>[insert JV's Member year of registration]</i>
5. Bidder's JV Member's legal address in country of registration: <i>[insert JV's Member legal address in country of registration]</i>
6. Bidder's JV Member's authorized representative information Name: <i>[insert name of JV's Member authorized representative]</i> Address: <i>[insert address of JV's Member authorized representative]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers of JV's Member authorized representative]</i> Email Address: <i>[insert email address of JV's Member authorized representative]</i>
7. Attached are copies of original documents of <i>[check the box(es) of the attached original documents]</i> ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.3. ☐ In case of a Government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status, in accordance with ITB 4.5. 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Price Schedule Forms

*[The Bidder shall fill in these Price Schedule Forms in accordance with the instructions indicated. The list of line items in column 1 of the **Price Schedules** shall coincide with the List of Goods and Related Services specified by the Purchaser in the Schedule of Requirements.]*

Price Schedule: A. Goods Manufactured Outside the Purchaser's Country, to be Imported

(Group C bids, goods to be imported) Currencies in accordance with ITB 15						Date: _____ ICB No: _____ Alternative No: _____ Page N° _____ of _____		
1	2	3	4	5	6	7	8	9
Line Item N°	Description of Goods	Country of Origin	Delivery Date as defined by Incoterms	Quantity and physical unit	Unit price CIP Hazrat Shah Jalal International Air Port, Dhaka in accordance with ITB 14.8(b)(i)	CIP Price per line item (Col. 5x6)	Price per line item for inland transportation and other services required in the Purchaser's country to convey the Goods to their final destination specified in BDS	Total Price per Line item (Col. 7+8)
1	Automatic Water Level Sensors							
1.1	Supply of Automated Water Level Recorder (non-contact-RADAR) for inland/flood plain areas having 15m range with all necessary hardware as per technical specifications			20 Nos.				
1.2	Supply of Automatic River Discharge Measurement System consisting of Surface Velocity Radar (SVR) type sensor of range 15 m/ sec with RADAR type water Level Sensor of range 15 m in the rivers of coastal areawith all necessary hardware as per technical specifications			20 Nos.				

2.0	Data- Logger							
2.1	Supply of Data Loggers with 2analogue Input channels, including all necessary equipment for data transmission as per technical specifications.			40 Nos.				
2.2	Supply of GSM & GPRS based telemetry with SIM card, including all necessary equipment for data transmission as per technical specifications.			40 Nos.				
3.0	Solar panel, Battery, Panels & accessories							
3.1	Supply of Solar panel with all connectors,cables and conduit for cables as per technical specifications.			40 Nos.				
3.2	Supply of Battery, charger regulator, with all interconnecting connectors, cables for DCP as per technical specifications			40 Nos.				
3.3	Supply of Charge controller (to maintain required/stable voltage to device).			40 Nos.				
3.4	Manual Water Level Gauge / staff gauge			40 Nos				
3.5	Supply of NEMA 4X enclosure for Automatic Water Level Gauge station (As per Specification)			40 Nos.				

3.6	Supply of Compact platform within which all the sensor and devices such as AWLG , SVR with AWLS sensor, Data logger, Modem, Solar Panel, Battery, Charge controller including enclosure are fixed			40 Nos.				
3.7	Supply of lightning Arrester including earthing, surge protector, cables, mounting poles(As per Specification			40 Nos.				
3.8	Supply of Portable field calibration device for AWLG station			2 Nos.				
3.9	Supply of Safety kit for maintenance and repair of Coastal monitoring stations (As per Specification)			40 Nos				
3.10	Supply of ancillary equipment required for Coastal inundation station not listed in items 1- 3 but required for operation of system.			40 Nos				
Total Price								
Name of Bidder <i>[insert complete name of Bidder]</i> Signature of Bidder <i>[signature of person signing the Bid]</i> Date <i>[Insert Date]</i>								

Price Schedule: B. Goods Manufactured Outside the Purchaser's Country, already Imported

				(Group C bids, goods to be imported)					Date: _____ ICB No: _____ Alternative No: _____ Page N° _____ of _____		
				Currencies in accordance with ITB 15							
1	2	3	4	5	6	7	8	9	10	11	12
Line Item N°	Description of Goods	Country of Origin	Delivery Date as defined by Incoterms	Quantity and physical unit	Unit price including Custom Duties and Import Taxes paid, in accordance with ITB 14.8(c)(i)	Custom duties and import Taxes paid per unit in accordance with ITB 14.8(c)(ii), (to be supported by documents)	Unit price net of custom duties and import taxes, in accordance with ITB 14.8 C (iii) (Col 6 minus Col 7)	Price per line item net of Custom Duties and Import Taxes paid, in accordance with ITB 14.8(c)(i) (Col. 5×8)	Price per line item for inland transportation and other services required in the Purchaser's country to convey the Goods to their final destination specified in BDS in accordance with ITB 14.8(c)(v)	Sales and other taxes paid or payable per item of contract is awarded in accordance with ITB 14.8 (c) (iv)	Total Price per Line item (Col. 9+10)
1	Automatic Water Level Sensors										
1.1	Supply of Automated Water Level Recorder (non-contact-RADAR) for inland/flood plain areas, having 15m range with all necessary hardware as per technical specifications			20 Nos.							
1.2	Supply of Automatic River Discharge Measurement System consisting of Surface Velocity Radar (SVR) type sensor of range 15 m/ sec with RADAR type water Level Sensor of range 15 m in the rivers of coastal areawith all necessary hardware as per technical specifications			20 Nos.							

2.0	Data- Logger										
2.1	Supply of Data Loggers with 2analogue Input channels, including all necessary equipment for data transmission as per technical specifications.			40 Nos.							
2.2	Supply of GSM & GPRS based telemetry with SIM card, including all necessary equipment for data transmission as per technical specifications.			40 Nos.							
3.0	Solar panel, Battery, Panels & accessories										
3.1	Supply of Solar panel with all connectors, cables and conduit for cables as per technical specifications.			40 Nos.							
3.2	Supply of Battery, charger regulator, with all interconnecting connectors, cables for DCP as per technical specifications			40 Nos.							
3.3	Supply of Charge controller (to maintain required/stable voltage to device).			40 Nos.							
3.4	Manual Water Level Gauge / staff gauge			40 Nos							
3.5	Supply of NEMA 4X enclosure for Automatic Water Level Gauge station (As per Specification)			40 Nos.							
3.6	Supply of Compact platform within which all the sensor and devices such as AWLG , SVR with AWLS sensor, Data logger, Modem, Solar Panel, Battery, Charge controller including enclosure are fixed			40 Nos.							

3.7	Supply of lightning Arrester including earthing, surge protector, cables, mounting poles(As per Specification			40 Nos.						
3.8	Supply of Portable field calibration device for AWLG station			2 Nos.						
3.9	Supply of Safety kit for maintenance and repair of Coastal monitoring stations (As per Specification)			40 Nos						
3.10	Supply of ancillary equipment required for Coastal inundation station not listed in items 1- 3 but required for operation of system.			40 Nos						
Total Price										
Name of Bidder <i>[insert complete name of Bidder]</i> Signature of Bidder <i>[signature of person signing the Bid]</i> Date <i>[Insert Date]</i>										

Price Schedule: C. Goods Manufactured in the Purchaser's Country

Purchaser's Country _____			(Group A and B bids) Currencies in accordance with ITB 15							Date: _____ ICB No: _____ Alternative No: _____ Page N° _____ of _____
1	2	3	4	5	6	7	8	9	10	
Line Item N°	Description of Goods	Delivery Date as defined by Incoterms	Quantity and Unit	Unit price EXW	Total EXW price per line item (Col. 4x5)	Price per line item for inland transportation and other services required in the Purchaser's Country to convey the Goods to their final destination	Cost of local labor, raw materials and components from with origin in the Purchaser's Country % of Col. 5	Sales and other taxes payable per line item if Contract is awarded (in accordance with ITB 14.8(a)(ii))	Total Price per line item (Col. 6+7)	
1	Automatic Water Level Sensors									
1.1	Supply of Automated Water Level Recorder (non-contact-RADAR) for inland/flood plain areas, having 15m range with all necessary hardware as per technical specifications		20 Nos.							
1.2	Supply of Automatic River Discharge Measurement System consisting of Surface Velocity Radar (SVR) type sensor of range 15 m/ sec with RADAR type water Level Sensor of range 15 mtr in the rivers of coastal area with all necessary hardware as per technical specifications		20 Nos.							
2.0	Data- Logger									

2.1	Supply of Data Loggers with 2analogue Input channels, including all necessary equipment for data transmission as per technical specifications.		40 Nos.						
2.2	Supply of GSM & GPRS based telemetry with SIM card, including all necessary equipment for data transmission as per technical specifications.		40 Nos.						
3.0	Solar panel, Battery, Panels & accessories								
3.1	Supply of Solar panel with all connectors,cables and conduit for cables as per technical specifications.		40 Nos.						
3.2	Supply of Battery, charger regulator, with all interconnecting connectors, cables for DCP as per technical specifications		40 Nos.						
3.3	Supply of Charge controller (to maintain required/stable voltage to device).		40 Nos.						
3.4	Supply of Water Level Gauge / staff gauge		40 Nos.						
3.5	Supply of NEMA 4X enclosure for Automatic Water Level Gauge station (As per Specification)		40 Nos.						
3.6	Supply of Compact platform within which all the sensor and devices such as AWLG, SVR with AWLS sensor, Data logger, Modem, Solar Panel, Battery, Charge controller including enclosure are fixed		40 Nos.						
3.7	Supply of lightning Arrester including earthing, surge protector, cables, mounting poles(As per Specification)		40 Nos.						

3.8	Supply of Portable field calibration device for AWLG station		2 Nos.						
3.9	Supply of Safety kit for maintenance and repair of Coastal monitoring stations (As per Specification)		40 Nos.						
3.10	Supply of ancillary equipment required for Coastal inundation station not listed in items 1- 3 but required for operation of system. This includes but not limited to lightning Arrester, Earthing, , surge protector, cables, mounting poles, etc.		40 Nos.						
								Total Price	

Name of Bidder *[insert complete name of Bidder]* **Signature of Bidder** *[signature of person signing the Bid]* **Date** *[insert date]*

Price and Completion Schedule: Related Services Part 1 of 2 Parts						
Currencies in accordance with ITB 15					Date: _____ ICB No: _____ Alternative No: _____ Page N° _____ of _____	
1	2	3	4	5	6	7
Service N°	Description of Services (excludes inland transportation and other services required in the Purchaser's country to convey the goods to their final destination)	Country of Origin	Delivery Date at place of Final destination	Quantity and Physical unit	Unit price	Total Price per Service (Col. 5*7)
1.0	Automatic Water Level Sensors					
1.1	Installation, Testing & Commissioning of Automated Water Level Recorder (non-contact-RADAR) for inland/flood plain areas having 15m range with all necessary hardware as per technical specifications			20 Nos.		
1.2	Installation, Testing & Commissioning of Automatic River Discharge Measurement System consisting of Surface Velocity Radar (SVR) type sensor of range 15 m/ Sec with RADAR type water Level Sensor of range 15 mtr , related communication hardware and accessories with all complete as per desired specification			20 Nos.		
2.0	Data- Logger					
2.1	Installation, Testing & Commissioning of Data Loggers with 2analogue Input channels, including all necessary equipment for data transmission as per technical specifications.			40 Nos.		

2.2	Installation, Testing & Commissioning of GSM & GPRS based telemetry with SIM card, Antenna including all necessary equipment for data transmission as per technical specifications.			40 Nos.		
3.0	Solar panel, Battery, Panels & accessories					
3.1	Installation, Testing & Commissioning of Solar panel with all connectors, cables and conduit for cables as per technical specifications.			40 Nos.		
3.2	Installation, Testing & Commissioning of Battery, charger regulator, with all interconnecting connectors, cables for DCP as per technical specifications			40 Nos.		
3.3	Installation, Testing & Commissioning of Charge controller (to maintain required/stable voltage to device.			40 Nos.		
3.,4	Installation, Testing & Commissioning of staff Gauge scale			40 Nos.		
3.5	Installation, Testing & Commissioning of NEMA4X OR Equivalent Enclosure box to suit master unit equipment with locking, ,other ancillary equipment, fittings earthing, lightening arrestor with all connectors, cables and conduit for cables, mast to mount DCP, sensor mount complete as per technical specifications			40 Nos.		
4.0	Foundation MAST					
4.1	Type -1 : construction of Foundation mast including mounting arrangement as per the sample drawing , complete as per direction of engineer-in charge.			20 Nos.		
4.2	Type -2 : Fixing with existing bridge deck/parapet			20 Nos.		
5	Information System Requirement					

5.1	Make sure that the real-time data files sent by the RTDAS and collected at the are being parsed, decrypted and primary validated by the COTS software installed in the New BWDB Data Centre.			1Lot		
6.0	Operation & Maintenance during the warranty					
6.1	Services of one full time Systems Supervising Engineer dedicated to the project at Data Centre in Dhaka during one year warranty period (Perform supervision of all measuring divisions of BWDB and coordination with Project & Organizations related to the smooth operations of the total system, monthly overall reporting to the project). The Systems Supervising Engineer shall be supported with a full time cross contry vehicle, Laptop Computer, Electronic test equipment, etc.			12Man-months		
6.2	Services of two Full time Hydro-met Technicians dedicated to the project at field office of BWDB during one year Warranty period (Perform operation and maintenance all equipment, monthly reports with coordination of the persons stationed in Dhaka). The Hydro-met Technicians shall be supported with one. full time Double-Cabin Pick-Up, Laptop Computer, Electronic test equipment, etc.			24Man-months		

6.3	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB during Installation period Two Trainings in Field office of BWDB in different divisions during one-year Installation period (3 total) One Training in Dhaka Head quarter of BWDB during warranty period Two Trainings in Field office of BWDB in different divisions during one-year warranty period (3 total)			6 Trainings (3 during installation phase and 3 during Warranty period)		
6.4	Operations, Trouble-shooting & Maintenance during 01 (one) year Comprehensive Warranty Period in 20 inland/flood plain areas Monitoring Stations including AWLG with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes Local Training, Documentation, Replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM / GPRS telemetry for Data transmission shall be borne by the Bidder.			20 Nos.		

6.5	Operations, Trouble-shooting & Maintenance during 01 (one) year Comprehensive Warranty Period in 20 River Discharge Measurement System including SVR with Level, with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes Local Training, Documentation, Replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM / GPRS telemetry for Data transmission shall be borne by the Bidder.			20Nos.		
Total Bid Price						
	Name of Bidder <i>[insert complete name of Bidder]</i> Signature of Bidder <i>[signature of person signing the Bid]</i> Date <i>[insert date]</i>					

Price and Completion Schedule: Related Services Part 2 (Annual Operation & Maintenance Services) of 2 Parts.

(to be used for evaluation purpose and establishing Annual Maintenance Contract)

		Date: _____ ICB No: _____ Alternative No: _____ Page N° _____ of _____					
1	2	3	4	5	6	7	8
Service N°	Description of Services (excludes inland transportation and other services required in the Purchaser's country to convey the goods to their final destination)	Country of Origin	Delivery Date at place of Final destination	Quantity	Physical unit	Unit price in BDT (inclusive of AIT & VAT)	Total Price per Service in BDT (Col. 5*7)
1.	Operations, Trouble-shooting & Maintenance during First year of Comprehensive Annual maintenance period after one year Warranty period for 20 AWLG and 20 SVR with AWLG 20 and staff gauges for Costal Inundation & storm hydromet Monitoring Stations with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes, Replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM & GPRS telemetry for Data transmission shall be borne by the Bidder.			Year 1(one) after expiry of Warranty period of 01 (one) year.	Lump-sum		

2.	Operation, Trouble-shooting & Maintenance during <u>2nd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period</u> for 20 AWLG and 20 SVR with AWLG and staff gauge for Coastal Inundation & storm hydromet Monitoring Stations with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes Replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM & GPRS telemetry for Data transmission shall be borne by the Bidder.			Year 2(two) after expiry of Warranty period of 01 (one) year.	Lump-sum		
3.	Operation, Trouble-shooting & Maintenance during <u>3rd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period</u> for 20 AWLG, and 20 SVR with AWLG and staff gauge for Coastal Inundation & storm hydromet Monitoring Stations with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes Replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM & GPRS telemetry for Data transmission shall be borne by the Bidder.			Year 3(three) after expiry of Warranty period of 01 (one) year.	Lump-sum		

4	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in field office of BWDB in different divisions of Bangladesh			3 training in Year 1 (One) of AMC period after expiry of Warranty period of 01 (one) year	Lump-sum		
5	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in field office of BWDB in different divisions of Bangladesh			3 training in Year 2 (Two) of AMC period after expiry of Warranty period of 01 (one) year	Lump-sum		

6	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in field office of BWDB in different divisions of Bangladesh			3 training in Year 3 (Three) of AMC period after expiry of Warranty period of 01 (one) year	Lump-sum		
				Total AMC Price			
Name of Bidder <i>[insert complete name of Bidder]</i> Signature of Bidder <i>[signature of person signing the Bid]</i> Date <i>[insert date]</i>							

Form of Bid Security

(Bank Guarantee)

[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Purchaser to insert its name and address]*

IFB No.: *[Purchaser to insert reference number for the Invitation for Bids]*

Alternative No.: *[Insert identification No if this is a Bid for an alternative]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of _____ under Invitation for Bids No. _____ ("the IFB").

Furthermore, we understand that, according to the Beneficiary's conditions, bids must be supported by a bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

- (a) has withdrawn its Bid during the period of bid validity set forth in the Applicant's Letter of Bid ("the Bid Validity Period"), or any extension thereto provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such contract agreement; or (b) if the Applicant is not the successful bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the bidding process; or (ii) twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

[Signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Form of Bid Security (Bid Bond)

(Not Applicable for this contract Package)

[The Surety shall fill in this Bid Bond Form in accordance with the instructions indicated.]

BOND NO. _____

BY THIS BOND *[name of Bidder]* as Principal (hereinafter called “the Principal”), and *[name, legal title, and address of surety]*, **authorized to transact business in** *[name of country of Purchaser]*, as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[name of Purchaser]* as Obligee (hereinafter called “the Purchaser”) in the sum of *[amount of Bond]*²*[amount in words]*, for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted or will submit a written Bid to the Purchaser dated the ____ day of _____, 20__, for the supply of *[name of Contract]* (hereinafter called the “Bid”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

- (a) _____ has withdrawn its Bid during the period of bid validity set forth in the Principal’s Letter of Bid (“the Bid Validity Period”), or any extension thereto provided by the Principal; or
- (b) _____ having been notified of the acceptance of its Bid by the Purchaser during the Bid Validity Period or any extension thereto provided by the Principal; (i) failed to execute the contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to Bidders (“ITB”) of the Purchaser’s bidding document.

then the Surety undertakes to immediately pay to the Purchaser up to the above amount upon receipt of the Purchaser’s first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiration of the Bid Validity Period set forth in the Principal’s Letter of Bid or any extension thereto provided by the Principal.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this ____ day of _____ 20__.

² The amount of the Bond shall be denominated in the currency of the Purchaser’s country or the equivalent amount in a freely convertible currency.

Principal: _____
Corporate Seal (where appropriate)

Surety: _____

(Signature)
(Printed name and title)

(Signature)
(Printed name and title)

Form of Bid-Securing Declaration

(Not Applicable for this contract Package)

Date: *[date (as day, month and year)]*

Bid No.: *[number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[complete name of Purchaser]*

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Purchaser for the period of time of *[number of months or years]* starting on *[date]*, if we are in breach of our obligation(s) under the bid conditions, because we:

- (a) have withdrawn our Bid during the period of bid validity specified in the Letter of Bid; or
- (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract; or (ii) fail or refuse to furnish the Performance Security, if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder* _____

Name of the person duly authorized to sign the Bid on behalf of the Bidder** _____

Title of the person signing the Bid _____

Signature of the person named above _____

Date signed _____ 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 attached to the Bid

[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the bid.]

Manufacturer's Authorization

*[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the **BDS**.]*

Date: *[insert date (as day, month and year) of Bid Submission]*

ICB No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Purchaser]*

WHEREAS

We *[insert complete name of Manufacturer]*, who are official manufacturers of *[insert type of goods manufactured]*, having factories at *[insert full address of Manufacturer's factories]*, do hereby authorize *[insert complete name of Bidder]* to submit a bid the purpose of which is to provide the following Goods, manufactured by us *[insert name and or brief description of the Goods]*, and to subsequently negotiate and sign the Contract.

We hereby extend our full **guarantee and warranty in accordance with Clause 28 of** the General Conditions of Contract, with respect to the Goods offered by the above firm.

We as a manufacturer of *[insert type of goods manufactured]* confirm to provide the spare & service support for a **minimum period of 10 years after commissioning**

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer]*

Title: *[insert title]*

Dated on _____ day of _____, _____ *[insert date of signing]*

Manufacturer's/Distributor's Authorization for IT Equipment

*[The Bidder shall require the Manufacturer/ Distributor to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the **BDS**.*

Date: *[insert date (as day, month and year) of Bid Submission]*
ICB No.: *[insert number of bidding process]*

To: *[insert complete name of Purchaser]*

WHEREAS

We *[insert complete name of Manufacturer/Distributor]*, who are official manufacturers/ Distributor of *[insert type of goods manufactured]*, having factories at *[insert full address of Manufacturer's factories]*, do hereby authorize *[insert complete name of Bidder]* to submit a bid the purpose of which is to provide the following Goods, manufactured/ Distributed by us *[insert name and or brief description of the Goods]*, and to subsequently negotiate and sign the Contract.

We hereby extend our full **guarantee and warranty in accordance with Clause 28** of the General Conditions of Contract, with respect to the Goods offered by the above firm.

We as a manufacturer of *[insert type of goods manufactured]* confirm to provide the spare & service support for **a minimum period of 10 years after commissioning**

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer Distributor /]*

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer/Distributor]*

Title: *[insert title]*

Dated on _____ day of _____, _____ *[insert date of signing]*

Section.V Eligible Countries

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

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: **Israel**

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

Section VI. Bank 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.

“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.³ 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;⁴
 - (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;⁵
 - (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;⁶
 - (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;⁷
 - (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

³ In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

⁴ 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.

⁵ 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.

⁶ 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.

⁷ For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution.

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,⁸ 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 nominated⁹;
- (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."

⁸ 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.

⁹ 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.

PART 2 – Supply Requirements

Section VII. Schedule of Requirements

Contents

1. List of Goods and Delivery Schedule	76
2. List of Related Services Part-1 of 2 Parts and Completion Schedule	79
3. List of Related Services Part-2 of 2 Parts and Completion Schedule	83
3. Technical Specifications	86
4. Drawings	149
5. Inspections and Tests	152

1. List of Goods and Delivery Schedule

List of Goods and Delivery Schedule							
Sl. No.	Description of Goods	Quantity	Physical unit	Final (Site) Destination as specified in BDS	Delivery (as per Incoterms) Date		
					Earliest Delivery Date	Latest Delivery Date	Bidder's offered Delivery date [to be provided by the bidder]
1	Automatic Water Level Sensors						
1.1	Supply of Automated Water Level Recorder (non-contact-RADAR) for inland/flood plain area, having 15m range with all necessary hardware as per technical specifications	20	Number.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
1.2	Supply of Automatic River Discharge Measurement System consisting of Surface Velocity Radar (SVR) type sensor of range 15 m /sec with RADAR type water Level Sensor of range 15 mtr in the rivers of coastal area with all necessary hardware as per technical specifications	20	Number.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
2.0	Data- Logger						
2.1	Supply of Data Loggers with 2analogue Input channels, including all necessary equipment for data transmission as per technical specifications.	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
2.2	Supply of GSM & GPRS based telemetry with SIM card, including all necessary	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	

List of Goods and Delivery Schedule							
Sl. No.	Description of Goods	Quantity	Physical unit	Final (Site) Destination as specified in BDS	Delivery (as per Incoterms) Date		
					Earliest Delivery Date	Latest Delivery Date	Bidder's offered Delivery date [to be provided by the bidder]
	equipment for data transmission as per technical specifications.						
3.0	Solar panel, Battery, Panels & accessories						
3.1	Supply of Solar panel with all connectors, , cables and conduit for cables as per technical specifications.	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.2	Supply of Battery,charger regulator,, with all interconnecting connectors, cables for DCP as per technical specifications	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.3	Supply of Charge controller (to maintain required/stable voltage to device).	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.4	Supply of Water Level Gauge / staff gauge	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.5	Supply of NEMA 4X enclosure for Automatic Water Level Gauge station (As per Specification)	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.6	Supply of Compact platform within which all the sensor and devices such as AWLG, SVR with AWLG sensor, Data logger, Modem, Solar Panel, Battery, Charge controller including enclosure are fixed/	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	

List of Goods and Delivery Schedule							
Sl. No.	Description of Goods	Quantity	Physical unit	Final (Site) Destination as specified in BDS	Delivery (as per Incoterms) Date		
					Earliest Delivery Date	Latest Delivery Date	Bidder's offered Delivery date [to be provided by the bidder]
3.7	Supply of lightning Arrester including earthing, surge protector, cables, mounting poles (As per Specification)	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.8	Supply of Portable field calibration device for AWLG station	2	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.9	Supply of Safety kit for maintenance and repair of Coastal Monitoring Stations (As per Specification)	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	
3.10	Supply of ancillary equipment required for Coastal inundation station not listed in items 1- 3 but required for operation of system.	40	Nos.	<i>At respective Locations as decided by engineer in-charge/as per list of locations</i>	<i>120 days from date of signing of contract</i>	<i>180 days from date of signing of contract</i>	

2. List of Related Services Part-1 of 2 Parts and Completion Schedule

(Related Services Part 1 of 2 Parts)

Sl. No.	Description of Service	Quantity	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
1.0	Automatic Water Level Sensors				
1.1	Installation, Testing & Commissioning of Automated Water Level Recorder (non-contact-RADAR) for inland/flood plain area, having 15m range with all necessary hardware as per technical specifications(for Type 1 Stations)	20	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
1.2	Installation, Testing & Commissioning of Automatic River Discharge Measurement System consisting of Surface Velocity Radar (SVR) type sensor of range 15 m/ Sec with RADAR type water Level Sensor of range 15 mtr , related communication hardware and accessories with all complete as per desired specification.(for Type 2 Stations)	20	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
2.0	Data- Logger				
2.1	Installation, Testing & Commissioning of Data Loggers with 2analogue Input channels, including all necessary equipment for data transmission as per technical specifications.	40	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
2.2	Installation, Testing & Commissioning of GSM & GPRS based telemetry with SIM card, Antenna including all necessary equipment for data transmission as per technical specifications.	40	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
3.0	Solar panel, Battery, Panels & accessories				<i>12 months from date of signing of contract</i>
3.1	Installation, Testing & Commissioning of Solar panel with all connectors, cables and conduit for cables as per	40	No.	Various locations in Bangladesh as per table in	<i>12 months from date of signing of contract</i>

Sl. No.	Description of Service	Quantity	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
	technical specifications.			Annexure A	
3.2	Installation, Testing & Commissioning of Battery, charger regulator, with all interconnecting connectors, cables for DCP as per technical specifications	40	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
3.3	Installation, Testing & Commissioning of Charge controller (to maintain required/stable voltage to device.	40	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
3.4	Installation, Testing & Commissioning of staff Gauge scale	40	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
3.5	Installation, Testing & Commissioning of NEMA4X OR Equivalent Enclosure box to suit master unit equipment with locking, ,other ancillary equipment, fittings earthing, lightening arrestor with all connectors, cables and conduit for cables, mast to mount DCP, sensor mount complete as per technical specifications	40	No.	Various locations in Bangladesh as per table in Annexure A	<i>12 months from date of signing of contract</i>
4.0	Foundation MAST				
4.1	Type -1 : construction of Foundation mast including mounting arrangement as per the sample drawing , complete as per direction of engineer-in charge.	20	Nos	Various locations in Bangladesh as per table in Annexure A	<i>9 months from date of signing of contract</i>
4.2	Type -2: Fixing with existing bridge deck/parapet	20	Nos	Various locations in Bangladesh as per table in Annexure A	<i>9 months from date of signing of contract</i>
5	Information System Requirement				
5.1	Make sure that the real-time data files sent by the RTDAS and collected at the are being parsed, decrypted and primary validated by the COTS software installed in the New BWDB Data Centre.	1	Lot	In New Data Center , Dhaka	<i>12 months from date of signing of contract</i>

Sl. No.	Description of Service	Quantity	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
6.0	Operation & Maintenance during the warranty				
6.1	Services of one Full time service engineer dedicated to the project at Data centre in Dhaka (Perform all software and hardware operation and maintenance tasks, monthly reports)	12	Man-month	Data Center, Dhaka	During 1 year warranty period
6.2	Services of two full time service engineer dedicated to the project at Field in two teams of two persons under 2 Circles.	24	Man-month	Various locations in Bangladesh as per table in Annexure A	During 1 year warranty period
6.3	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in each un Field office of BWDB in different divisions during one-year warranty period (3 total)	3	Trainings (3 during installation phase and 3 during Warranty period)	Dhaka, 2circle office and various field	3 nos 12 months from date of signing of contract during Installation period and 3 nos during Warranty Period
6.4	Operations, Trouble-shooting & Maintenance during 01 (one) year Comprehensive Warranty Period in 20 inland/flood plain area Monitoring Stations including AWLG with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes Local Training, Documentation, Replacement of material/goods/spare parts and consumables as & when	1	Lot	Various locations in Bangladesh as per table in Annexure A	1 years after successful commissioning and final acceptance certificate of RTDAS

Sl. No.	Description of Service	Quantity	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
	required at bidder's cost. The Cost of Communication for GSM / GPRS telemetry for Data transmission shall be borne by the Bidder.				
6.5	Operations, Trouble-shooting & Maintenance during 01 (one) year Comprehensive Warranty Period in 20 River Discharge Measurement System including SVR with Level, with Telemetry systems as specified in Schedule of Requirement along with accessories installed at designated locations after final acceptance of total Hydromet Monitoring System. This includes Local Training, Documentation, Replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM / GPRS telemetry for Data transmission shall be borne by the Bidder.	1	Lot	Various locations in Bangladesh as per table in Annexure A	1 years after successful commissioning and final acceptance certificate of RTDAS

3. List of Related Services Part-2 of 2 Parts and Completion Schedule (Annual Operation & Maintenance Services)

Sl. No.	Description of Service	Quantity	Physical Unit	Place where Services shall be performed	Final Completion Date(s) of Services
1	Operation, Trouble-shooting & Maintenance during <u>1st year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period</u> for 40 Coastal Monitoring Stations including 20 AWLG and 20 SVR with Level, with Telemetry including InformationnnSystem requirement as specified in Schedule of Requirement along with accessories installed at designated SVR with level Monitoring System. This includes replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM / GPRS telemetry for Data transmission shall be borne by the Bidder.	01 (one)	Lump-sum	As per list provided in Annexure-1	1st year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period
2	Operation, Trouble-shooting & Maintenance during <u>2nd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period</u> for 40 Coastal Monitoring Stations including 20 AWLG and 20 SVR with Level, with Telemetry including InformationnnSystem requirement as specified in Schedule of Requirement along with accessories installed at designated SVR with level S Monitoring System. This includes replacement of material/goods/spare parts and consumables as & when required at bidder's cost. The Cost of Communication for GSM / GPRS telemetry for Data transmission shall be borne by the Bidder.	01 (one)	Lump-sum	As per list provided in Annexure-1	2nd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period

3	Operation, Trouble-shooting & Maintenance during 3rd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period for 40 Coastal Monitoring Stations including 20 AWLG and 20 SVRs with Level, with Telemetry including Information System requirement as specified in Schedule of Requirement along with accessories installed at designated SVR with level Monitoring System. This includes replacement of material/goods/spare parts and consumables as & when required at bidder's cost.	01 (one)	Lump-sum	As per list provided in Annexure-1	2nd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period
4	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in each Field office of BWDB in different divisions (3 total)	1	Training	As per list provided in Annexure-1	1st year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period

5	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in each Field office of BWDB in different divisions (3 total)	3	Training	As per list provided in Annexure-1	2 nd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period
6	Technology transfer and trainings of BWDB Personnel regarding startup, operation, maintenance and/or repair manual of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies as per technical specification. One Training in Dhaka Head quarter of BWDB Two Trainings in each Field office of BWDB in different divisions (3 total)	3	Training	As per list provided in Annexure-1	3 rd year of Comprehensive Annual Maintenance Contract (AMC) period after completion of 01 (one) year Warranty period

3. Technical Specifications

1.0 General

The Real Time Hydro-Met data acquisition network will be implemented under the Project “Component-B: Strengthening Hydrological Information Services and Early Warning System SHEWS)” for the Coastal Monitoring Stations. The Real Time Hydro-Met data acquisition network will provide key data required for forecasting, Inflows into the Basin, Basin rainfall amount, flood forecasting and monitoring, data dissemination, and other relevant data. The Real Time Data Acquisition System (**RTDAS**) will consist of a telemetry network of Automatic Water Level Gauge (**AWLG**), Surface Velocity Radar (**SVR**) with automatic water level gauge, along rivers/reservoirs, which will be installed to capture real-time hydro-met data. The RTDAS has been conceptualized to combine the advantages of modern data loggers, data storages, processing and data communication technologies, with the high availability and sustainability, required by such an important project. Real-time data acquisition system networks ensure high degree of reliability and robustness, which potentially minimize the maintenance of the system.

To minimize corrective maintenance and to increase the performance of the monitoring network, a well-organized preventative maintenance plan is highly recommended. The preventative maintenance is required for all system components, including the infrastructure, to house the electronic data collection components. A strong maintenance plan will be the foundation for sustaining Bangladesh Hydro-meteorological monitoring network operation over the expected lifetime of the technology, which is considered to be **minimum 10 years**.

The Technical Specifications of the Real-time Data Acquisition System for Bangladesh, consist of design, manufacture, factory testing, delivery to the sites, installation of the associated interface wiring/termination and other accessories, delivery of the computer servers, delivery of software, operating and maintenance knowledge transfers, commissioning, site acceptance testing, supply of mandatory spares, training and documentation, etc.

2.0 Design Principles

The following basic principles are applied in the design of real time hydrologic data acquisition systems for Coastal Storm & inundation.

- a) Installation of Automated Water Level Recording Stations which will have the primary function of measuring water levels at the installed locations (Rivers (GD Stations) / Coastal area)
- b) Installation of staff Gauge scale which will have the manual function of measuring sea water levels at the installed locations (Rivers (GD Stations) / Coastal area)

- c) Installation of Non contact type Surface Velocity Radar with Radar type Water Level Recording Stations which will have the primary function of measuring sea water Velocity with levels at the installed locations (Rivers (GD Stations) / Bridge locations.)
- d) Recoded data at field stations will be transmitting the coded data through GSM & GPRS communication to State Data Centre (SDC). data logger logged same data and transmitting through GSM-GPRS modem to state data center. Thereafter, data will be further processed.
- e) Data logger transmitted signals/data files should be compatible with existing purchaser of **G1 & G2 package** server.
- f) Stations or sensors in close proximity to each other will be combined to reduce the number of reporting stations. This is especially important to save the recurring GSM & GPRS charges

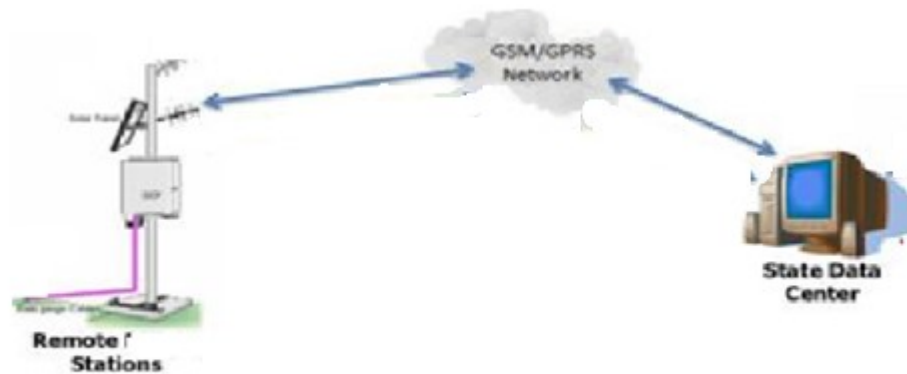


Figure 1: Typical network diagram

System Configuration:

Hydromet system is consider: Radar Water Level transmitter, velocity /level/ direction instrumentall sensor output is connected to data logger i.e. data logger all sensors should be connected to data logger. Data logger with GSM- GPRS telemetry for transmitting the signals and Also Data logger withsolor power supply

Data logger is collecting data and storing the data and transmitting the data through GSM- GPRS modem to Information data center as per the design consideration

3.0 Scope of Work

- 1) Complete supply, installation, testing, commissioning of remote stations including associated civil works, sensors, data logger, software, hardware and ancillaries' equipment, solar panel, mounting poles, masts, cables and tethers, electrical and network cabling, lightning arresters etc.
- 2) Make necessary provisions in the existing State Data Center for reception of GSM & GPRS data from all remote Coastal Storm & inundation stations
- 3) Supply, installation, testing, commissioning of the real time hydro-meteorological data collection network and establish data communications using GSM / GPRS between remote station to the dedicated computer server provided by client at New Data centre of BWDB in Dhaka. This includes, but is not limited to acquiring service, and maintaining all aspects of the service during the warranty period as well as the maintenance period.
- 4) Establish a GSM & GPRS receiving system along with all required data reception arrangement at existing New Data Center, Dhaka to collect GSM & GPRS data. This shall include a required hardware & computer that will support the reception of the GSM & GPRS Data stream. This consists of acquiring all hardware and software, installation, configuration.
- 5) Using the client provided server with Monitor and data backup facility (16 TB), 42" LED display, 3 KVA online UPS and computer node, internet connection with requisite public IP address, firewalls and other required networking components with network wiring at New Data Centre located at Dhaka that will support the reception of GSM, GPRS data directly from remote station.
- 6) Assure the collection, storage/backup and seamless flow of Real Time Data from all types of automated sensors to Dhaka and NDC /modelling centers.
- 7) Perform on-site assembly, start-up of the supplied goods.
- 8) Complete commissioning integration, testing & organization of the whole system. Bidder is responsible for, interfaces between the sensors and the DCP, DCP and transmission equipment and that between modelling centres, and ensure compatible data format as per bid document and trouble free operation of system.

- 9) Provide operation & maintenance services during one (1) year warranty period to include all components at the remote stations as well as all newly acquired equipment in the data center.
- 10) Provide installation and maintenance reports as required by the Purchaser and any delay is not acceptable in time schedule provided by supplier.
- 11) Supply on-site spares to repair any part of the remote stations upon determination of malfunction or failure. This includes, but is not limited to, DCP, sensors, batteries, solar panel and other accessories etc. required in seamless operation of the real time data acquisition system
- 12) Supply detailed operation and maintenance manual for each component in the system and compile Knowledge and working supply type Manual for training purpose (including multimedia training kits).
- 13) Provide classroom and field training to the sufficient number of BWDB personnel on the data acquisition system. This includes operation and maintenance procedures. Training will also occur at selected field locations as selected by the Purchaser. This includes startup, operation, maintenance and/or repair of the supplied goods. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing maintenance requirements and procedure for equipment configuration, installation, site testing and commissioning including training kit containing course material in soft and hard copies.
- 14) Onsite Calibration and validation of the installed system and shall continue during the entire contract period.
- 15) All selected sites should conform to the extent practical to **WMO** guidelines as much as possible. The purchaser will be responsible for obtaining permission to use property. River stage Reservoir Stage and weather data will be logged every 1 hour and transmit data based on a schedule set in the data logger (e.g. user defined)
- 16) To provide necessary facility to generate daily report of coastal inundation & storm hydroment data at specified time and in the specified format as prescribed by Engineer-in-charge.
- 17) The remote stations DCP's shall store the data for at least one year.
- 18) Bidder shall Supply a detailed operation and maintenance manual for each appropriate unit of supplied goods and compile Knowledge and working supply type Manual for training purpose (including multimedia training kits).

19) A guarantee by the manufacturer that all equipment being provided will have maintenance & Spare support for a minimum of 10 (ten) years from the date of issuance of final acceptance certificate by engineer in charge including Warranty and Operation & Maintenance period.

4.0 General Features/ Specifications

- i. It is imperative that all instrumentation, other equipment shall operate effectively with the (Data Collection Platform (DCP)'s and the DCP's in turn shall operate effectively with the GSM/GPRS systems. In addition, the input/output protocols of individual items of equipment (SVR with Level, AWLGetc., DCP's, solar power arrangements, etc) shall interface accurately. For this purpose, the interfaces between the sensors and the DCP, DCP and transmission equipment and that between modeling centres are ensured to be compatible and trouble free.
- ii. The specific electrical, electronic and mechanical design parameters mentioned in case of individual sensors are indicative of a typical design and variations therein can be considered provided the output, resolution accuracy and ruggedness against environment are not compromised in any manner. In such cases where the supplier proposes to deviate from the specifications a full technical justification shall be provided. The Purchaser is not bound to accept such justification.
- iii. It shall be the Suppliers responsibility to ensure that the installation is robust and shall continue to work in extreme weather conditions.
- iv. Reliability of operation during normal and extreme weather conditions is imperative.
- v. The sensors and all accessories and facilities shall be fully compatible with the data acquisition and transmission system. The sensors and DCP's shall form a complete automated data acquisition storage and transmission system.
- vi. In case of any of the sensors, the equipment is supplied with certain optional features which are required to be ordered separately and are not included as a part of the offer; the same shall be clearly mentioned in the bid along with the functions of such features. The purchaser shall be provided with all necessary information which shall enable him to take an informed decision at the time of entering into the contract as to the ordering any such feature or otherwise.
- vii. The Bidder shall enclose technical literature with photographs in respect of all the sensors datalogger and other equipment being quoted. The features which are mentioned in the literature but are not being quoted as a part of the current system shall be clearly brought out in the bid. In the event of failure of the Bidder to explicitly mention any such

exclusion, it shall be taken as inclusion of all features mentioned in the bid as a part of the supply and the Bidder shall have to provide all such features/ accessories without claim of extra cost to the purchaser.

- viii. Although all accessories and fixtures required for installation of the equipment & their specifications have been specified in technical specifications however, bidder shall ensure the satisfactory performance & functioning of COASTAL MONITORING STATIONS system complete, for this if any accessory or items are required that shall be provided by bidder, the cost towards that is deemed to be included in the cost tendered by the bidder, no extra cost shall be paid to the bidder on this account..
- ix. Bidders shall give general layout of all the installations including all civil works for types of stations and materials including that for the equipment at the time of bidding. Afterwards, the successful Bidder shall furnish the details of all the mounting arrangements. including civil works. IS codes of practice shall be followed for all civil works and mounting arrangements.
- x. The security arrangement provisions for sensors installed in the open ground like Chain-Link fencing, locking etc. shall also be provided by the Bidder.
- xi. Security of installed equipment against theft and vandalism will be the responsibility of the Bidder till successful installation, commissioning, two stages of site acceptance testing.
- xii. All fixings shall be non-corrodible.
- xiii. The Bidder has to specify how the calibration will be carried out and has to use his own calibration equipment during the period of warranty.
- xiv. Ensure that all software licenses and maintenance agreements are in the name of Purchaser and should seek full support and updates for such software for the duration of the **Warranty**Period. Also all the software licenses should be valid for the design life of the system, that is 10 (ten) years from date of commissioning.

5.0 EQUIPMENT ARRANGEMENT AT REMOTE STATIONS

5.1 AUTOMATIC WATER LEVEL GAUGE (AWLG) FOR COASTAL AREA, RIVER

The Automatic Water Level Gauge (AWLG) station shall be equipped with all necessary equipment's and peripherals including the following

- i. Data Collection Platform (DCP) mounted inside an enclosure which will house the following items:

- Data Logger with GSM & GPRS Transmitter with built-in display.
 - Battery for power requirements.
 - Pre-wiring and configuration.
 - Solar panel charger regulator.
 - Antenna (GPS, GSM/GPRS) & required accessories.
- (iii) Installation of suitable range of Non-contact type Water Level Radar sensor for Automatic Water Level Gauge (AWLG) station with all fittings, accessories and cables.
- (iv) AWLR installation shall be integrated with the datalogger and transmit.
- (v) Mast / tripod to mount DCP at the site (alternatively, where walled enclosure or tower is available, same can be mounted on the same).
- (vi) Mast / tripod for solar panel (provided locally by the Bidder). Mast can be shared with the DCP mast also.
- (vii) Conduit for cables GI Flexible conduits and HDPE pipe conduits.
- (viii) Civil works for mast / tripod (provided locally by the Bidder).

5.2 SURFACE VELOCITY RADAR (SVR) WITH RADAR LEVEL TRANSMITTER (NON CONTACT) FOR RIVER BRIDGES:

The SVR shall be equipped with all necessary equipment's and peripherals including the following

- i. Data Collection Platform (DCP) mounted inside an enclosure which will house the following items.
 - a. Data Logger with, GSM & GPRS Transmission facilities with built-in display.
 - b. Battery for power requirements
 - c. Pre-wiring and configuration.
 - d. Solar panel-based power supply system.
 - e. Antenna's (GPS, GSM / GPRS) & required accessories
- ii. Surface Velocity Radar (SVR) with Non-contact Radar type water level sensor with all fittings, accessories and cables and conduits.
- iii. Mast / tripod to mount DCP at the site (alternatively, where walled enclosure or tower is available, same can be mounted on the same).
- iv. Mast / tripod for solar panel. (provided locally by the Bidder)

- v. Mast can be shared with the DCP mast also
- vi. Civil works for mast (provided locally by the Bidder).
- vii. Conduit for cables GI Flexible conduits and HDPE pipe conduits.
- viii. Power & signal cables with cable conduits.
- ix. Grounding and lightning protection (provided locally by the Bidder)
- x. All necessary software required for the system to operate properly

A Compact/integrated system with data logger, modem, charge controller, Battery, Radar level sensor (RLS) with small size and light weight will be preferred in a common platform. Only solar panel may be outside attached to the Box.

Generally, the common platform will be fixed with the existing bridges, barrages and sluices. If it is found that the existing bridge comes under flood during monsoon iron rods, angles may be fixed with the bridge to raise the location of the equipment.

5.3 TELEMETRY

The data communications employed on COASTAL MONITORING STATIONS network will use GSM & GPRS radio communications. It will be the responsibility of the bidder to confirm radio path and mobile network coverage. The bidder will be ultimately responsible for establishing data communication at all sites.

The bidder will provide all associated civil works related to the installation of the antenna, including cabling, wiring and other such infrastructure.

NEW BWDB DATA CENTER

The New BWDB Data Center (NDC) has already been established at Data Centre Dhaka. The bidder shall make sure that the Real-Time Data Acquisition System (RTDAS) for Coastal Monitoring Network is implemented, consisting of a Telemetry Network of Surface Water Velocity Radar with Radar Lever and Automatic Water Level Gauges (AWLG). The bidder shall ensure that the sensors of the telemetry network will automatically measure the parameters and transmit the data files containing real-time Coastal Storm and Inundation data, using GSM/GPRS communication protocol, to the BWDB Data Collection Server, installed in the new BWDB Data Centre. The bidder will also ensure that the COTS software installed in the Data Centre is able to parse, decrypt data from the data files and able to do Primary Validation of the data. This infrastructure includes all networking devices to connect the equipment via INTERNET to the Web.

GSM & GPRS Data Collection Station

- Integration of GSM & GPRS data from remote station with existing New Data Center at Dhaka
- The GSM & GPRS data collection station will be able to interrogate the DCPs based on a schedule of the State's choice and as implemented by the bidder.

- Data Collection Stations will use GSM/GPRS protocol to transmit data to the Data Collection Server at the New BWDB Data Centre.
- In case of failure of telemetry of remote sites, the provision for polling the data by GPRS telemetry so that missing of data is avoided.
- The bidder will provide all civil works related to the installation of the antenna, including cabling, wiring and other such infrastructure required to operate the GSM & GPRS Data Collection Station.

5.4 INSTALLATION REQUIREMENTS FOR COASTAL MONITORING STATIONS

A) SITE PREPARATION AND INSTALLATION

1. The purchaser will provide details of the installation sites before the scheduled installation date to allow the Bidder to perform site inspection and construction of suitable structures before the installation of the hardware.
2. The location of antenna, sensors and related civil work will be decided in consultation with respective Engineer-in-charge depending on the site and river flow conditions.
3. The Bidder should complete the required works at the site for proper installation of the equipment before receipt of the equipment.
4. These are the basic guidelines for installation of COASTAL MONITORING STATIONS system however it may vary as per site conditions, in case of variation from installation guidelines stated below drawings shall be approved by engineer-in charge prior to the start of installation work.

B) SPECIFICATIONS FOR INSTALLATION

Automated Water Level Recorder (AWLG) and SVR with level sensors

SAFETY REQUIREMENTS

1. The sensor and its accessories should be protected from theft. The bidder is encouraged for minor modifications in installation of sensor and its accessories so as to minimize the chances of theft. Mortise lock is proposed to avoid theft. Due care must be taken while modifying the installations. In no case the basic principle and working of sensor is allowed to disturb.
2. Radar sensors should be mounted such that they have a direct vertical shot to the water surface with no obstruction of their beams. Beam spread must be determined based on manufacturer's specification and the maximum expected distance to be measured at low flows. Consideration should be made in designing the mounting structure to allow for easy access to the instrument for maintenance

3. Framework support to attach Radar sensor to Pole/Tower:-

A Compact/integrated system with data logger, modem, charge controller, Battery, Radar level sensor (RLS) with small size and light weight will be preferred. Only solar panel may be outside but attached to the Box.

In few cases sensor may be separated from the platform depending upon the locations. Assembly should be light weight with a suitable hanging arrangement. The Platform shall be close to the bridges and shall be easily accessible for supervision. Wire from the sensor shall be minimum to avoid the exposure.

If it is found that the existing bridge comes under flood during monsoon iron rods, angles may be fixed with the bridge to raise the location of the equipment.

C) SPECIFICATIONS FOR CIVIL WORKS

a) Mast Foundation

Foundation: consideration below points.

1. Basic Load: Aerodynamic Load
2. Wind Loads on Structure
3. Wave Kinematics
4. Hydrodynamic
5. Earthquake
6. Load Combination: Extreme Wind Load during Cyclone and Earthquake during operation
7. Pile Soil Interaction:
8. Orthogonal Nonlinear Springs & Soil at Palk Strait
9. All Material should be GI and suitable and comply coastal area application.
10. Size of the GI pipe must be considered as per above consideration and as per sample drawing.

1. Foundation as per the site network

Type-1: Fixing with Pole in Inundated land

Type-2 Fixing with existing bridge deck/parapet, External chain link fencing with Lock will be considered for DCP

Refer Foundation sample drawing with site photos.

2. The height of the mast should be as indicated in the drawings.

b) Local Earthing

1. The lightning arrestor rod is made of copper which is mounted on the top most part of the COASTAL MONITORING STATIONS Mast / Tripod /Tower.
2. It should be of thickness 12 mm and of one meter length with a connected copper wire of 6mm thickness (gauge). At the other end of copper wire is the Earthing rod of dimensions 15mm thickness and 1.8 meter length, which is buried into the ground.
3. The lightning arrestor rod is made of copper which is mounted on the top most part of the tower.
4. On the bottom of earthing rod, one copper plate of dimensions 300mm x 300mm should be connected. data logger enclosure should also be grounded with local earthing.

• Painting

1. The tower, fencing angles, chain-link fencing and gate should be properly painted every year to avoid rusting.
2. All concrete foundations shall be painted using white cement paint every year.

Tower Foundation

- The Type 1 pole foundation must be of dimensions as per the sample drawing
- Proper guy rope support (three Nos) with foundation.
- The DCP, sensors and Antenna will be mounted on a composite platform over the tower, which should cater for fitments of assemblies for sensors, DCP, antenna and other accessories. The tower will be as indicated in drawing and one top section of 1 meter height. The tower should be made of GI Pipe and should be light as well as robust enough to withstand weight of at least two persons (200 Kgs). This tower with complete accessories will be part of the supplies and will be galvanized to avoid rusting and long life in outdoor conditions.

6.0 Technical Specifications

6.1. RADAR TYPE AWLGSENSOR (15M)

(Item no. 1.1, List of Goods and Delivery Schedule under Section VII):

Functional Requirement: To measure the water level

Design Requirements: The equipment offered should conform to the following technical specifications:

Feature	Value
Site Conditions	
Ambient Temperature	From -5 to +60 °C
Humidity	0 to 100 %
Altitude	0 to 2000 meter
Sensor	
Sensor Type	Microwave non-contact sensor
Range	15meter
Resolution	3 mm or better
Accuracy	0.02 % FSO
Output Interface	SDI-12 / RS-485/ 4-20mA and compatible to RTU/Data logger Unit
Power Supply	To be powered by Battery/Solar Panel provided by bidder.
Beam angle	Less than 16 degree.
General Features	
Housing Material	Housing Material – “Corrosion Resistance (Stainless steel / die cast Aluminium or PVC/UV stabilized ABS with metal casing”
Enclosure	The Sensor shall be easy to dismount and replace in the event of malfunction.
Tools	Complete tool kit for operation and routine maintenance
Manuals	Full Documentation and maintenance manual in English
Accessories	Sensor Mounting support, cables and other accessories as required
Protection	NEMA4X or IP65 or better
Horizontal Mounting/Installation Arrangements	Above FRL, Below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/wall/pedestal to be provided
Radar Sensor should have inbuilt diagnostic feature & averaging function	

6.2: SURFACE VELOCITY RADAR WITH RADAR TYPE WATER LEVEL TRANSMITTER

(Item no. 1.2, List of Goods and Delivery Schedule under Section VII):

FUNCTIONAL REQUIREMENT: To measure the water surface velocity with Water Level and calculate the discharge.

DESIGN REQUIREMENTS: The equipment offered should conform to the following technical Specifications:

Feature	Value
Site Conditions	
Ambient Temperature	From -5 to +60 Degree Celsius
Humidity	0 to 95 % non-condensing
Altitude	0 to 2000 meter
Velocity Sensor	
Sensor Type	Microwave non-contact sensor
Distance to water	15 meters
Velocity measurement Range	Up to 15 m/s (Configurable)
Resolution (Velocity)	2 mm/s or better
Accuracy (Velocity)	± 2% FSO
Water Level sensor	
Water Level	15 meter
Resolution	3 mm or better
Output Interface	SDI-12 / RS-485 / 4-20mA and compatible to RTU/Data logger Unit
Power Supply	To be powered by Solar Panel provided by bidder with DCP
Beam angle	Less than 16 degrees.
General Features	
Housing Material	Corrosion Resistance (Stainless steel / die cast Aluminium/ PVC /UV stabilized ABS with metal casing”

Enclosure	The Sensor shall be easy to dismount and replace in the event of malfunction.
Tools	Complete tool kit for operation and routine maintenance
Manuals	Full Documentation and maintenance manual in English
Accessories	Sensor Mounting support, cables and other accessories as required
Protection	NEMA 4 or IP67 or better
Horizontal Mounting/Installation Arrangements	below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/wall/pedestal to be provided
Sensor shall have facility of bidirectional flow measurement	

6.3: MANUAL GAUGE PLATE / Staff Gauge:

(Item no.3.4, List of Goods and Delivery Schedule under Section VII):

Conditions & Requirements

The staff gauge shall be of such a design that it can be effectively used under the prevailing environmental conditions. It needs to be readable for all possible water levels at site.

- The staff gauge shall generally comply with IS 4080-1994.
- The staff gauge shall be of a sturdy construction
- The staff gauge shall be easy to operate and maintain.
- All materials on the staff gauge shall be non-corrosive.
The staff gauge may be supported by a concrete or steel pole of sufficient length for stable installation on water banks and riverbeds.
- The pole shall have provisions to rigidly attach the staff gauges and a provision to adjust the staff gauges to the required elevation, tuning it to Datum.

Provision for easy replacement of the damaged staff to be kept.

◇ The concrete pole shall have a square cross-section. The concrete pole shall have such solidity that it can permanently sustain partial and/or full immersion in water. The pole should have larger dimensions than the staff gauges width. Example: for a narrow staff gauge rectangular dimensions could be approximately 150 x 150 mm.

◇ The steel pole may have a square or rectangular cross-section. The steel pole shall be epoxy paint coated. In saline water, the compatibility of the applied materials should be taken into account, to avoid excessive corrosion. The width of the pole should be larger than the staff gauge width. Example: for a narrow staff gauge rectangular dimensions could be approximately 100 x 40 x 3 mm (3 mm metal thickness).

- Complying with the above given graduation specifications, i.e. accuracy and smallest graduation, the staff gauge may also be painted on a well-established and stable structure, e.g. a bridge pier or similar. However, the location shall meet the hydraulic requirements for its application and shall therefore be chosen with care.

Mounting arrangement:

The staff gauge support shall be founded in cast concrete; alternatively, it may be supported by a concrete or steel pole firmly driven in the river bed/ banks. In case of wave-action, a stilling well shall be provided.

material	enamelled steel or stable FRP plate
colour	white background, deep blue graduations
sizes (prior to coating)	
width	100 to 200 mm
thickness	1.5 to 2.5 mm
length	1500 mm
smallest graduation	0.01 m
accuracy of graduations	0.5 mm
distinction	cm, dm and m, index at 5 cm mark
temperature	0 to 60°C, the accuracy shall be maintained over the full temperature range;

6.6 DATA LOGGER

Data Logger (All data loggers will be of the same make/model)
(Item no. 2.1, List of Goods and Delivery Schedule under Section VII):

Feature	Value
Site Conditions	
Ambient Temperature	From 0 to +50 ⁰ C
Humidity	0 to 95%
Altitude	0 to 2000meter
Sensor Interface	
Inputs	Necessary inputs to collect data from supplied sensors and maintaining the stated accuracy of the sensors. If 4-20 mA Analogue Inputs are used the the inputs shall be able to survive 100% overrange.
Serial Port for sensor interface	One RS-232 / SDI- 12 & One RS-485 for sensor Interface
Pulse Input	1 Input for Rain Gauge impulse
Input - Output Interfaces	
Data Transfer	USB port for high speed Data transfer (12 Mbit/s)
Port for Configuration	One Serial Port (RS-232 / RS-485 / USB port) for communication with Laptop for programming
Port for Telemetry	One Port for Communication with Telemetry (GSM & GPRS) device and another port for spare. The Bidder shall ensure that the system remains operational even under extreme conditions of weather. The failure of transmission due to temporary disturbances in the network must be taken care of by providing adequate storage in the Data logger and ensuring subsequent relay immediately after the network is restored. Non-volatile Flash memory that can one store one year of data and expandable upto a minimum of 1GB.Via USB/SD Card

Feature	Value
Display Port	Datalogger should have built-in display.
Analog to Digital Converter	
Resolution	16 bit or better or as necessary to maintain stated accuracy of the sensor (required under sensor section)
Sample intervals	2 minutes to 24 hours (user selectable)
General Features	
Flash memory	Non-volatile Flash memory that can store one year of data and expandable up to a minimum of 1GB. Via USB/SD Card
Recording Interval	Individual recording intervals for each sensor/parameter
Firmware Operating System	Multi-tasking operating system - must collect/store data and transmit at same time
Display	Inbuilt Digital Display for viewing current data and setting values
Power Supply	Shall be powered by Solar panel, to be provided by bidder with DCP, low current drain (quiescent $\leq 10.0\text{mA}$)
Power Consumption	1) quiescent mode: $< 30\text{ mA}$ 2) In operation mode : $< 350\text{ mA}$.
Battery Voltage	Monitoring and logging of battery voltage under load (during measurement/transmission)
Internal battery	Internal battery backup for clock, lithium battery, storage 2 years
Charge Controller	Properly matched to solar panel and battery
Internal clock	Internal clock with drift less than 1 second per Week
Keypad	For displaying or transferring data to memory stick, configuration of data logger and sensors
Real time clock	GPS synchronized & timing in BST (GMT+6 hours) format required
System integrity	System integrity check procedures
Enclosure	for wall-mounting in a shelter / enclosure with IP65/NEMA4X or better protection or better
PCB Standard	1) Material: Minimum FR-4 Standard Tg 150°C 2) Surface Finish : HASL - Hot Air Solder Leveling

Feature	Value
	Or Lead Free HASL - RoHS Or ENIG - Electroless Nickle/Immersion Gold – RoHS
Accessories	Serial cable + adaptor (if required) for notebook connection. All accessories (fixing units, etc.) as required
Tools	complete tool kit for installation and routine maintenance giving full detail (number of pieces and type)
Manuals	full documentation and maintenance instructions in English (1 copy per station).
GSM / GPRS MODEM	
Operating Temperature	From 0 to +50 Degree C
Performance	Data Reception availability of 95% or better. GSM- GPRS omni directional antenna with minimum 11 dBi gain
Form factor	The GSM /GPRS modem should either be integral part of data logger specified above, or it should be supplied as independent unit compatible with supplied data logger
Specific Features	Data logger should be universal and support any other RLS/Pressure sensor. It should be configurable either on-site or remotely.
Communication	Utilize GPRS network for two-way connection with FTP, TCP/IP (INTERNET) connection and SMS GSM/GPRS antenna to be provided for better signal capture.
Transmission trigger	Data collection to be triggered by interrogation from Data Centre or by event based transmission triggered by the on-site data logger. For sending data from data logger to server to BWDB, provided Sub-domain (www.xxx.bwdb.gov.bd) has to be used.
Flood Alarm for typical threshold	Data logger should have alarm set parameters for each sensor value. (Min Level and Max Level Alarm intervals) When the sensor values crosses critical levels, data loggers should send alarm to Customer by email and by SMS.
Remote Firmware updation	Data Loggers should have online update option. When there is a new version of the data logger software available it should update only upon approval from BWDB technical

Feature	Value
	personel.
Power Saving	Ability to disable interrogation system in order to save power at remote site
Communication Protocol	Data transmission to execute HTTP Post or FTP, SMS to transmit and receiving data to the Data Centre
Accessories	All associated equipment, including Antenna all cables and mounting hardware
Certification	UL / IEC/ ANSI/ IMD/ BMD/ ILAC/ APAC Valid Certification required.

7.0 DATA COLLECTION PLATFORM (DCP)

7.1. FUNCTIONAL REQUIREMENT

1. The system shall automatically collect the observations from attached sensors, process and store them into its memory and transmit through GSM /GPRS communication link to the BWDB Data Collection Server, installed in the New BWDB Data Centre, as per the preprogrammed measurement interval. The DCP shall also continuously monitor the status of the instruments, power supply and communication. In the event of failure of an instrument or disruption of any of the power sources, an alarm shall be sent back to the data collection centre
2. The number of analog/ digital/ SDI-12 / RS-232 / RS-485 channels in the data logger must be compatible to the sensors being supplied and also for other battery monitoring systems.
3. The sensor's signal conditioning unit should be an integral part of the system.
4. The System shall have provision to easily include and change the following information in field as mandatory requirements:
 - (a) Unique station identification code.
 - (b) Time of observation and Transmission.
 - (c) Sensor identification
 - (d) Data transmission time for GSM/ GPRS communication
 - (e) Programmable Sensor data measurement interval
 - (f) Configuration of Measurement, logging & GPRS/GSM data transmission interval
 - (g) Slope, offset, Datum parameterization for all sensors
 - (h) Configuration of FTP server & mobile number of data centre.

5. Parameterization & configuration of COASTAL MONITORING STATIONS remotely through GPRS/ GSM communication shall be available
6. The system shall have an integrated microprocessor based data acquisition and storage system having adequate hardware configuration and software support to serve as an interface between sensors and the communication link to perform tasks as stated below.
7. Providing necessary electrical power to the sensors and conversion of electrical output signals from the sensors into engineering value based on calibration information stored in the memory. Full compatibility with all types of sensors provided in the package shall be mandatory.
8. Storage of observed data along with time for all the parameters in the memory. Memory capacity to retain at least 365 days data is required. Data shall be available even if the power supply to the system has failed (RAM Backup battery) for one year.
9. The stored data shall be retrievable via serial port to a PC/ laptop or USB device. The downloaded data shall be provided in the prescribed format provided for GSM/GPRS in technical specifications
10. Full compatibility with all types of sensors provided in the packages shall be mandatory.
11. The system should be stand alone and all programming functions / setups to be carried out through system keypad and display independent of a PC / Laptop.
12. The system should be capable of continuous updating of the values of sensed parameters and post processing the instantaneous values into average values over a specified period of time for transmission to the DCP with earth receiving station.
 - (i) Management of GSM/GPRS transmitter to optimize the battery consumption.
13. The system shall provide a complete health status of the battery, transmitter and other components.
14. The system shall support the following functions:
 - (a) Easy programming set up.
 - (b) Multi-tasking capability.
 - (c) User friendly software programming.
 - (d) The system shall have self diagnostic facility and be capable of displaying station ID / sensor ID code and messages of the display panel for general identification of the fault. It should have facility to monitor these code and other health status through an external laptop / PC.
 - (e) Setup shall be organized in a tree of menus and sub menus. Protection of setup parameters and data through password should be supported by the system. In addition, the DCP shall support the manual entry of data through

keyboard and its display.

- (f) Data including the setup and program files shall be transferrable from the system via a serial port to PC and SD card or other suitable memory device and vice versa. The scripts / software for configuration of datalogger should be part of supply.
 - (g) Facility for Pooling of data via GPRS shall available in data logger.
15. The DCP shall be housed in a weather proof and temper proof housing of NEMA 4 or equivalent type enclosure of steel or fiber glass.
 16. DCP Should be supplied with Software for configuration and troubleshooting
 17. The data logger shall be programmable locally in field via laptop / PC.
 18. The DCP shall be located in a place specified by the Engineer-in-charge at each site and shall be generally one meter above Highest Flood Level (HFL) attained at that site. The DCP at each site shall be located in such a way it is easily approachable even in floods.
 19. A single point grounding method should be installed using polyphasors (or similar) on communication lines coming from the transmission antenna.
 20. The DCP shall have a provision to display, store and transmit the water level with respect to MSL or with respect to zero level/bed level (user selectable).
 21. The datalogger shall store data in memory, in case of GPRS/GSM communication failure. The data shall be transferred automatically once GPRS/GSM communication is retained. This will ensure no data loss during no communication also.
 22. DCP enclosure should be lockable, with keyed locks with all locks keyed identically.

8 GSM & GPRS Transmission Format:

Table below gives the GSM / GPRS data parameters and their identification code format which is required to transmit the data from datalogger to FTP server.

Format:

&Station ID, Date and Time, MobileNumber, Battery, WaterLevel RADAR , SVR, ,

Example Data Spring:

&738D1E76,07/01/18 10:00,9849556430,13.5,26.347,1.5,15.5,-11.4,--,187,1.2,256,936.7,56,125

S. No.	Channel no.	Parameter
1	Station ID	Start of String should be ‘&’ and Eight Characters Station ID provider by bidder
2	Date and Time	Measurement date and Time in DD/MM/YY HH:MM
3	Mobile Number	Mobile no of remote station SIM
4	Battery	Battery voltage at end of every full hour in Volts with 1 right digit
5	Water Level RADAR	Water level at end of every 1 hour in Mts. with 3 right digit
6	Surface Water Velocity	Water level at end of every 1 hour in Mts. with 3 right digit

Note:

1. If any sensor is not connected then it should transmit ‘--’ characters in place of the sensor value.
2. Attached format is indicative, recommended for standardised data acquisition for development of unified Water Information System. In case bidder deviates from this format then bidder shall be responsible for integration of the data in NDC server without any manual intervention.

9.0 Lightning Protection

The entire unit has to be adequately protected against lightning and build of static

The entire unit has to be adequately protected against lightning and build of static charges. The lightning rod should protrude 1 m above the highest point (Antenna) and should be placed in the centre of the pole. The mast should be electrically grounded. As a part of the maintenance, the earthing equipment shall be inspected on a yearly basis for its conductivity and effectiveness. Such inspection shall be carried out in the pre-monsoon period and any faults noticed shall be rectified.

Also, all incoming transmission lines (cable between GSM/GPRS radio and antenna) should be equipped with a polyphasor (or similar) to eliminate the impact of lightning reaching the radio and data logger.

10.0 Earthing for Equipment

The electrical grounding for all other electronic and electrical equipment should be done by following standard procedure of Bangladesh. The earthing for the equipments should be done separately and should have a minimum distance of 2.5 meter from the earthing done for lightning rod. In no case both the earths should be done in the same earthing rod.

As a part of the maintenance, the earthing equipment shall be inspected on a yearly basis for its conductivity and effectiveness. Such inspection shall be carried out in the pre-monsoon period and any faults noticed shall be rectified.

11.0 SAFETY EQUIPMENT KIT

The safety equipment kit is for the purpose of maintenance and repair of the sensor and other related equipments at the site which include but not limited to: Safety belt, Ladder, Tools box, Tools set, Register/Note book, Duster (to clean solar panel and other devices), Standard Operation Manual (in Bangla).

12.0 SOLAR POWER SUPPLY WITH BATTERY BACKUP

12.1 SOLAR POWER SUPPLY

Solar Panel mounting hardware shall be designed to allow a great variety of attachment methods and accommodate a variety of mounting surfaces. They may be used to mount a module on a horizontal or vertical surface, on surfaces at angles between horizontal and vertical and on metal poles. Attachment methods include bolts, lag bolts, u – bolt brackets and stainless steel hose clamps.

The Solar power supply shall be mounted on the roof of site buildings where existing. The Bidder shall supply a pole – mounted arrangement including a standard pole and necessary foundation and fixing arrangements.

The location of solar power installation shall be indicated by the concerned engineer – in – charge of each DCP.

In order to guard against frequent theft of solar panels the mounting device shall be so designed as to make the solar panel detachable as and when required. Also solar panel removed hard digital signals should be configured in both data loggers. It is intended to store the solar panel during the night hours as well for longer durations in the non-monsoon period and the arrangement should be designed in such a way that the arrangement is sturdy and capable of handling frequent disconnecting and re connections.

The power supply shall primarily function through a set of sealed maintenance free rechargeable batteries capable of preventing deep discharge.

Solar panel with **charge controller** is used to charge the battery without failed.

12.2 BATTERIES

The batteries required for the equipment above shall be maintenance free, rechargeable sealed batteries with the following features:

- (a) Overcharge and deep discharge protection
- (b) Leak-proof
- (c) Easy handling – no special shipping container required
- (d) Long service life
- (e) Excellent recharge ability

(f) Redundant charge controller

One battery pack shall be provided for each DCP. The batteries pack provided shall have adequate capacity to sustain the maximum sized DCP configuration of sensors and telemetry equipment for a period of 15days of continuous operation at the frequency of one observation per hour per sensor and one transmission per hour on a 24-hourly basis. This capacity shall be available If it not, battery pack should be replaced with new one free of cost.

The necessary housing and configuration of the batteries shall be furnished in detail by the Bidder.

The battery pack shall also include arrangements of charging through a standard 220 V AC domestic power supply outlet and also from solar panels established as above. The normal supply to the DCP equipment shall be from battery pack only.

The power supply unit shall have audio and/or visual alarms for overcharging and deep discharging conditions. The charge level shall also be indicated on the front panel of the pack.

The sealed construction shall allow trouble-free, safe operation in any position. The battery case shall be high-impact, with sufficient resistance to shock, vibration, chemicals and heat.

12.3. POWER SUPPLY FOR DCP

The equipment offered should conform to the following technical specifications

Feature	Units
Battery	
Voltage	0 to 60 V / as compatible with DCP and all sensors
Type	Sealed maintenance free
Capacity	Based on site conditions and Telemetry method, power supply system to provide 15 days of power back up to all equipment's being powered up by the solar panel
Solar Panels	
Size	Based on site conditions and telemetry method, power supply system shall provide 15 days of backup to all equipment's being powered up by the solar panel
Mounts	The mounts should be sturdy in design and detachable but the solar panel should not move or rotate with wind. It should have provision to adjust direction and elevation during installation for optimal solar power generation.
Charge controller	Smart solar charge controller with protection shall be provided by the

Feature	Units
	bidder
General	
The supplier should determine optimal size of solar panels and batteries, such that system should be operational for at least 15 days in the absence of charging while allowing the battery to be charged from 20percent capacity to full charge within a single sunny day.	

12.4. SPECIFICATION FOR CABLING AND CONDUITS

- i. The term cable shall always include necessary type of connectors at both the ends for connecting between two equipment. The connectors shall be properly anchored with protective sheathing of the cable in such a way that the loads due to pulling and twisting shall be borne by the protective sheathing and the conductors shall not be subjected to any stress.
- ii. The connectors shall be so fixed on the individual components of the system that the metal/ plastic connector shall always transfer the loads due to pulling and twisting directly to the protective body of the component and the internal interface cards/ connections shall not be subjected to any load.
- iii. Laying of necessary data and power supply cables for connecting various components and embedding them or protecting them with necessary conduits shall be carried out as per directions of engineer-in-charge.
- iv. Wherever the cables are to be laid indoors and the length of the individual cable run exceeds 1 meter, the cable shall be housed in a protective conduit made of electrical supply grade conduit of appropriate diameter and the conduit shall be fixed with the wall at a height not less than 1 meter above the floor surface. Whenever the indoor cable is required to cross the floor, it shall be housed in a HDPE pipe of 25mm internal diameter and the pipe shall be fixed to the floor with suitable protective covering to avoid tripping of personnel using the area or disturbance to the pipe due to such movement.
- v. Wherever cables are to run through open ground including the public road and pathways, the cable shall be armored /shielded and shall be water ingress proof up to static water pressure of 5 kg/cm². All joints made in cable shall also meet the water proofing criteria. In addition, the cable shall be protected by housing the same in 25 mm HDPE pipe/flexible metallic conduit embedded at a depth of not less than 1.0 meter below the ground surface with a warning brick on the same. A sketch of the cable layout with respect to the identifiable marks of the area shall be prepared and handed over to the Engineer-in-charge for each such cable run on completion of the work of cable laying operation.

- vi. The joints in the cable connecting between the sensor and data collection unit shall be avoided by measuring the appropriate length of the cable required and attaching the same in one piece. If the cable joints become necessary, prior permission of the Engineer-in-charge shall be obtained before executing the same. The joint fabricated through a splicing and jointing kit shall be stronger than the parent cable.
- vii. The cable carrying data and electrical AC power shall be housed separately in different conduits separated by adequate distance to prevent leakage currents. The data cables shall also be laid out in such a way that the data integrity is not compromised due to mutual interference.
- viii. Shielded (screened) cables shall be used for external Cabling. The power and control cables shall be generally as per IS 8130/34. For these cables, equivalent IEC/IS specifications are also acceptable
 - (i) All cables shall have stranded copper conductor of suitable cross section depending on load.
 - (ii) The Communication cable/power cable shall be of shielded, twisted pair type.

These are minimum requirements. Bidder is free to propose improved cabling technology

13.0 TRAINING AND DOCUMENTATION

The Bidder is required to provide an extensive training programme for the system. The training set forth in the following paragraphs is a minimum requirement and the bidder should propose any additional training that he considers critical for long term success of the system operations.

The Bidder is expected to provide an outline or table indicating the contents of each of the required courses. The table shall describe the specific topics to be covered for each day of the training period.

The Bidder is responsible for the salaries of the training instructors and all training materials. **The costs of travel, transportation and per diem for the trainees shall be borne by the Purchaser.**

Training shall be provided by the bidder in several phases. The training shall include both classroom and field trainings and will be continued during all 4 years. The bidder is required to have hydro-meteorological equipment specialists.

The Bidder shall provide trainings as training modules as part of the Tender given as under:

S. No.	Description	Numbers of training/ duration of each trainings	Number of Participants per session
During Installation Period			
1	User Training Course for senior management.	1 Training in Dhaka Head Quarter of BWDB Duration 1 day	15
2	Operation and Maintenance course. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing, maintenance requirements, and procedures for equipment configuration, installation, site testing and commissioning, .	1 Training each in two field offices of BWDB in different divisions Duration of each Training 3 days	2X15
During 1 year Warantee Period			
3	User Training Course for senior management	1 Training in Dhaka Head Quarter of BWDB Duration 1 day	15
4	Operation and Maintenance course. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing, maintenance requirements, and procedures for equipment configuration, installation, site testing and commissioning, .	1 Training each in two field offices of BWDB in different divisions Duration of each Training 3 days	2X15
During AMC Period in each Year			
3	User Training Course for senior management.	1 Training in Dhaka Head Quarter of BWDB Duration 1 day	15
4	Operation and Maintenance course. Course topics will include sensor calibration, data logger configuration, data downloading, data retrieval, collection, Trouble shooting, processing, maintenance requirements, and procedures for equipment configuration, installation, site testing and commissioning, .	1 Training each in Two field offices of BWDB in different divisions Duration of each Training 3 days	2x15

All aspects of the electrical, instrumentation and telemetry equipment being supplied shall be covered in the courses and full documentation shall be provided. The documentation and kits shall be got approved from purchaser in advance. The course shall provide detail documentation and shall ensure that the purchaser's personnel shall be able to modify settings/ parameters without reference back to the Supplier. The places / sites where this training will be decided later by the purchaser.

The training course will take place as decided by the Purchaser. In case of formal training, the Purchaser will provide classroom and other logistics. The Bidder will facilitate the professional and the training materiel. On-the-job training will be provided by the Bidder in conjunction with the installation of hydro-meteorological stations and during the course of maintenance as required.

- (a) Training kit containing course material in soft as well as hard copy shall be provided by the Bidder.
- (b) All logistical arrangement such as projector, training space etc for training is to be made by purchaser.

14.0 INFORMATION TECHNOLOGY SECTION

Apart from getting the specific responsibilities in the Information technology area, the bidder should get:

- An overview of the entire Software Solution for BWDB, and,
- An overview of the entire ICT Solution for implementing the software solution.

At the end of the section, Specific Responsibilities of the bidder, vis-à-vis the entire software solution and the entire ICT solution, have been described.

For details of the Software Solution, refer to “*Proposed IT Solution: Appendix 1: Services & Products Report*”.

Overview of the Software Solution

The New BWDB Information System will be developed for meeting the following non-negotiable key business objectives of BWDB:

- To retain the functions implemented in the current information system. Currently implemented functions must not be removed, rather they should be technically upgraded, as found required;
- To overcome the issues and deficiencies of the current information system as revealed through the assessment of the existing system;
- To introduce more functions and features for strengthening Hydrological Information Services;

- To capture, collate, process, integrate, and disseminate hydro-meteorological data of all river basins in Bangladesh;
- To process the data for providing information required for a range of hydrological, environmental and engineering studies;
- To manage and maintain the historical data and disseminate data to the stakeholders, to meet their demands;
- To enable the Flood Forecasting and Early Warning System, by providing hydro-met data online.

The direct benefits of the New BWDB Information System are:

- Maximization of real-time capture of hydro-met data;
- Maintain data entry facility, for the hydro-met parameters, which are not captured through RTDAS;
- Maintain data entry facility, as a fall back of RTDAS;
- More efficient data storage for integrating surface water data, ground water data, meteorological data, and river channel morphology data;
- More stringent data validation and data cleaning;
- Flexible, fulfilling and access controlled data dissemination;
- Enabling flood forecasting and early warning;
- More user friendly and easy to use system;
- More secure and scalable database design for storing and retrieving hydro-met data;
- More secured data dissemination;
- Enabling users with advanced search options and obtaining required data from anywhere;
- Modularized design of the software application enabling the BWDB developers to maintain the software system, efficiently.

The New BWDB Information System will capture real-time hydro-met data files for Surface Water, Coastal Monitoring and Ground Water data from the respective Real Time Data Acquisition Systems. The data files will be collected in the “Data Collection Server”. The system will provide facility for capturing manually measured hydro-met parameters data and

River Morphology data also. Both the real-time data files and non-real-time data files (say, “Other Data Files”) will be stored in the “Data Collection Server”.

A Data Collection / Acquisition software will be installed in the “Data Collection Server”. The software will parse the data files, decrypt the data, and store them in a “Time Series Database”. A relevant portion of the parsed data will be stored in another Database too (say, “General Database”).

A Data Management Software will be installed in a “Data Management & Processing Server”. The software will do data validations and store the validated data in a “Time Series Database”. The “Data Management & Processing Server” will house the “General Database” also.

There will be another Server, “Dissemination Server”, where permissible data sets, extracted from the Time Series Database and the General Database will be stored and regularly refreshed. All the three Servers (“Data Collection Server”, “Data Management & Processing Server” and “Dissemination Server”) will be installed in the New BWDB Data Centre.

The New BWDB Information System will be a web-based software application system, consisting of three major components:

- A. Portal:** For data entry, data validation and cleaning, controlling parameters and options set up for data dissemination
- B. Mobile Application:** For limited data entry and queries
- C. Website:** For controlled and rule-based information dissemination

The “Dissemination Database” will be accessed for disseminating data to the external users, in the form of restricted and stipulated reports, queries, data buying, and data visualization. Data will be disseminated mainly through the Website. Part of the Portal and the Mobile Application may be designed for data dissemination to the external users. The Portal and the Mobile Applications will be implemented with user access control and authorization. BWDB Internal Users will mainly use the Portal and Mobile Application for their internal operations, queries, reports, and data visualization. For that purpose, the “General Database” and the “Time Series Database” will mainly be accessed. Everywhere, GIS system will be accessed for displaying data of Maps.

Sourcing Observation Wells Ground Water Data

Refer to the Bidding document, "Procurement of Upgrade existing and new ground water stations and nests from Manual to Automatic, including monitoring and maintenance" under the Project BWCSR: Component-B SHEWS.

Through a separate initiative, a ground water observation wells network (RTDAS) will be installed, consisting of 905 sties. The automation of the Groundwater monitoring network will streamline the data into the system. Ground Water data transmission will be automatic and real-time from the field to the server. The Ground Water data will be transmitted using GSM/GPRS communication protocol. Ground Water “real-time data files” containing hydro-met data will be collected in the “Data Collection Server”.

Sourcing Observation Network Surface Water Data

A real time hydro-met data acquisition network (RTDAS) will be implemented, as per the Task 1.2 “Assessment and design of water resources information observation network”. The Real Time Data Acquisition System (RTDAS) for Surface Water Observation Network will consist of a telemetry network of Automatic Rainfall Gauges (ARG), Automatic Weather Station (AWS) and Automatic Water Level Gauge (AWLG) stations, along the rivers and reservoirs. The sensors of the telemetry network will automatically measure and transmit “real-time data files” containing hydro-met data to the same “Data Collection Server”, using GSM/GPRS communication protocol.

Sourcing Coastal Monitoring Surface Water Data

Another Real-Time Data Acquisition System (RTDAS) for **Coastal Monitoring Network** will be implemented, consisting of a Telemetry Network of Automatic Water Level Gauge and Surface water velocity Radar with Automatic Water Level Gauges (AWLG). The sensors of the telemetry network will automatically measure and transmit “real-time data files” containing Coastal Storm and Inundation data, to the same “Data Collection Server”, using GSM/GPRS communication protocol.

Every day 1500 X 400 data files will be transmitted by the Real Time Data Acquisition Systems from 1500 stations. This huge load will hit the Data Collection Server every day (24X7). Hence, the Data Collection Server has to be load balanced.

Sourcing Manually Measured Data

There are certain hydro-met parameters, which will not be captured through the Real-time Data Acquisition Systems. Those hydro-met parameters will be manually measured at the field. The New BWDB Information System will provide User Interfaces (in Portal and Mobile Application) for the users to enter the manually measured data. The manually measured data will be stored as “Other Data files” in the same “Data Collection Server”.

Sourcing River Morphology Data

River Morphology data will be captured from the IWM (Institute of Water Modelling) files. The New BWDB Information System will provide Import Utility for the IWM users to upload the River Morphology data files. IWM users should also be able to enter River Morphology data using the User Interfaces provided by the New BWDB Information System. The uploaded data files will be stored as “Other Data files” in the same “Data Collection Server”. Entered morphology data will be stored as “Other Data files” in the same “Data Collection Server” too.

Sourcing BMD and DAE Data

Bangladesh Meteorological Department (BMD) and Department of Agriculture Extension (DAE) send data to BWDB. The New BWDB Information System will provide Import Utility for the BMD and DAE users to upload the data files. The uploaded data files will be stored as “Other Data files” in the same “Data Collection Server”.

Data Files Parsing and Decrypting

A Data Collection / Acquisition software will be installed in the “Data Collection Server” and will run in a stipulated time interval. The software will pick up the newly arrived data files in the “Data Collection Server”, parse the data from the data files, and decrypt the data. After parsing and decrypting, the software will store the data in a “Time Series Database”. A relevant portion of the parsed and decrypted data will be stored in another Database too. (say, “General Database”).

Data Processing and Validation

A Data Management Software housed in the “Data Management & Processing Server” will perform time series processing and data validation, as per the Quality Management System (QMS) of BWDB. As part of the data validation process, the software will facilitate in doing Data in-filling (completion) and correction, Data compilation, Data analysis, and Data reporting. The software will support performing Data Validation in two levels; Primary Data Validation and Secondary Data Validation. The processed, validated and corrected data will be stored in the Time Series Database.

Other Supporting Functions

Apart from data collection, processing and validation, the New BWDB Information System will have many supporting and ancillary functions. In order for executing those functions properly, corresponding data have to be maintained in the system. These data will be stored in the “General Database”.

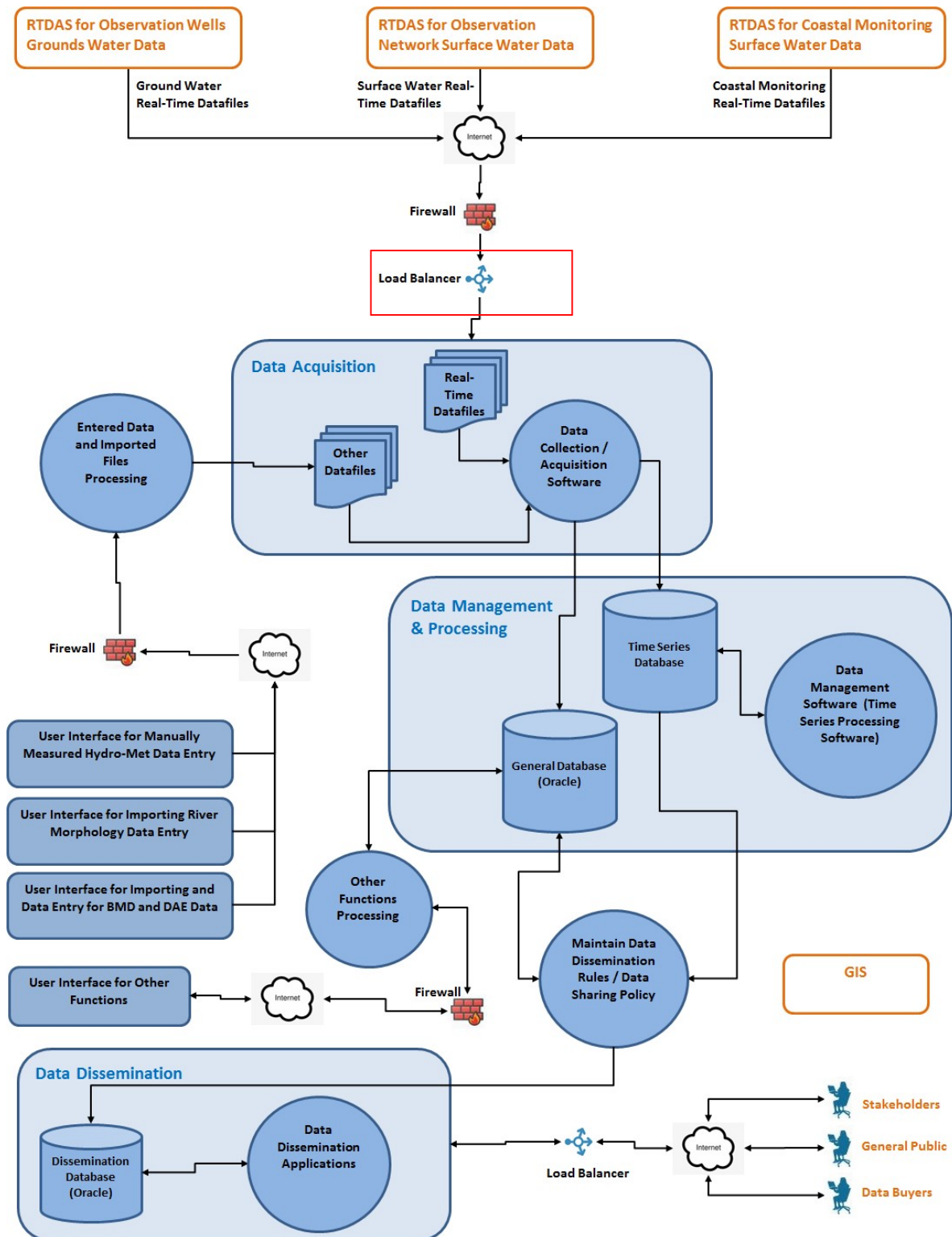
Catering to User Data Requests

There are Data Dissemination Rules and Data Sharing Policy of BWDB/the Bangladesh Government, which have to be maintained in the system. According to the Data Dissemination Rules and Data Sharing Policy, data will be extracted from the “General Database” and the “Time Series Database”, and the extracted data will be updated and refreshed in the “Dissemination Database”. The “Dissemination Database” will be accessed to cater to the users, who are external to the core system. The “General Database” and the “Time Series Database” will be secluded from the external world.

“Data Dissemination Applications” will primarily access the “Dissemination Database” to cater to the external users’ data requests like reports, queries, data buying, and data visualization. Data Dissemination Applications mainly relate to the Website. However, a part of Data Dissemination may be implemented in the Portal and Mobile Application, also. Data Dissemination Server will be “Load Balanced” to sustain potentially fluctuating data request load from the external users. “Data Dissemination Applications” will access the GIS system for displaying disseminated data on the Maps.

An Integrated Information System

As described above, data from various sources will get into the system, go through several processes, get transformed, stored and get ready for dissemination. The New BWDB Information System will be an integrated information system ensuring end-to-end seamless data flow and processes. The Figure below schematically depicts the end-to-end dataflow, the processes, the Serves, and the Databases housed in the Servers, for the New BWDB Information System.



Schematic diagram of end-to-end dataflow, the processes, the Servers, and the Databases of the Information System

Overview of the ICT Solution

The New Software Application will be installed in the New BWDB Data Centre facility and run from there. In order for implementing the New Software Application and running the same efficiently, appropriate ICT Items (Computer Servers, Communication items, Security items, Monitoring Software items, etc.) have been judiciously identified. The ICT Solution for BWDB identifies the ICT items according to specific requirements, purposes and benefits of BWDB.

Following are the primary drivers for the ICT solution and design:

- Overcoming the issues, deficiencies and problems at hand in the Computer Facility of the Hydrology Wing.
- Provisioning the ICT items, which will implement the Value Adding features in the ICT System.
- Provisioning the ICT items, which are directly or indirectly required for installing and running the software for the New BWDB Information System
- Provisioning the ICT items, which are not related to running the software for the New BWDB Information System, but required for the Data Centre rendering more efficient services to the New BWDB Information System.

For details of the ICT Solution, refer to the “ICT Systems Design Report”.

The value adding features and their benefits are described below.

Implementing Redundancy at Server Level

Computer Server Level redundancy will be achieved at two levels; by having redundant Computing Resources and by having redundant Computer Servers. Explained below:

Computing Resources Redundancy

High-performance Servers with sufficient computing power in terms of CPU, storage, RAM, network ports will be installed in the Data Centre, which will have computing resource redundancy for hosting and running multiple applications and databases efficiently. Computer Servers’ specifications have been judiciously decided to ensure sufficient computing resources redundancy. The HDDs will have sufficient storage space for installing and running the requisite application software/tools and database management software.

Computer Servers Redundancy

A critical requirement for BWDB is that the New Information System will provide uninterrupted (24X7) services to the stakeholders and the users. To ensure that the system has to be set on High Availability (HA) mode or Fault Tolerant (FT) mode. In the New BWDB Information System, HA/FT will be obtained by deploying Computer Servers in Failover clusters and/or Data Synchronization clusters. Almost for every function of the BWDB system, a pair of Computer Servers will be deployed in Failover clusters and/or Data Synchronization clusters. As for example, for Data Acquisition, instead of having one Computer Server, two Computers Servers will be deployed, which will run in Failover cluster.

Failover is a backup operational mode in which the functions of a system component is taken over by a Secondary system, when the Primary system becomes unavailable either due to failure or due to scheduled down time. Thus, if the Primary Computer Server deployed for “Data Acquisition” fails due to any reason, the Secondary Computer Server will take over the data acquisition operation. This will ensure an uninterrupted data acquisition in the BWDB system.

Implementing Load Balancing

Every day 1500 X 400 data files will be transmitted by the Real Time Data Acquisition Systems from 1500 stations. Data files will generally contain the following data points; SWL/GWL/RF, Device code, Station Id, Server/Device Time/Log interval, Parameter/value, Battery voltage, Solar voltage, CSQ of Modem/Radar status, Ptr (Read/Write), Source IP, RecError. This huge load will hit the Data Collection/Acquisition Servers every day (24X7). Hence, the Data Collection/Acquisition Servers have to be load balanced.

The Data Dissemination Servers will also face fluctuating load from the external users. Data requests from the users can substantially go high in the event of natural disasters or similar events. In order for coping up with the spikes of load, the Dissemination Servers have to be load balanced.

Load Balancers hardware will be implemented with DDoS protection (Anti-DDoS). Anti-DDoS will protect from DDoS attacks at the network, session and application layers. Depending upon the incoming load the Load Balancers will distribute the load dynamically among the Servers.

Enhancing Security

Another critical requirement for the new Information System is the Security at all levels (internet security, application security, etc.). Security will be ensured through Firewalls and Anti-DDos at every entry point of the system from the internet. At the crucial entry points like real time data acquisition, most modern and advanced Firewall, i.e., Next-Generation Firewall (NGFW), will be installed for taking care of all possible security measures and control. NGFW will be installed for WAN perimeter. Midrange Firewalls will be installed for the four branch offices for IPSEC connectivity to HO. Redundancy will be followed in Firewall item also, including Data Centre Internal requirement.

Implementing Redundancy at Network Level

All the Networking equipment like Firewall, Core Switches, and Load Balancers will have redundancy for avoiding single point of failure, and ensuring High Availability (HA) of the ICT system. Sufficient redundancy is applied to ensure HA in the RTDAS sensors connectivity.

Implementing Data Centre Storage Network

Storage-Area Networking (SAN) is used to attach servers to remote computer storage devices in such a way that they appear to be locally attached devices. SAN offers the following benefits:

- Application high availability: Storage is independent of applications and can be accessed through multiple paths.
- Better application performance: Processing for data storage is offloaded from servers.
- Consolidated storage and scalability: Simpler management, flexibility, and scalability of storage systems.
- Disaster recovery: Data can be copied remotely using Fibre Channel over IP (FCIP) features for disaster recovery.

Monitoring Services

The Data Centre needs to monitor certain critical aspects like security incident event monitoring, server monitoring, field maintenance tracking and monitoring, for much enhanced services to the Information System by taking pro-active actions and by taking informed decisions.

Following monitoring Tools will be implemented in the Data Centre. The functional requirements of the Monitoring Tools are described in the following sections.

- **NMS/Server Monitoring Tool:** This tool is for Infrastructure and Network Management, which will help to monitor all the Servers and the Network components for taking immediate action, in case of any failure or mal-functioning.
- **Security Incident Event Management (SIEM) Tool:** This tool will help to monitor the security in the system, which will help in taking immediate action if any incident has taken place already and taking pro-active action for any perceived threat to the system.
- **Field Maintenance Tracking Tool:** This tool will help in tracking onsite services, managing personnel, and maintaining online visibility into operations.

Following functions and features will be implemented in the New BWDB Data Centre for overcoming the issues, deficiencies and problems at the current computer facility.

Backup & Restore

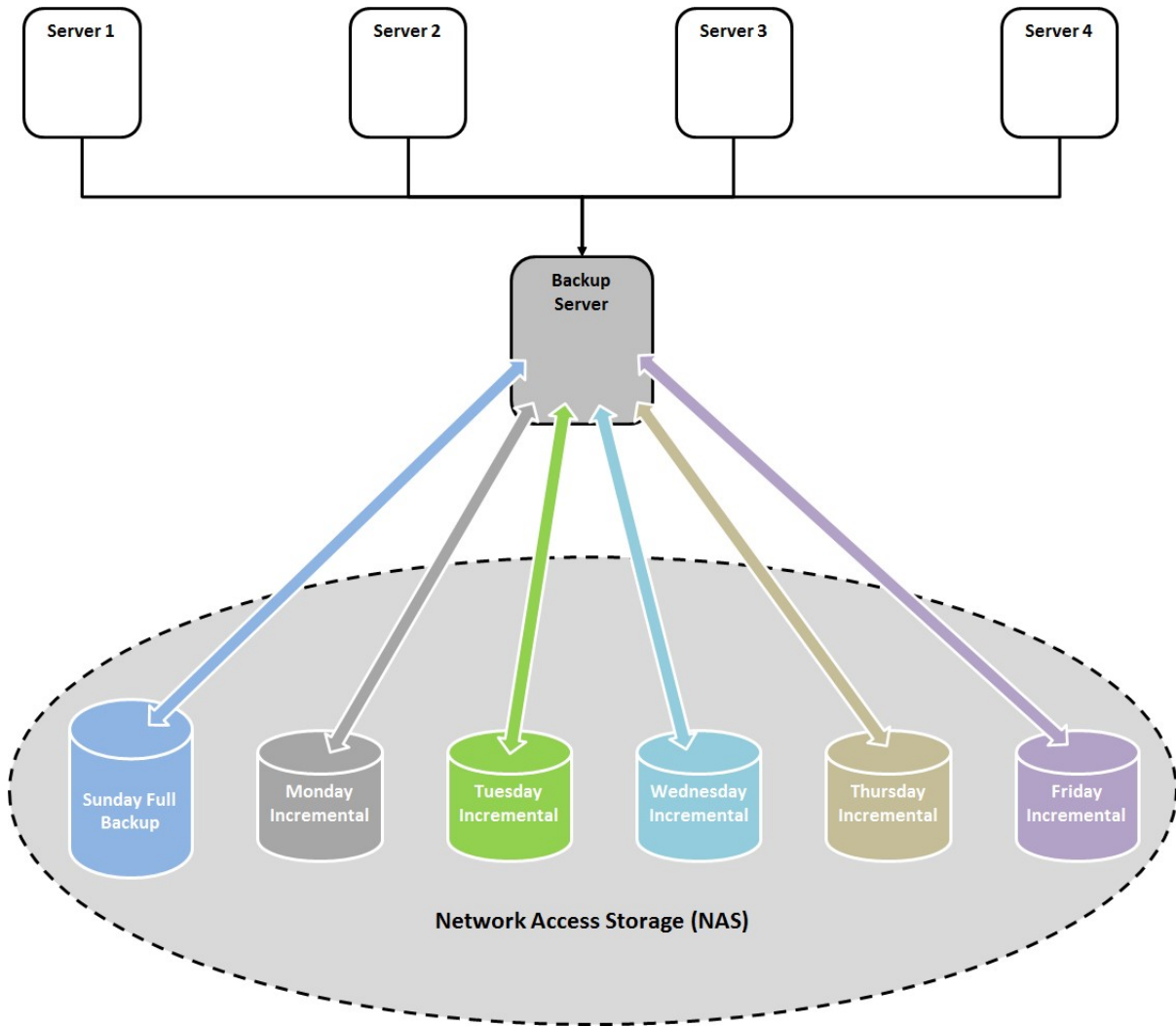
Enterprise data deem to be vulnerable in the event of buggy software, data corruption, hardware failure, malicious hacking, user error or other unforeseen events. BWDB cannot afford to lose its sensitive and valuable data. The Data Centre needs to implement a rugged and fool-proof backup and restore process and mechanism for the New BWDB Information System. BWDB's goal is to minimize the risk of losing data and ensure rapid and reliable data restore, should the need arise.

A COTS software for Backup and Restore will be implemented in the Data Centre to make sure all the servers data and applications of the New BWDB Information System are backed up systematically. The Backup System should conform to an industry standard backup methodology.

The Backup System should follow the classic GFS scheme, which implies daily backups as 'sons', weekly as 'fathers', and monthly as 'grandfathers'. This scheme is very suitable for the organization want to have an incremental backup system. For BWDB incremental backup is very suitable.

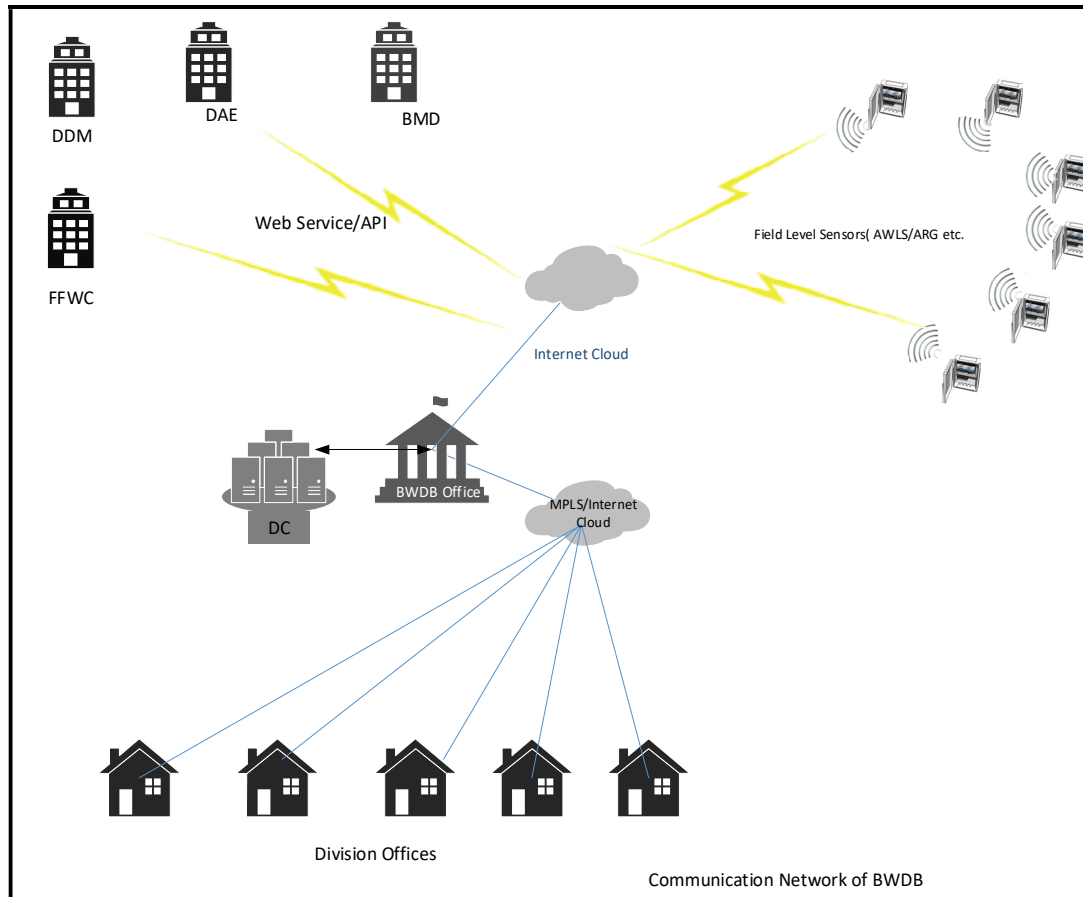
The initial full backup made on Monday becomes the first 'father', and the following incremental daily backups are 'sons'. The last backup of the week becomes the next 'father'. The 'sons' are rotated on the FIFO rotation scheme, so the oldest 'son' is replaced with the new incremental backup, and the cycle repeats. The last backup of the month becomes a 'grandfather'. After that, 'fathers' begin to rotate by the FIFO scheme.

Figure below schematically depicts how data will be pulled from the target servers and the data will be backed up in NAS (Network Attached Storage), installed in the new Data Centre.



The Communication Network

The Proposed Communication Network for the New BWDB Information System is schematically presented in the Figure below.



In the new system, all field stations like AWLS, AWS, ARG etc., will be having GSM/GPRS based communication system, which will send real time data over GPRS network to the BWDB Data Collection Server, installed at the New BWDB Data Centre. The Data Collection Server will have high speed Internet connectivity to receive those data. Data exchange with the department like BMD, DAE will be done through API / Web services, apart from Data Import/Export facility. All Divisional offices of BWDB will also have Internet connectivity for exchanging data among themselves and with HO at Dhaka. IPSEC VPN configuration will be done. This connection configuration may be used for Video Conferencing system also. IPSEC over internet connection is cost effective. Each branch office will have branch Firewall for the same. Users can access data over the internet. The Backup system will be set up in the BWDB old computer facility. The BWDB old computer facility be connected to the new Data Centre through a dedicated OFC Link. Entire communication between sensors/remote offices and the BWDB Data Collection Server is expected to be through secured encrypted channel.

Infrastructure and Network Management

Getting the real-time data from the RTDAS sensors, and data entered over the internet from anywhere is a smart and effective solution, but that brings in some obvious tasks for the Data

Centre. The Data Centre shall set thresholds for server utilization, network bandwidth and program responses and monitor them. Should a server go down, it should be able to restart automatically and remotely.

Infrastructure monitoring covers adding and removing devices to be monitored, performance and health monitoring, network and data movement monitoring, reporting/logs, and an issue alert system. This monitoring and issue alert will be real-time, as an alert is of no use, if an issue is discovered after six hours.

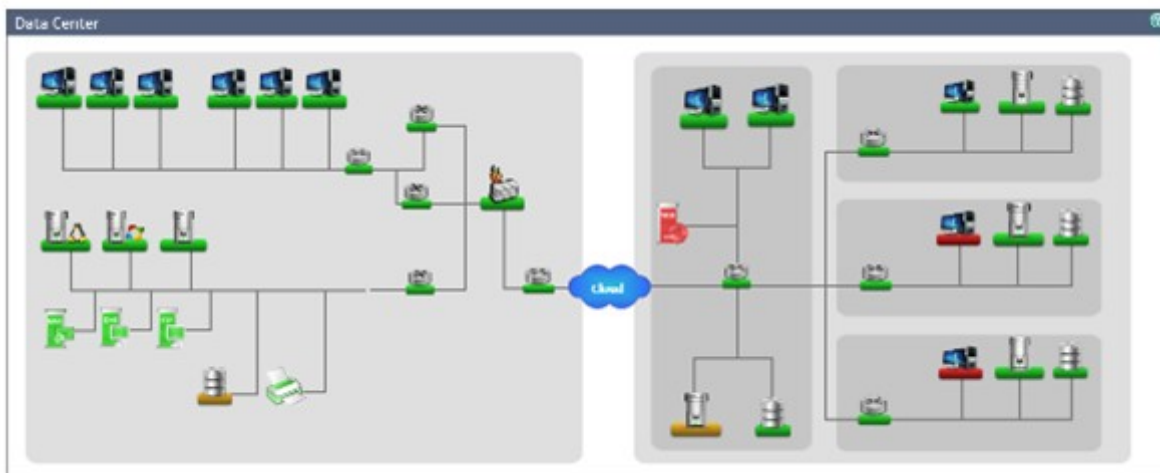
The Data Centre will have a COTS software system for Infrastructure and Network Management. The software should conform to the following features.

Infrastructure and Network Management Solution Dashboard

Infrastructure monitoring will be typically done through a dashboard, which will present all relevant information in one place through visual layout, like meters. The dashboard will present a real-time update of everything on one screen, and can generate reports over a time period as well.

A Dashboard for IMS/NMS should typically have the features like Maps, Network diagram as a service, Alarm Dashboard, Events / Traps / Syslogs, Node view and Resources.

A typical IMS/NMS dashboard of Network Topology is depicted in the Figure below:

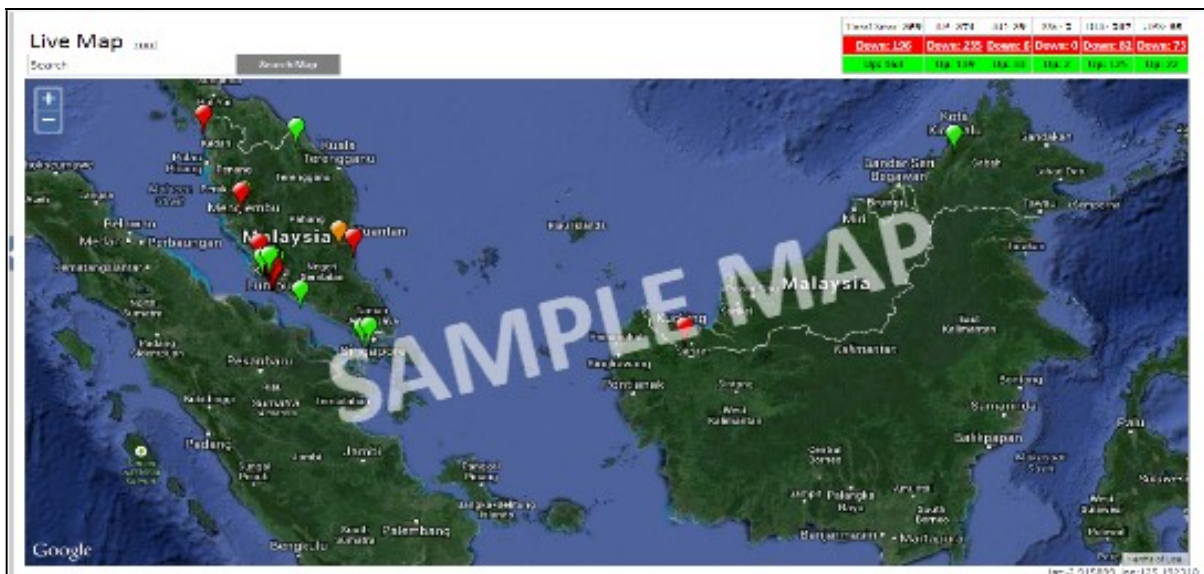


Mapview

Mapview provides a topological representation of the monitored resources. It offers a quick visual status indicator of the managed elements in a network, from routers to response paths. With features like status propagation, it provides a snapshot view for the NOC users about

the general health of the entire system. Components can be grouped to reflect business alignment. Drilling down to reports for additional detail can be accomplished directly from the Mapview. This feature also displays the total number of alarms for each folder and their colour-coded severity level. Mapview shall offer the users the option to create their own connection or topology, by selecting the icons on the Mapview and then creating interconnections and/or relations between folders and resources.

Geographical Map also allows administrator to view the network devices on geographical map as per the location of the devices. This will help the administrators to view the complete network with geographical location and its status across country. A sample Geographical Mapview is presented in the Figure below:



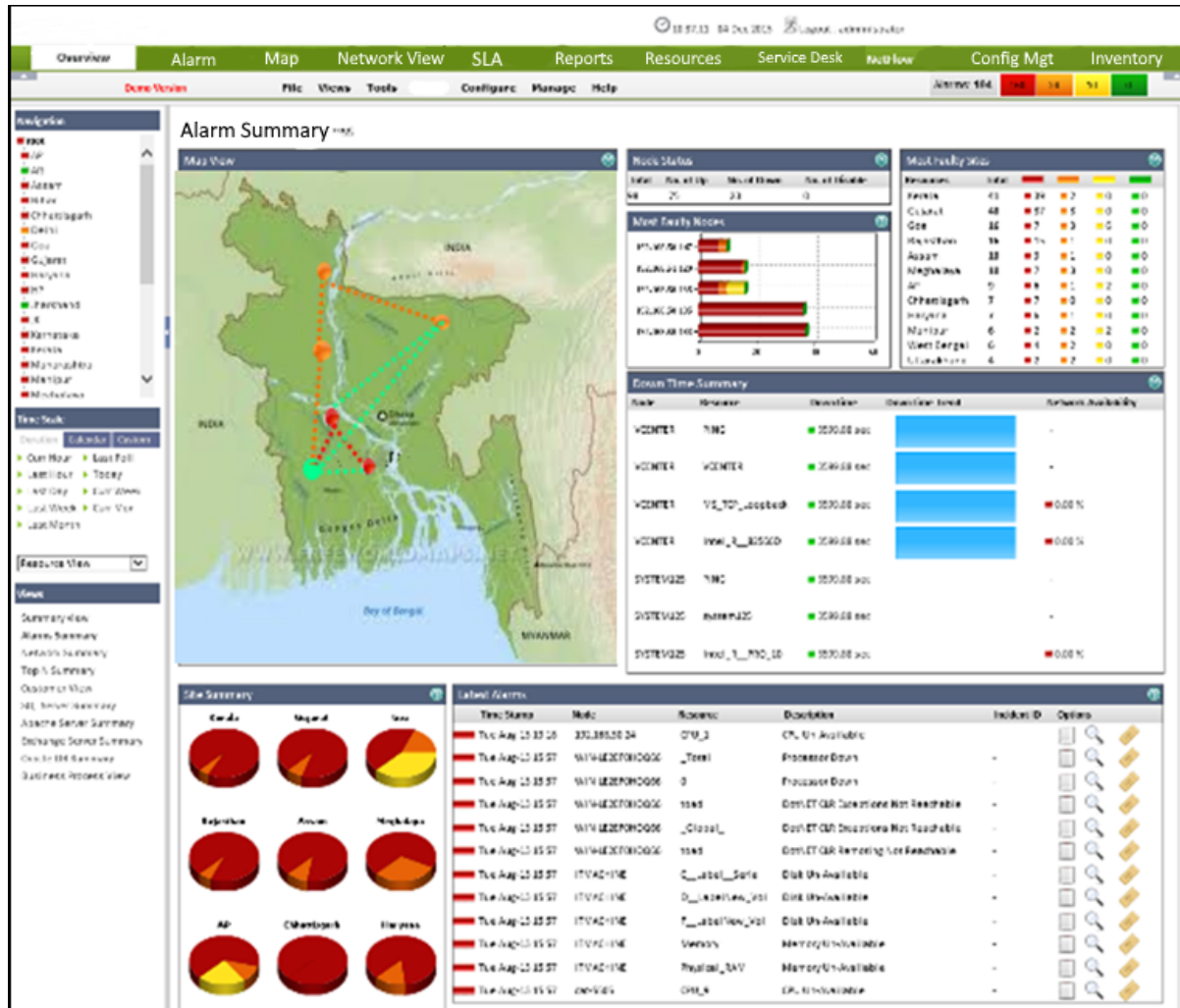
Robust Discovery of Resources

IMS/NMS should be able to discover different resources in network like switches, routers. It should be able to perform the following types of discovery; Topology Discovery, Scheduled Automatic Discovery, CSV based Discovery (bulk discovery), VM Discovery and it should support wide range of Protocols.

Key Monitored Performance Statistics Dashboard

The key performance statistics that should be monitored on the Dashboard are; Network Availability, Application Availability, Resource Availability, Database Availability, Network Utilization, Network Throughput, Error Traffic, Overflow traffic, CPU Utilization, Disk Utilization, Memory Utilization, Buffer Overflow, Latency, Packet Loss, Jitter, Ping Response Time, Web Response Time, DNS Response Time, and FTP Response Time.

A sample Key Monitored Performance Statistics Dashboard for Bangladesh is presented in the Figure below with IMS/NMS alert:



Security Information and Event Management

Security Information and Event Management (SIEM) is a software solution that will aggregate and analyse activities from many different resources across the entire ICT Infrastructure of BWDB. SIEM will collect security data from the network devices, servers, domain controllers, and more. SIEM will store, normalize, aggregate, and apply analytics to that data to discover trends, detect threats, and enable organizations to investigate any alerts.

SIEM will provide two primary capabilities to the Data Centre for taking pro-active response; Reporting and forensics about security incidents, and Alerts based on analytics that match a certain rule set, indicating a security issue. SIEM will gather immense amounts of data from the entire BWDB networked environment, consolidate and make that data human

accessible. With the data categorized and handy, Data Centre can research data security breaches.

Field Maintenance Management

Field Maintenance Management software will primary help the Administrators of the BWDB Hydrology Wing in tracking onsite services, managing personnel, and maintaining online visibility into operations. A COTS software system for Field maintenance Tracking will be installed in the Data Centre. The software must ensure the following features.

- Record all station visits including the following activities
 - Date of visit
 - Time of arrival
 - Station name
 - Technician(s) name
 - Purpose of visit
 - Operational status upon arrival
 - Operation status upon departure
 - Activities performed during visit
 - Recommendation of activities on future visit
 - Geo-tag timestamp picture taken during maintenance visit (3 pictures each visit)
 - Time of Departure
- The records must be sortable by any of the fields. For instance, the software must produce a record of all activities at a given station, or all activities performed by a given technician, or any combination of fields.
- The field maintenance management software will be used to produce monthly reports.

The New BWDB Data Centre will provide the following support for installing and running the New BWDB Information System, provided all the Data Centre requirements are fulfilled.

Data Centre Infrastructural Support

- Rack Space for installing the networking equipment and the necessary Servers.

- As the new Data Centre is a 4-Tier standard data centre, all the requisite power and HVAC system will be available.
- Required internet connectivity.
- Required SAN storage space.
- Load Balancer with Anti DDos
- WAF
- Backup and Restore
- Network Monitoring, Application Monitoring and System Monitoring for performance and cyber-attack prevention
- In case of an ICT item failure (including Server), facilitate in getting the failed item repaired.
- The new Data Centre, BWDB shall follow and implement the Industry standard security frame work like ISO 27001:2013/ ISO (refer to ISO.org/standard/42103.html), which will take care of
 - Aligning of security strategy to the BWDB's business objectives
 - Defining security policies that meet security strategy
 - Implementation of effective security metrics and monitoring activities
 - Conducting regular security awareness programs and trainings for all employees
 - Implementation of well-defined guidelines, standards, and procedures for all security operations, such as incident and risk management plans

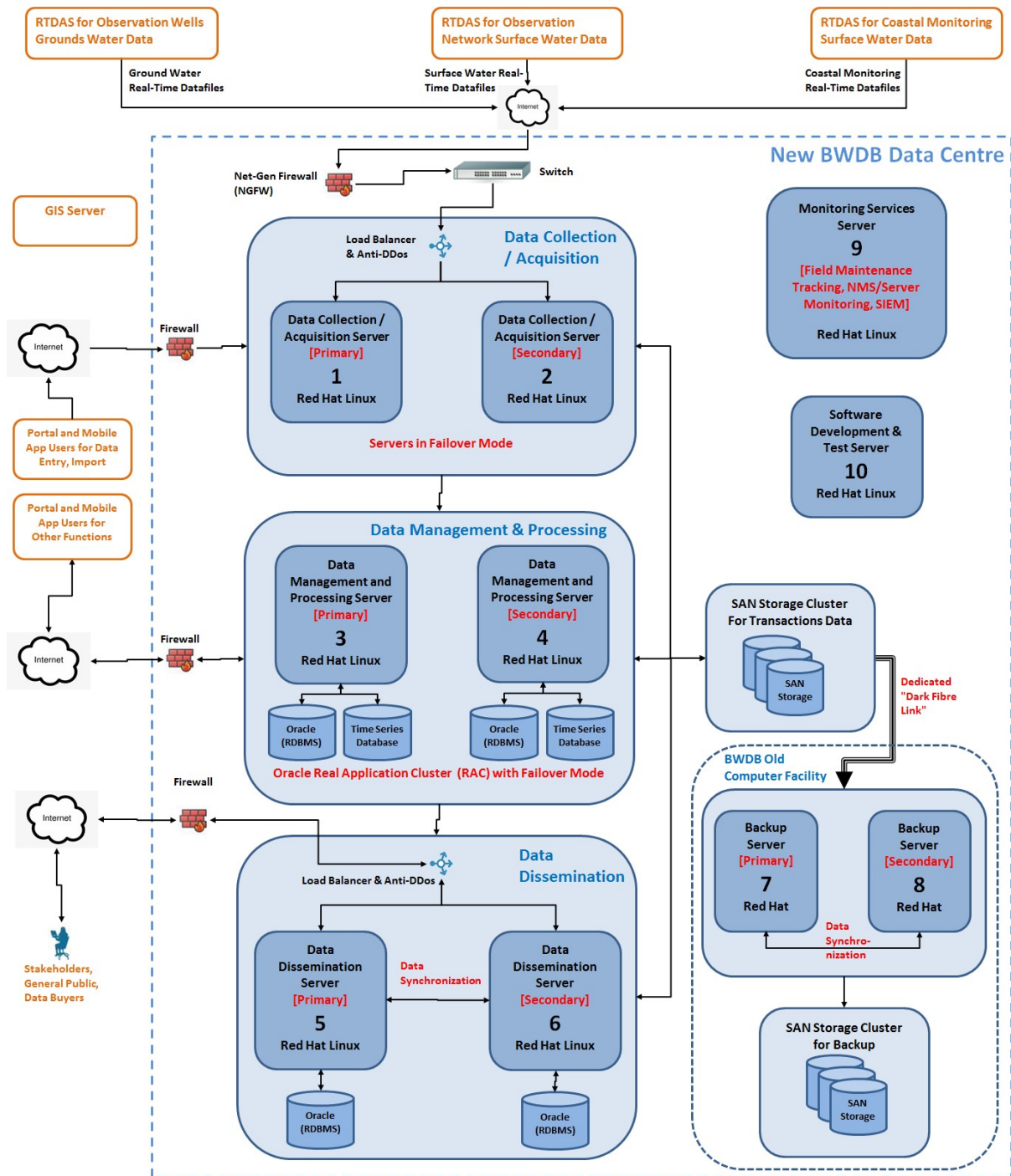
Identification of the Computer Servers and the Major ICT Items

Computer Servers and the major ICT items are identified on the basis of the following:

- Identification of Computer Servers for the Data Centre is done primarily on the basis of the Software Requirements.
- Following the Failover Clusters value addition, the redundant Computer Servers have been identified.
- Computer Server has been identified for Monitoring Services value addition.

- Computer Servers have been identified for the Backup requirement of the Data Centre with redundancy.
- Major hardware appliances like Firewall, Load Balancer, Switches, and SAN have been identified, on the basis of the value additions for enhanced security, network redundancy and storage arrangement.
- Computer Sever has been identified for maintaining the Software Development Environment (the Development Environment and the Test Environment). Apart from the Software Development Server, all other servers are for the Production Environment.

The Figure below shows the “Computer Servers and other major ICT Items identified”, which will be installed in the Data Centre. In the diagram, the New BWDB Data Centre is demarcated by the dotted box. The orange coloured objects are external to the Data Centre, but they have interactions with the Data Centre resources/servers. The identified Computer Servers are given unique identification numbers for ease of referencing. The diagram covers the major ICT items like Firewall, Load Balancer, Switches, and SAN. Though Back & Restore function will be under the operational purview of the Data Centre, the backup setup will be physically located at a place, away from the Data Centre premises. The Backup setup will be located in the BWDB Old Computer Facility, which will be connected to the Data Centre through a “Dedicated Black Fibre Link”.



Specific Responsibilities of the Bidder in Information Technology

The Bidder shall make sure that the real-time data files sent by the RTDAS and collected at the stations are being parsed, decrypted and primary validated by the COTS software installed in the New BWDB Data Centre.

15.0 PREVENTIVE MAINTENANCE

The bidder shall be responsible for operation and maintenance of all stations /components of installations, commissioning, site acceptance and operation tests. All equipment maintenance cost, repairs, replacements and repairs to civil work shall be borne by the bidder during the warranty Period. The scope of O&M support would include all materials and services including replacement of components and consumables (including batteries etc.), mandatory spare parts required to ensure smooth and sustainable operations of the entire system. The bidder shall provide monthly maintenance reports during the course of maintenance. The bidder shall supply a Manual specifying all the faults experienced by the system together with an account of how such faults have been rectified.

The bidders shall ensure the following visits at remote site for preventive maintenance. The bidder should take time stamped geo tagged photographs of the equipment during each maintenance visit (either scheduled or unscheduled visit). The photographs should show the condition of equipment before maintenance, during maintenance and after maintenance.

15.1 Schedule Showing Frequency of Scheduled Visits for Routine and Preventive Maintenance

S. No.	Station Category	Minimum Preventive Visits yearly	Remarks
1	Maintenance of Water Level Instruments : RADAR ,	4	One pre-monsoon, two in monsoon period and one in post monsoon and also on need basis
2	Maintenance of SVR with , Water Level Instruments : RADAR ,	4	One pre-monsoon, two in monsoon period and one in post monsoon and also on need basis
3	Data Logger with solar panel , Batteries.	4	One pre-monsoon, two in monsoon period and one in post monsoon and also on need basis

15.2 Operation & Maintenance

Bidder shall provide at least one dedicated Service Engineer cum operator at the National Data Centre for Operation of COASTAL MONITORING STATIONS system and ensure seamless data transfer from remote station to National data Centre via GPRS /GSM data transmission as per technical specifications.

The Service Engineer shall have experience of working on Hydro met stations /Instrumentation / SCADA system for period of at least 3 years and shall be well versed with Operation and Maintenance aspects of COASTAL MONITORING STATIONS systems.

Operation and Maintenance shall include free of cost repairs/ replacement of hardware and Software necessary to keep the system functional for the period of 1 years (Warranty) and CAMC from Date of Installation.

Staffing

The project requires the **Bidder** to provide staff positions to fill the tasks involved in maintenance during the warranty period.

These staff positions will include a minimum of 3 (three) Hydro-meteorological Technicians. The personnel will be required to be **dedicated** to the project and will remain onsite for the period of the schedule. The Purchaser will arrange office space, furnishing (desk, chair, and cabinets) and other related facilities. The hydrologic technicians will have their own arrangements for reliable transportation and required laptops and mobile telephone facilities required for the work. It is required that the Bidder acquire a minimum of 2 (two) 4x4 vehicle capable of holding and securing all of the equipment used for field maintenance. The hydrologic technicians will form one team and be strategically located at field offices/ head office to minimize travel time to the ARLG stations while participating in preventative and emergency maintenance.

Staff Schedule Requirements

The Bidder supplied staff will be required to work in the field during the entire warranty and Annual Operation & Maintenance Services period (if any). It is most important that the staff be entirely committed to the project and will not be allowed to be shared between projects without the written consent of the Purchaser.

Staff Requirements to be supplied by the Bidder are as follows:

No of Personnel Required	Designation and Location	Period of Commitment
	BWDB Data Center in Dhaka	
1	Senior Hydro-meteorological Technician	Full Time
	Field Office	
1	Senior Hydro-meteorological Technician	Full Time
1	Junior Hydro-meteorological Technician	Full Time

Hydro-meteorological Technicians – Responsibilities, Qualifications and Supervision

There are two levels of hydro-meteorological technicians required. There will be a senior hydro-meteorological technician and a junior hydro-meteorological technician at each maintenance center.

Senior Hydro-meteorological Technician

The senior hydro-meteorological technician will be highly trained and certified to have expertise in operation and maintenance of the equipment used in the project. The senior hydro-meteorological technician will also be certified to have expertise in complete knowledge and understanding in making sensor calibration checks and field adjustments. The senior hydro-meteorological technician is required to have a firm grasp and understanding of the installed technology and be able to train junior hydro-meteorological technicians from both Purchaser and Bidder candidate pool.

It is paramount that the senior hydro-meteorological technician be able to maintain, repair, and replace all AWLGS equipment and civil works.

Junior Hydro-meteorological Technician

The junior hydro-meteorological technician will work under the senior hydro-meteorological technician and assist in performing preventative and emergency maintenance visits. The junior hydro-meteorological technician will be certified by the Bidder to maintain data stations.

Responsibilities

The hydro-meteorological technicians will be responsible for maintaining all AWLG stations installed by the Bidder. The hydro-meteorological technicians will be required to record activities at the stations using the maintenance management & tracking software purchased as part of this tender. The hydro-meteorological technicians will perform **preventative maintenance visits four per year or more frequent**, to each and every station in their area of responsibility. The hydro-meteorological technicians will also perform emergency maintenance visits on an “as-needed” basis, and within 24 hours of a station going down. Area of responsibility is outlined in Appendix A and Appendix B.

Proper data transfer and acquisition in data center as per required format will be their responsibility.

During each such maintenance visit (either scheduled or unscheduled), the bidder’s representative must take geo-tagged time stamped pictures and submit to purchaser. Three pictures must be taken for each visit for each site, covering status before maintenance, during maintenance and after maintenance.

The maintenance activities will include clearing weeds, cleaning equipment and enclosures ridding the equipment of insects. The technicians will perform spot checks of instrument

performance, which means the technicians must have, as provided by the Bidder, accurate temperature sensors and rain gauge test equipment to assure the temperature and relative humidity sensors are in proper working order.

The bidder will also be responsible for producing monthly reports, due no later than **7th day of each month**, which is valid for the previous month.

The monthly reports will include the summary of the entire meteorological network. The report will include:

1. Station summary of the following:
 1. Number of hours reporting for the previous month.
 2. The number of hours missing for the previous month.
 3. The number of penalty days for the previous month.
 4. Notes on exceptional activities, such as equipment theft/damage.
 5. Surface water level maximum.
 6. Surface level minimum.
 7. Minimum and Maximum value weater parameters
2. Summary of field maintenance activities. Including:
 1. The number of station visits for preventative maintenance for the previous month.
 2. The number of station visits for emergency maintenance for the previous months including problem and action taken.
 3. Other technician activity, such as the number of days worked, vacation, sick, etc.
3. Data Center Summary of the following:
 1. Server downtime and reason for downtime
 2. Software/hardware upgrades
 3. Daily maintenance activity log

The purchaser will modify the reports as directed by the purchaser to include more or less information.

The contractor provided technicians/IT personnel will be responsible for using the time series database to perform quality control and establish a “data for record” database. Data will be processed and stored no later than two months after the data is received at the server.

Supervision

The hydro-meteorological technicians (both senior and junior) will take supervision from the appointed executive officer of BWDB though the purchaser must be cognizant of the contractual commitments of the technicians in assuring that no stations are down beyond a period where penalties may commence. This means that hydro-meteorological technician activities must be carefully coordinated with the Purchaser. Regular dialogue is required between the Bidder and the Purchaser. The Purchaser can also request station maintenance activities, again provided that the activities don’t interfere with the technician’s contractual obligations.

TECHNICAL RESPONSIVENESS FORM

BIDDER SHALL FURNISH CLAUSE BY CLAUSE COMMENTARY AGAINST THE LAID DOWN TECHNICAL SPECIFICATION AND STANDARDS AS PER THE FORMAT GIVEN BELOW:

(A) Summary of Instructions

- (a) Particulars of Manufacturer and local agent cum representative are to be given under rows Model and Address.
- (b) **All entry boxes in column “Specification and Standards as offered in by Bidder” shall be filled-in accurately and comprehensively. Quantitative fields shall be filled in accurately. It is not acceptable to use ‘Yes’, No, Compliant or similar evading words. Following format is designed to help the Bidder to understand the requirements of the equipment being procured. The Bidder must describe in the format how his bid responds to the technical requirements of the equipment. Bidder to note that one or two word responses (e.g. “Yes”, “No” “will comply” or similar evading words) are normally not sufficient to confirm the responsiveness with the technical requirements, hence elaborate responses are sought from the bidders. In case deviation on the following technical requirements of equipment is not as per the minimum criteria mentioned, the bids may be declared “non-responsive”.**
- (c) Requested materials and information shall be enclosed with the bid and be unambiguously associated with instruments as offered in the bid
- (d) **Negligence to comply with the instructions and requirements as stated above makes the bid liable to be rejected.**
- (e) Abbreviations: OD-Outer Diameter; ID-Inner Diameter; FS-Full Scale; Pa-Pascal (unit of pressure), COASTAL MONITORING STATIONS-Real time data acquisition system; DRS-Data Retrieval System; DCP- Data Collection Platform, AWS-Automatic Weather Station, ARG- Automatic Rain Gauge, AWLG- Automatic Water Level Gauge. SVR – Surface water Velocity Radar
- (f) Sample interval is the interval at which samples or sensor readings are taken. The recording / measurement interval defines the interval at which the data records are stored in memory. A data record can represent a single sample or the average of a number of samples. In particular, the result of the wave suppression filter is a single record representing the average value of a number of samples.

(A) Entries requiring special attention

- i. The proposed maintenance interval and the recommended spares as offered in the bid

Bidder	AWLR /AWLS	SVR with Radar type water level sensor	Data Logger make/ model
Name / Complete Address/ Website/ Email	Model: Manufacturer: Name: Place: Tel: Fax: E-mail: Web:	Model: Manufacturer: Name: Place: Tel: Fax: E-mail: Web:	Model: Manufacturer: Name: Place: Tel: Fax: E-mail: Web:

shall be based on instrument deployment history. The training proposal shall be based on experience in similar cases. Moreover, it shall consider the educational level and specialization of the trainees.

(A) Bidder shall provide information in the formats given below:

- (a) Make/ Model/ Local Agent:
 (b) Clause by Clause Commentary against laid down technical specifications:

1. Specifications of the RADAR (Water Level Gauge)

Name of Goods-Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
RADAR Automatic Water Level Gauge Sensor		Make: Model: Manufacturer Name, address, email, phone, website, fax	
Site Conditions			
Ambient Temperature	From -5 to +60 °C		
Humidity	0 to 100 %		
Altitude	0 to 2000 meter		
Sensor			
Sensor Type	Microwave non-contact sensor		
Range	15 meters		

Name of Goods-Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Resolution	3 mm or better		
Accuracy	0.02 % FSO		
Output Interface	SDI-12 / RS-485 /4-20mA /V/ mV/ and compatible to RTU/Data logger Unit		
Power Supply	To be powered by Solar Panel provided by bidder with DCP		
Beam angle	Less than 16 degrees.		
General Features			
Material	Corrosion Resistance (Stainless steel / Aluminum / PVC/UV stabilized ABS with metal casing)		
Enclosure	The Sensor shall be easy to dismount and replace in the event of malfunction.		
Tools	Complete tool kit for operation and routine maintenance		
Manuals	Full Documentation and maintenance manual in English		
Accessories	Sensor Mounting support, cables and other accessories as required		
Protection	NEMA 4 or IP67 or better		
Horizontal Mounting/Installation Arrangements	Above FRL, below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/wall/pedestal to be provided		
Radar Sensor should have inbuilt diagnostics feature & averaging feature			

2 Specifications of the SVR with Radar type Water Level Transmitter (Non contact type)

Name of Goods-Its Features		Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Surface Velocity non Contact type RADAR			Make: Model: Manufacturer Name, address, email, phone, website, fax	
Site Conditions				
Ambient Temperature		From -5 to +60 Degree Celsius		
Storage temperature		-10 to 60oC		
Humidity		0 to 95 % non-condensing		
Altitude		0 to 2000 meter		
Sensor				
Level measurement				
Sensor Type		Microwave non-contact sensor		
Range		0 to 15 m		
Resolution		1mm		
Accuracy		±2mm or 0.25% of Full Scale (FS), whichever is better		
Beam angle		12 degree		
Velocity measurement				
Sensor Type		Microwave non-contact sensor		
Velocity measurement Range		0.10 to Up to 15 m/s (Configurable)		
Accuracy (Velocity)		±0.01m/s or ±1% of full scale whichever is better		
Resolution		1mm/s		
Measurement duration		5 to 240 seconds		
Distance to water surface		0.5 to 15m or as per requirement		
Output Interface		SDI-12 / RS 485 / 4-20mA / and compatible to RTU/Data logger Unit		

Power Supply	To be powered by Solar Panel provided by bidder with DCP		
Beam angle	Less than 16 degrees.		
General Features			
Housing Material	Corrosion Resistance (Stainless steel / die cast Aluminum/ PVC /UV stabilized ABS with metal casing”		
Enclosure	The Sensor shall be easy to dismount and replace in the event of malfunction.		
Tools	Complete tool kit for operation and routine maintenance		
Manuals	Full Documentation and maintenance manual in English		
Accessories	Sensor Mounting support, cables and other accessories as required		
Protection	NEMA 4 or IP67 or better		
Horizontal Mounting/Installation Arrangements	below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/wall/pedestal to be provided		
Special Feature	Sensor shall have facility of bidirectional flow measurement		

3. Specifications of Data Logger with 2AI channels

Name of Goods- Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Data Logger with 2 AI channels		Make: Model: Manufacturer Name, address, email, phone, website, fax	
Site Conditions			
Ambient Temperature	From 0 to +50 Degree C		
Humidity	0 to 100 %		

Name of Goods-Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Altitude	0 to 2000meter		
Sensor Interface			
Analogue Inputs	2-Analogue Input Channels 4 to 20 mA, 100% over range withstand (Analog input channels are required in datalogger, if any sensor offered by bidder requires analog interface to integration with datalogger)		
SDI Port	One SDI-12 Interface port		
Serial Port for sensor interface	One RS-232 / SDI- 12 & One RS-485 for sensor Interface		
Pulse Input	1 Input for Rain Gauge impulse		
Input - Output Interfaces			
Data Transfer	USB Port for Data transfer		
Port for Configuration	One Serial Port (RS-232 / RS-485 / USB port) for communication with Laptop for programming		
Port for Telemetry	One Port for Communication with Telemetry (GSM & GPRS) device and another port for spare		
Display Port	Datalogger should have built-in display.		
Analog to Digital Converter			
Resolution	16 bit or better		
Conversion Accuracy	± 1 LSB		
Sample intervals	2 minutes to 24 hours (user scalable)		
General Features			
Flash memory	Non-volatile Flash memory that can store one year of data and expandable upto 1 GB Via USB/ SD Card		
Recording	Individual recording intervals for each		

Name of Goods- Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Interval	sensor/parameter		
Firmware Operating System	Multi-tasking operating system - must log data and transmit at same time		
Display	Inbuilt Digital Display for viewing current data and setting values		
Power Supply	Shall be powered by solar Power supply to be provided by bidder with DCP low current drain (quiescent $\leq 10.0\text{mA}$)		
Battery Voltage	Monitoring of battery voltage level		
Internal battery	Internal battery backup for clock, lithium battery, storage 2 years		
Charge Controller	Internal or External then details required		
User Permissions	Different user levels, system of user rights / passwords, access restricted to unauthorized personnel		
Internal clock	Internal clock with drift less than 1 second per Week		
Keypad	For displaying or transferring data to memory stick, configuration of data logger and sensors		
Real time clock	GPS synchronized & timing in IST format required		
System integrity	System integrity check procedures		
Enclosure	for wall-mounting in a shelter / enclosure with IP65/NEM4X or better) protection or better		
Accessories	Serial cable + adaptor (if required for Notebook connection). All accessories (fixing units, etc.) as required		
Tools	complete tool kit for installation and routine maintenance giving full detail (number of pieces and type)		
Manuals	full documentation and maintenance instructions in English (1 copy per		

Name of Goods- Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
	station).		
GSM / GPRS MODEM		Make: Model: Manufacturer Name, address, email, phone, website, fax	
Operating Temperature	From 0 to +50 Degree C		
Transmission System	GPRS/edge-based data transmission system		
Performance	Data Reception availability of 95% or better. GSM- GPRS omni directional antenna with minimum 11 dBi gain.		
Form factor	The GSM /GPRS modem should either be integral part of data logger specified above, or it should be supplied as independent unit compatible with supplied data logger		
Specific Features			
Communication Direction	Utilize GPRS network for two-way connection with FTP, TCP/IP (INTERNET) connection and SMS		
Transmission trigger	Data collection to be triggered by interrogation from Data Centre, or by event based transmission triggered by remote site		
Power Saving	Ability to disable interrogation system in order to save power at remote site		
Communication Protocol	Data transmission SMS to transmit and receiving data to the Data Centre		
Accessories	All associated equipment, including Antenna all cables and mounting hardware		
Certification	UL/IEC/ANSI/Equivalent certifications needed		

4. Specifications of Solar Power Supply System

Name of Goods-Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Battery		Make: Model: Manufacturer Name, address, email, phone, website, fax	
Voltage	From 0 to +60 V / as compatible with DCP and all sensors		
Type	Sealed maintenance free		
Capacity	Based on site conditions and telemetry method, power supply system shall provide 15 days of backup to all equipment's being powered up by the solar panel		
Solar Panel		Make: Model: Manufacturer Name, address, email, phone, website, fax	
Size	Based on site conditions and telemetry method, power supply system shall provide 15 days of backup to all equipment's being powered up by the solar panel		
Mounts	The mounts should be sturdy in design and detachable but should not move or rotate with wind. It should have a provision to adjust direction and elevation during installation for optimal solar power generation		
Charger	Smart solar charger with protection shall be provided by the bidder		

5. Specifications of Staff Gauge

Name of Goods-Its Features	Required Specifications and standards as per bidding document	Specification and standard as offered in by Bidder	Remarks
Enmelled Gauge Plate 4 inch wide, 1.8 mts long as per the technical specifications.	Make:		
	Model:		
	Manufacturer Name, address, email, phone, website, fax		
material	enamelled steel or stable FRP plate		
colour	white background, deep blue graduations sizes (prior to coating)		
Mounting arrangement:	Suitable for concrete, Steel structure. With accessories.		
width	100 to 200 mm		
thickness	1.5 to 2.5 mm		
length	1500 mm		
smallest graduation	0.01 m		
accuracy of graduations	0.5 mm		
distinction	cm, dm and m, index at 5 cm mark		
temperature	0 to 60°C, the accuracy shall be maintained over the full temperature range		
certificate	Calibration certificate		

Performance Specifications

Operation, Trouble-shooting & Maintenance for 03 (three) years beyond Warranty Period.

Scope of Work

The scope of work includes the following activities as guided by the specifications.

1. Undertake services of Operations, Maintenance & keep automated stations 100 % functional.
2. Provide hydro-meteorological technicians for operation, maintenance and keep stations 100 % functional.
3. Replace spare parts as and when required.
4. Develop reports and products as directed by the **Purchaser**
5. Provide staff at data center to operate newly acquired data center computer systems.
6. Provide documentation.

3.1 Requirements during the period of Operations, Trouble-shooting and Maintenance to keep 100% functional for 03 years beyond mandatory warranty Period.

The monthly reports will include the summary of the entire Hydromet network. The report will include:

1. Station summary of the following:

- a. Number of hours reporting for the previous month.
- b. The number of hours missing for the previous month.
- c. The number of penalty days for the previous month.
- d. Notes on exceptional activities, such as equipment theft/damage.
- e. Hydromet level maximum.
- f. Hydromet level minimum.

2. Summary of field maintenance activities. Including:

- a. The number of station visits for preventative maintenance for the previous month.
- b. The number of station visits for emergency maintenance for the previous months including problem and action taken.
- c. Other technician activity, such as the number of days worked, vacation, sick, etc.

3. Data Center Summary of the following:

- a. Server downtime and reason for downtime purchaser will provide.

- b. Software/hardware upgrades
- c. Daily maintenance activity log

This report will be provided to the purchaser no later than the 7th day of the month for the previous month.

The supplier provided technicians/IT personnel will be responsible for using the time series database to perform quality control and establish a “data for record” database. Data will be processed and stored no later than two months after the data is received at the server.

3.1.1 Scheduled Maintenance visits

The supplier shall make sure that preventive maintenance is carried out at all stations for at least twice a year. During maintenance visit, the bidder’s personnel should follow standard maintenance procedures, the procedures to be developed and submitted by the bidder. During these maintenance visits, the representative should make sure that:

- The battery is in proper operating condition, and free from leads/corrosion
- All the sensors and devices are working
- Confirmation of accurate hydro-met observations (note changes in field maintenance software and monthly report)
- All wires are tight with no loose connection
- Any damage to equipment by environment, animal or human factors
- The site is clean free from any kind of grass and debris.

The bidder’s representative shall take time stamped geo-tagged photographs during each such maintenance visits for each site. The pictures should clearly show 1) Status before maintenance, 2) status during maintenance and 3) status after maintenance. All these three photographs along with maintenance report should be submitted to purchaser.

3.1.2 Documentation

The **Bidder** will provide complete written documentation, including data sheets and operating manuals of the data logger, sensor and ancillary equipment, such as solar panels, batteries and solar regulators. This will be bound in binder(s) with 5 copies of this written material provided to the **Purchaser**.

The documentation will also be provided in electronic form on USB drives supplied by the **Bidder**. The **Bidder** will prepare 5 such USB drives with all required documentation on each of the 5 USB drives.

3.1.3 Bidder Responsibilities during Service Operations, Maintenance & kept the hydromet network 100 % functional for 03 years beyond mandatory warranty period.

1. The Bidder will be responsible for obtaining all tools and equipment necessary to complete Maintenance & kept the groundwater network 100 % functional.

2. The Bidder will be responsible in acquiring vehicles for field use and paying all expenses related to these vehicles. It is required that the vehicles be 4x4 trucks.
3. The Bidder will be responsible for arranging the vehicle for transport during maintenance and troubleshooting visits to remote sites, which includes bidder's personnel and accompanying purchaser's representatives.
4. The Bidder is responsible for obtaining office devices and supplies for their use, such as computer printers, paper stock, pens, etc.
5. The Bidder will be responsible for acquiring computers for field use, and prepare reports, etc.
6. The Bidder will be responsible for acquiring internet connectivity at the field offices for their own staff (technicians).
7. The bidder is responsible for paying all the GSM mobile charges for SIM cards and data at remote sites.
8. The bidder is responsible for paying all the data and telemetry charges, subscriptions for satellite telemetry at remote sites and BDWD headquarters.
9. The bidder is responsible for paying all the salaries, per-diem, travel and all incidental charges for their personnel deployed at BDWD headquarters and field offices.
10. The bidder is responsible for paying all transport and shipping, packing / unpacking, installation / un-installation charges for replacement / repair of defective equipment.
11. The bidder is responsible for paying all replacement spare parts, batteries, etc. whenever required.
12. The bidder is responsible for all training related costs.
13. Submit Geo-tagged time stamped photographs during maintenance visits.

3.1.4 Purchaser Responsibilities

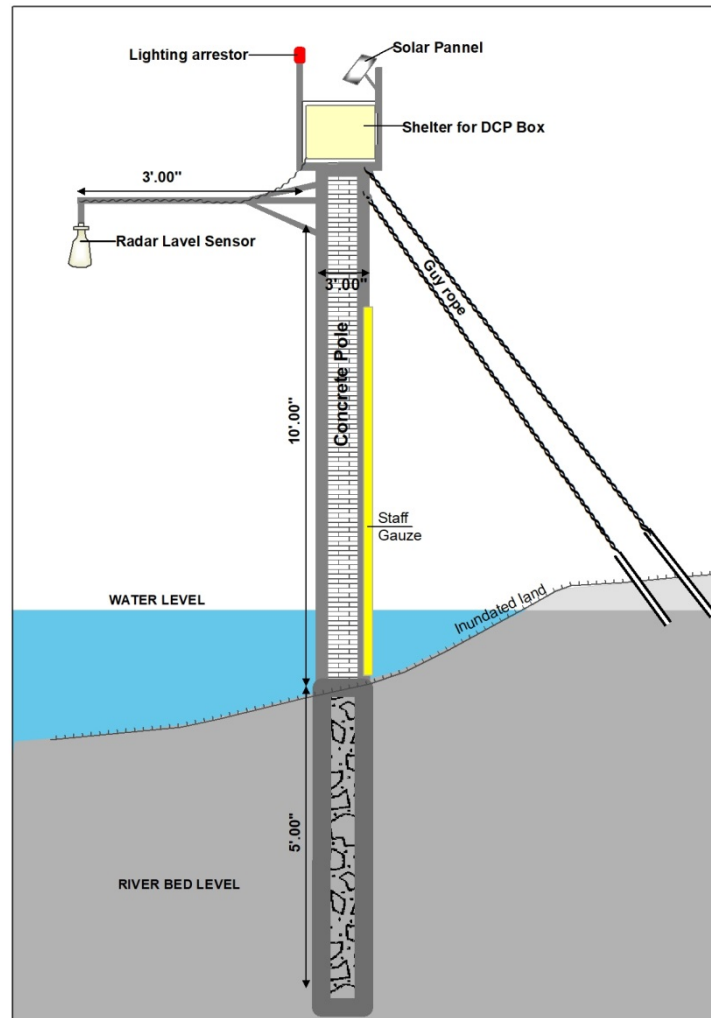
1. The Purchaser is responsible for taking permissions for land to be used to install the stations. The space required is free from obstacles.
2. The purchaser is responsible for food, per-diem and incidental charges for purchaser's personnel during field visits for installation/maintenance/troubleshooting.
3. The purchaser will provide list and location details of 40 GW stations.
4. The purchaser will provide training venue with related facilities (projector, white board etc.)

4. Drawings

These Bidding Documents includes the following drawing.

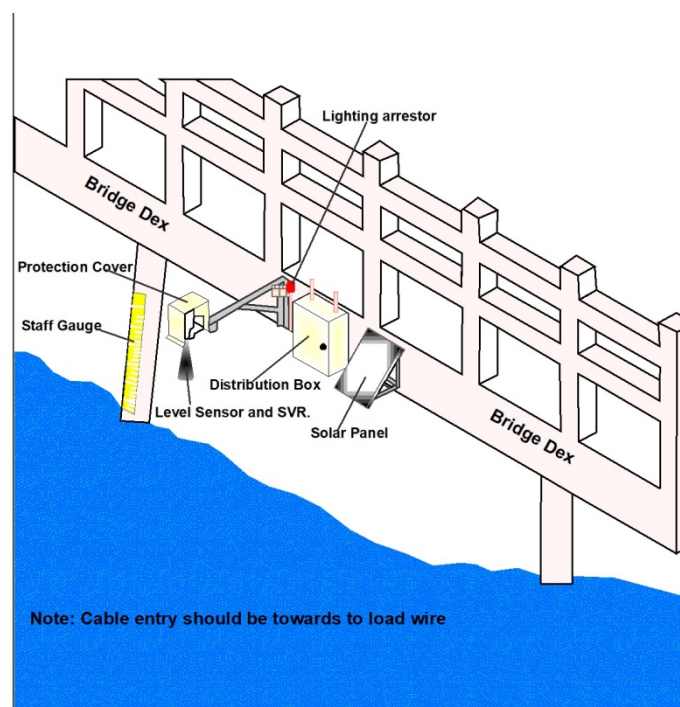
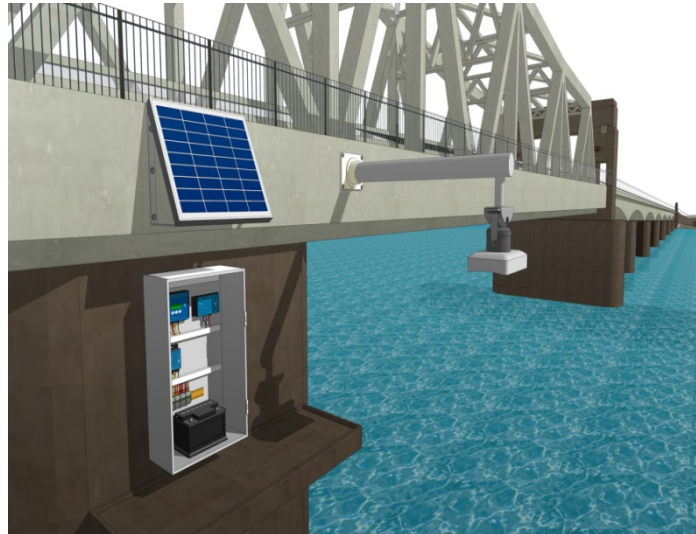
List of Drawings		
DRAWING No.	Drawing Name	Purpose
1	Type-1 foundation Mast	In inundated land
2.	Type-1 foundation Mast	Sample photo
3	Type-2 foundation Mast	In the Bridge
4	Type-2 foundation Mast	Sample photo

Photo: Type -1 AWLS in Inundated Land



Type-1 Pole mounted AWLGS in inundated land

Photo: Type -2 Fixing of AWLS and SVR in the bridge



Type -2 Fixing of AWLS and SVR in the bridge

HAND BACK REQUIREMENTS

Prior to completion of 4 years Operation and maintenance period the contractor shall complete the following Hand back requirements in last quarter of 4th year of Operation & Maintenance.

- i. The Contractor shall upgrade all such developed software during the operation period and on need basis and provide the latest versions of all such software including Source Codes, while handing over the facilities to department.
- ii. The Contractor shall hand over spares in working condition to department at the end of O&M Period.
- iii. Contractor shall provide the Acceptance testing of all Hydroment system including Local stations& monitoring station as defined in the bid document under —Inspection & Tests|| as per the satisfaction of Engineer- in- charge before completion of O&M period.
- iv. Contract shall reinstate all the associated civil works prior to acceptance testing which shall be inspected & approved by Engineer- in- charge.
- v. All documents as built drawings, User manuals, Training material & software licences shall be handed over to Engineer – In- charge prior to completion of Operation & Maintenance period.
- vi. The period of Operation & maintenance can be extended beyond the specified period of 4 years if mutually agreed by contractor and Department.

5. Inspections and Tests

The following inspections and tests shall be performed:

The following inspections and tests shall be performed:

5.1 General:

1. After manufacture, the supplier shall get each equipment/item of Goods inspected in manufacturer/s works and forward to the Purchaser along with his letter seeking to inspect a equipment/item of Goods conform to contract specifications.
2. Upon receipt of the test certificate and calibration certificates, the purchaser or its representative may arrange for inspection and/or test of any or part or all the equipment /Goods prior to issuance of dispatch clearance or the purchaser may waive the pre-dispatch inspection.
3. However, the inspection and dispatch clearance by the Purchaser or the waiver thereof shall not prejudice the right of the Purchaser or its consignee to test the equipment/goods on receipt at destination. Upon receipt of the goods at final destination, the Purchaser shall have the

- right to inspect and/or test the equipment/Goods to confirm their conformity to contract specifications.
4. If the equipment fails to meet the contract specifications during inspection, whether pre-dispatch or upon receipt at final destination, the supplier shall take immediate steps to remedy the deficiency or replace the defective equipment to ensure that all supplies meet with the specifications specified in the contract

5.2 Inspection & tests prior to shipment of Goods and at final acceptance are as follows:

1. The inspection of the Goods shall be carried out to check whether the Goods are in conformity with the approved technical specifications attached to the contract and shall be in line with the inspection/test procedures laid down in the Technical Specifications and the General Conditions of contract. Following broad test procedure will generally be followed for inspection and testing of equipment. The supplier will dispatch the goods to the ultimate consignee after internal inspection testing along with the supplier's inspection report and manufacturer's warranty certificate (where required). The purchaser will test the equipment after completion of the installation and commissioning at the site of the installation.
 - a. Site Preparation and Installation: The Purchaser will designate the installation sites before the scheduled installation date to allow the Supplier to perform a site inspection before the installation of associated telemetry system.
 - b. For site preparation, the supplier should furnish all details to the purchaser sufficiently in advance so as to get the works completed before receipt of the equipment.
2. Complete hardware and software as specified in 'List of Goods and Delivery Schedule' under the Schedule of Requirement should be supplied, installed and commissioned properly by the supplier prior to commencement of performance tests.
3. The acceptance test will be conducted by the purchaser/their consultant or any other person nominated by the purchaser, at its option. The acceptance will involve trouble-free operation for fifteen consecutive days. There shall not be any additional charges for carrying out acceptance tests. No malfunction, partial or complete failure of any part of hardware, equipment's, Data Servers attached to printers, drivers etc. or bugs in the software should occur. The supplier shall maintain necessary log in respect of the results of the tests to establish to the entire satisfaction of the purchaser, the successful completion of the test specified. An average uptake efficiency of 98% for the duration of test period shall be considered as satisfactory.
4. In the event of the equipment's & hardware failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which the purchaser reserves the rights to get the equipment replaced by the supplier at no extra cost to the purchaser.
5. Groundwater monitoring system procured would be subject to the Acceptance Protocol given below-

5.3 ACCEPTANCE PROTOCOL

General

- a. The delivery of goods/equipment and software should be in accordance with the contract agreement and the process of delivery will adhere to the following 'Acceptance Protocol'. The Acceptance Protocol shall serve as a formal guidance during delivery of the equipment. Its primary goals are twofold.

- i. Ascertain the delivery and completeness of all ordered products and related documents.
 - ii. Check the functioning of the equipment in a formal way against the specifications by application of Acceptance Tests. The tests also verify the accuracy and stability of the equipment.
- b. The Acceptance Protocol shall be executed in close co-operation between the Supplier and the Purchaser.
- c. Products shall be accepted only if they meet the requirements and are functioning in compliance with the approved technical specifications, related documents are complete and correct. Defective products and any other discrepancies shall have to be replaced/ resolved, within a pre-defined time frame.
- d. The Acceptance Report lays down the findings and observations during the execution of the Acceptance Protocol and is a formal document to record the acceptance or rejection of any item as covered in the Bid document. Any flaws or findings are to be reported. The forms and checklists filled out during the execution of the Acceptance Protocol are to be enclosed with the Acceptance Report. The Supplier receives a signed copy of the Acceptance Report, which the Supplier can use as proof that the items listed in the report were accepted.

The content of the various documents shall be as follows:

Documents

The following documents shall accompany the delivery of the equipment:

- i. Administrative and Quality Assurance (QA) documents
- ii. Test documents
- iii. Manuals and Guidelines

All documents shall have identification and references to subject or instrument, date, time, location and officer in charge.

Administrative and QA documents:

These QA documents shall include:

- i) Production documents associated with the instruments.
- ii) Type codes, serial numbers and other identification data on, possibly externally procured, sensors and major assemblies, to clearly demarcate the sensors/major assemblies associated with hydromet monitoring system.
- iii) Shipping documents indicating instrument/product type, serial number, measuring range, cable length and other similar data.
 - Spray test on enclosure(s), connectors and cables

Manuals and Guidelines

- i) The manuals shall meet the requirements on style and clarity, completeness, preciseness, detail and accessibility. This includes:
 - System manual,
 - Operation, Maintenance and Service manuals,

- Observation guideline, and
- Training handouts.

5.4 Acceptance Tests

1. General

- i) Qualified engineers under responsibility of a test manager shall execute the Acceptance Tests. The progress of the Acceptance Tests would be monitored and supervised by the Purchaser and/or his authorized representative. The Purchase may have any tests redone or additional tests executed as deemed required based on the results of previous tests conducted. The Purchase's and/or his authorized representative shall have the right of access to any instrument and may request any data or information at any time. The Supplier has the obligation to deliver requested information without delay; i.e. collected test data and documents must be available at the test site.
- ii) It is important that all activities (what, when, where, who, which instrument, etc.) are annotated and uniquely linked to the individual instruments.
- iii) The Acceptance Tests mainly comprise three levels viz.:
 - Functional Tests: The Functional Tests shall verify the proper functioning of the instruments and the associated software. Primary goal is to verify that the instrument performs its functions according to the bid specifications.
 - Accuracy Tests: The Accuracy Tests shall verify that each individual instrument is functional and operates according to the bid specifications. A number of relatively simple accuracy tests are routinely exercised on the instruments.
 - Overall Test: The main purpose of the Overall Test is to verify the common features that are identical to all the instruments in a series. Typical components of the Overall Test are: - in-built software functions of instruments, materials of the instrument, cables, connectors, etc. Further tests include battery and memory autonomy, details of sensor specifications like temperature effects, hysteresis, long term stability etc.
 - The above tests can be executed at any one of the following locations: - Premises of the Manufacturer/Supplier; Premises of the Client; Independent organization; at Site of installation
- iv) The charges for testing shall be borne by the Supplier. The Purchase and/or his authorized representative may at his cost opt to be present during the performances of the tests.

5.5 Supply and Installation checklist

In order to facilitate the site acceptance of the system by the site – in – charges, the Bidder should give a list of deliverables for each site to the respective sites as well as to the headquarters. The list shall be verified by the site – in – charge and accordingly will give a verification report whether all deliverables have been delivered properly at the site.

For site acceptance test, the supplier should give a check – list of all components and their functions. This check list shall be decided in consultation with the purchaser. This checklist shall indicate the tests to be conducted at the site and the results that are expected for each

and every component that are to be installed at the site. This check list will have to be provided to each and every site one month before the installation begins.

For the 2nd payment against supply and installation, following conditions must be met:

- Bidder should provide a complete table for each equipment installed at each of 905 site and data centre mentioning the make model and serial number / ID of the equipment.
- All the works (if any) related to site should be complete. This includes foundations, masts, earthing, and lightening protection on respective structures.
- The batteries properly installed, connected with correct polarity and surge protection.
- All the sensors should be connected to datalogger with proper cabling and conducting. The wires should be properly tied and covered.
- All the user manuals and other literature as applicable for equipment should be supplied to relevant engineer in charge.
- The sensors should start recording correct data in the datalogger
- All the testing certificates wherever applicable, should be submitted.
- The datalogger should have recorded 3 days of data, which would be transferred by USB driver and verified for continuity and correctness.

5.6 Spare parts

Bidder shall provide the list of mandatory spare parts & ensure the availability of sufficient spare parts in its godown for fulfilling its service obligations during warranty period.

5.7 Manuals

Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals of the goods and equipment. These shall be in such detail as will enable the Purchaser to operate, maintain, adjust and repair all parts of the equipment as stated in the specifications.

The manuals shall be in the ruling language (English) and in such form and numbers as stated in the contract.

Unless and otherwise agreed, the goods and equipment shall not be considered to be completed for the purpose of taking over until such manuals have been supplied to the Purchaser.

5.8 For the System and Other Software, the following will apply:

The Supplier shall provide complete and legal documentation of hardware, and licensed operating systems. The supplier shall also indemnify the purchaser against any levies/penalties on account of any default in this regard.

5.9 Acceptance Certificates:

On successful completion of acceptability test, receipt of deliverables etc. and after the purchaser is satisfied with the working of the system, the acceptance certificate signed by the supplier and the representative of the purchaser will be issued. The date on which such

certificate is signed shall be deemed to be the date of successful commissioning of the systems.

5.10 Checklist for payments for 01 (one) year for operations, trouble-shooting and maintenance during Warranty period:

After successful commissioning of the systems, the payments for 01 (one) year for operations, trouble-shooting and maintenance during warranty period would be made after fulfilling following conditions:

- The service Level conditions as mentioned in Annexure -B SCC 16.1 and adhered to and calculations made for percentage of correct data received
- The preventive maintenance of all stations as per technical section has been carried out. The bidder should supply the required geo-tagged time stamped photographs of all sites as mentioned in preventive maintenance section.
- The required trainings falling in the payment period as mentioned in technical section has been conducted.
- The attendance of the maintenance engineer for the payment has been submitted.
- The payments for internet connection and data charges for SIM cards at remote sites has been paid regularly.

PART 3 - Contract

Section VIII. General Conditions of Contract

Table of Contents

1. Definitions	161
2. Contract Documents	162
3. Corrupt and Fraudulent Practices	162
4. Interpretation	162
5. Language.....	163
6. Joint Venture, Consortium or Association	164
7. Eligibility.....	164
8. Notices	164
9. Governing Law.....	164
10 Settlement of Disputes	164
11. Inspections and Audit by the Bank	165
12. Scope of Supply	165
13. Delivery and Documents.....	165
14. Supplier's Responsibilities	166
15 Contract Price	166
16. Terms of Payment	166
17. Taxes and Duties	166
18. Performance Security	167
19. Copyright	167
20. Confidential Information	167
21. Subcontracting	168

22. Specifications and Standards	168
23. Packing and Documents	169
24. Insurance	169
25. Transportation and Incidental Services.....	169
26. Inspections and Tests.....	170
27. Liquidated Damages	171
28. Warranty	171
29. Patent Indemnity.....	172
30 Limitation of Liability	173
31. Change in Laws and Regulations	174
32. Force Majeure	174
33. Change Orders and Contract Amendments.....	174
34. Extensions of Time.....	175
35. Termination	175
36. Assignment.....	177
37. Export Restriction.....	177

Section VIII. General Conditions of Contract

1. Definitions

1.1 The following words and expressions shall have the meanings hereby assigned to them:

- (a) “Bank” means the World Bank and refers to the International Bank for Reconstruction and Development (IBRD) or the International Development Association (IDA).
- (b) “Contract” means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.
- (c) “Contract Documents” means the documents listed in the Contract Agreement, including any amendments thereto.
- (d) “Contract Price” means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.
- (e) “Day” means calendar day.
- (f) “Completion” means the fulfillment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract.
- (g) “GCC” means the General Conditions of Contract.
- (h) “Goods” means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.
- (i) “Purchaser’s Country” is the country specified in the Special Conditions of Contract (SCC).
- (j) “Purchaser” means the entity purchasing the Goods and Related Services, as specified in the SCC.
- (k) “Related Services” means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract.

- (l) “SCC” means the Special Conditions of Contract.
- (m) “Subcontractor” means any person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.
- (n) “Supplier” means the person, private or government entity, or a combination of the above, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.
- (o) “The Project Site,” where applicable, means the place named in the SCC.

2. Contract Documents

- 2.1 Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.

3. Corrupt and Fraudulent Practices

- 3.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC.
- 3.2 The Purchaser requires the Supplier 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 disclosed 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.

4. Interpretation

- 4.1 If the context so requires it, singular means plural and vice versa.
- 4.2 Incoterms
 - (a) Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms.
 - (b) The terms EXW, CIP, FCA, CFR and other similar terms, when used, shall be governed by the rules prescribed in the current edition of Incoterms specified in the SCC and published by the International Chamber of Commerce in Paris, France.

4.3 Entire Agreement

The Contract constitutes the entire agreement between the Purchaser and the Supplier and supersedes all communications,

negotiations and agreements (whether written or oral) of the parties with respect thereto made prior to the date of Contract.

4.4 Amendment

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

4.5 Nonwaiver

- (a) Subject to GCC Sub-Clause 4.5(b) below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.
- (b) Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

4.6 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

5. Language

- 5.1 The Contract as well as all correspondence and documents relating to the Contract exchanged by the Supplier and the Purchaser, shall be written in the language specified in the SCC. Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified, in which case, for purposes of interpretation of the Contract, this translation shall govern.
- 5.2 The Supplier shall bear all costs of translation to the governing language and all risks of the accuracy of such translation, for documents provided by the Supplier.

- | | |
|--|--|
| 6. Joint Venture, Consortium or Association | 6.1 If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser. |
| 7. Eligibility | <p>7.1 The Supplier and its Subcontractors shall have the nationality of an eligible country. A Supplier or Subcontractor shall be deemed to have the nationality of a country if it is a citizen or constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country.</p> <p>7.2 All Goods and Related Services to be supplied under the Contract and financed by the Bank shall have their origin in Eligible Countries. For the purpose of this Clause, origin means the country where the goods have been grown, mined, cultivated, produced, manufactured, or processed; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.</p> |
| 8. Notices | <p>8.1 Any notice given by one party to the other pursuant to the Contract shall be in writing to the address specified in the SCC. The term “in writing” means communicated in written form with proof of receipt.</p> <p>8.2 A notice shall be effective when delivered or on the notice’s effective date, whichever is later.</p> |
| 9. Governing Law | <p>9.1 The Contract shall be governed by and interpreted in accordance with the laws of the Purchaser’s Country, unless otherwise specified in the SCC.</p> <p>9.2 Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Purchaser’s country when</p> <p style="padding-left: 40px;">(a) as a matter of law or official regulations, the Borrower’s country prohibits commercial relations with that country; or</p> <p style="padding-left: 40px;">(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 from that country or any payments to any country, person, or entity in that country.</p> |
| 10 Settlement of | 10.1 The Purchaser and the Supplier shall make every effort to resolve |

Disputes

amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

10.2 If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract. Arbitration proceedings shall be conducted in accordance with the rules of procedure **specified in the SCC**.

10.3 Notwithstanding any reference to arbitration herein,

(a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and

(b) the Purchaser shall pay the Supplier any monies due the Supplier.

11. Inspections and Audit by the Bank

11.1 The Supplier shall keep, and shall make all reasonable efforts to cause its Subcontractors to keep, accurate and systematic accounts and records in respect of the Goods in such form and details as will clearly identify relevant time changes and costs.

11.2 The Supplier shall permit, and shall cause its Subcontractors to permit, the Bank and/or persons appointed by the Bank to inspect the Supplier's offices and all 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 Supplier's and its Subcontractors and consultants' attention is drawn to Clause 3 [Fraud and Corruption], which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under this Sub-Clause 11.1 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures)

12. Scope of Supply

12.1 The Goods and Related Services to be supplied shall be as specified in the Schedule of Requirements.

13. Delivery and

13.1 Subject to GCC Sub-Clause 33.1, the Delivery of the Goods and

Documents		Completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Schedule of Requirements. The details of shipping and other documents to be furnished by the Supplier are specified in the SCC .
14. Supplier's Responsibilities	14.1	The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with GCC Clause 12, and the Delivery and Completion Schedule, as per GCC Clause 13.
15 Contract Price	15.1	Prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid, with the exception of any price adjustments authorized in the SCC .
16. Terms of Payment	16.1	The Contract Price, including any Advance Payments, if applicable, shall be paid as specified in the SCC .
	16.2	The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by invoices describing, as appropriate, the Goods delivered and Related Services performed, and by the documents submitted pursuant to GCC Clause 13 and upon fulfillment of all other obligations stipulated in the Contract.
	16.3	Payments shall be made promptly by the Purchaser, but in no case later than sixty (60) days after submission of an invoice or request for payment by the Supplier, and after the Purchaser has accepted it.
	16.4	The currencies in which payments shall be made to the Supplier under this Contract shall be those in which the bid price is expressed.
	16.5	In the event that the Purchaser fails to pay the Supplier any payment by its due date or within the period set forth in the SCC , the Purchaser shall pay to the Supplier interest on the amount of such delayed payment at the rate shown in the SCC , for the period of delay until payment has been made in full, whether before or after judgment or arbitrage award.
17. Taxes and Duties	17.1	For goods manufactured outside the Purchaser's Country, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Purchaser's Country.
	17.2	For goods Manufactured within the Purchaser's country, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the

Purchaser.

- 17.3 If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in the Purchaser's Country, the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.

18. Performance Security

- 18.1 If required as specified in the SCC, the Supplier shall, within twenty-eight (28) days of the notification of contract award, provide a performance security for the performance of the Contract in the amount specified in the SCC.
- 18.2 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 18.3 As specified in the SCC, the Performance Security, if required, shall be denominated in the currency(ies) of the Contract, or in a freely convertible currency acceptable to the Purchaser; and shall be in one of the format stipulated by the Purchaser in the SCC, or in another format acceptable to the Purchaser.
- 18.4 The Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless specified otherwise in the SCC.

19. Copyright

- 19.1 The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party

20. Confidential Information

- 20.1 The Purchaser and the Supplier shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Supplier may furnish to its Subcontractor such documents, data, and other information it receives from the Purchaser to the extent required for the Subcontractor to perform its work under the Contract, in which event the Supplier shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the

Supplier under GCC Clause 20.

- 20.2 The Purchaser shall not use such documents, data, and other information received from the Supplier for any purposes unrelated to the contract. Similarly, the Supplier shall not use such documents, data, and other information received from the Purchaser for any purpose other than the performance of the Contract.
- 20.3 The obligation of a party under GCC Sub-Clauses 20.1 and 20.2 above, however, shall not apply to information that:
- (a) the Purchaser or Supplier need to share with the Bank or other institutions participating in the financing of the Contract;
 - (b) now or hereafter enters the public domain through no fault of that party;
 - (c) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; or
 - (d) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.
- 20.4 The above provisions of GCC Clause 20 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.
- 20.5 The provisions of GCC Clause 20 shall survive completion or termination, for whatever reason, of the Contract.

21. Subcontracting

- 21.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under the Contract if not already specified in the bid. Such notification, in the original bid or later shall not relieve the Supplier from any of its obligations, duties, responsibilities, or liability under the Contract.
- 21.2 Subcontracts shall comply with the provisions of GCC Clauses 3 and 7.

22. Specifications and Standards

- 22.1 Technical Specifications and Drawings
- (a) The Goods and Related Services supplied under this Contract shall conform to the technical specifications and standards mentioned in Section VI, Schedule of Requirements and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the

Goods' country of origin.

- (b) The Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Purchaser.
- (c) Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in the Schedule of Requirements. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Purchaser and shall be treated in accordance with GCC Clause 33.

23. Packing and Documents

- 23.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
- 23.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in the SCC, and in any other instructions ordered by the Purchaser.

24. Insurance

- 24.1 Unless otherwise specified in the SCC, the Goods supplied under the Contract shall be fully insured—in a freely convertible currency from an eligible country—against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery, in accordance with the applicable Incoterms or in the manner specified in the SCC.

25. Transportation and Incidental Services

- 25.1 Unless otherwise specified in the SCC, responsibility for arranging transportation of the Goods shall be in accordance with the specified Incoterms.
- 25.2 The Supplier may be required to provide any or all of the following services, including additional services, if any, **specified in SCC**:
 - (a) performance or supervision of on-site assembly and/or

start-up of the supplied Goods;

- (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
- (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (e) training of the Purchaser's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.

25.3 Prices charged by the Supplier for incidental services, if not included in the Contract Price for the Goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services

26. Inspections and Tests

26.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in the SCC.

26.2 The inspections and tests may be conducted on the premises of the Supplier or its Subcontractor, at point of delivery, and/or at the Goods' final destination, or in another place in the Purchaser's Country as specified in the SCC. Subject to GCC Sub-Clause 26.3, if conducted on the premises of the Supplier or its Subcontractor, all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.

26.3 The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in GCC Sub-Clause 26.2, provided that the Purchaser bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

26.4 Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.

26.5 The Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract but deemed

necessary to verify that the characteristics and performance of the Goods comply with the technical specifications codes and standards under the Contract, provided that the Supplier's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of manufacturing and/or the Supplier's performance of its other obligations under the Contract, due allowance will be made in respect of the Delivery Dates and Completion Dates and the other obligations so affected.

- 26.6 The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.
- 26.7 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to GCC Sub-Clause 26.4.
- 26.8 The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to GCC Sub-Clause 26.6, shall release the Supplier from any warranties or other obligations under the Contract.

27. Liquidated Damages

- 27.1 Except as provided under GCC Clause 32, if the Supplier fails to deliver any or all of the Goods by the Date(s) of delivery or perform the Related Services within the period specified in the Contract, the Purchaser may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in the SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in those SCC. Once the maximum is reached, the Purchaser may terminate the Contract pursuant to GCC Clause 35.

28. Warranty

- 28.1 The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
- 28.2 Subject to GCC Sub-Clause 22.1(b), the Supplier further warrants that the Goods shall be free from defects arising from any act or

omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.

- 28.3 Unless otherwise specified in the SCC, the warranty shall remain valid for twelve (12) months after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the SCC, or for eighteen (18) months after the date of shipment from the port or place of loading in the country of origin, whichever period concludes earlier.
- 28.4 The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.
- 28.5 Upon receipt of such notice, the Supplier shall, within the period specified in the SCC, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.
- 28.6 If having been notified, the Supplier fails to remedy the defect within the period specified in the SCC, the Purchaser may proceed to take within a reasonable period such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

29. Patent Indemnity

- 29.1 The Supplier shall, subject to the Purchaser's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:
- (a) the installation of the Goods by the Supplier or the use of the Goods in the country where the Site is located; and
 - (b) the sale in any country of the products produced by the Goods.

Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting

from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Supplier, pursuant to the Contract.

- 29.2 If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in GCC Sub-Clause 29.1, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.
- 29.3 If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf.
- 29.4 The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim, and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.
- 29.5 The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Supplier may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Purchaser.

30 Limitation of Liability

- 30.1 Except in cases of criminal negligence or willful misconduct,
 - (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay liquidated damages to the Purchaser and
 - (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed 1 total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or any obligation of the supplier to indemnify the purchaser w

respect to patent infringement

- 31. Change in Laws and Regulations**
- 31.1 Unless otherwise specified in the Contract, if after the date of 2 days prior to date of Bid submission, any law, regulation, ordinance or bylaw having the force of law is enacted, promulgated, abrogated, or changed in the place of the Purchaser's country where the Site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date and/or the Contract Price, then such Delivery Date and/or Contract Price shall be correspondingly increased or decreased, to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with GCC Clause 15.
- 32. Force Majeure**
- 32.1 The Supplier shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 32.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- 32.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- 33. Change Orders and Contract Amendments**
- 33.1 The Purchaser may at any time order the Supplier through notice in accordance with GCC Clause 8, to make changes within the general scope of the Contract in any one or more of the following:
- (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
 - (b) the method of shipment or packing;

- (c) the place of delivery; and
- (d) the Related Services to be provided by the Supplier.

33.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provision under the Contract, an equitable adjustment shall be made in the Contract Price or in the Delivery/Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this Clause must be asserted within twenty-eight (28) days from the date of the Supplier's receipt of the Purchaser's change order.

33.3 Prices to be charged by the Supplier for any Related Services that might be needed but which were not included in the Contract shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

33.4 Subject to the above, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

34. Extensions of Time

34.1 If at any time during performance of the Contract, the Supplier or its subcontractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services pursuant to GCC Clause 13, the Supplier shall promptly notify the Purchaser in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.

34.2 Except in case of Force Majeure, as provided under GCC Clause 32, a delay by the Supplier in the performance of its Delivery and Completion obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 26, unless an extension of time is agreed upon, pursuant to GCC Sub-Clause 34.1.

35. Termination

35.1 Termination for Default

- (a) The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:
 - (i) if the Supplier fails to deliver any or all of the Goods

within the period specified in the Contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 34;

- (ii) if the Supplier fails to perform any other obligation under the Contract; or
 - (iii) if the Supplier, in the judgment of the Purchaser has engaged in fraud and corruption, as defined in GCC Clause 3, in competing for or in executing the Contract.
- (b) In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 35.1(a), the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods or Related Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

35.2 Termination for Insolvency.

- (a) The Purchaser may at any time terminate the Contract by giving notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Purchaser

35.3 Termination for Convenience.

- (a) The Purchaser, by notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.
- (b) The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:
 - (i) to have any portion completed and delivered at the

Contract terms and prices; and/or

- (ii) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Supplier.

36. Assignment

- 36.1 Neither the Purchaser nor the Supplier shall assign, in whole or in part, their obligations under this Contract, except with prior written consent of the other party.

**37. Export
Restriction**

- 37.1 Notwithstanding any obligation under the Contract to complete all export formalities, any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the products/goods, systems or services to be supplied, which arise from trade regulations from a country supplying those products/goods, systems or services, and which substantially impede the Supplier from meeting its obligations under the Contract, shall release the Supplier from the obligation to provide deliveries or services, always provided, however, that the Supplier can demonstrate to the satisfaction of the Purchaser and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the products/goods, systems or services under the terms of the Contract. Termination of the Contract on this basis shall be for the Purchaser's convenience pursuant to Sub-Clause 35.3.

APPENDIX TO GENERAL CONDITIONS

Bank's Policy- Corrupt and Fraudulent Practices

(text in this Appendix 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.¹⁰ 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;¹¹
 - (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;¹²
 - (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;¹³

¹⁰ In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

¹¹ 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.

¹² 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.

¹³ 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.

- (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;¹⁴
- (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.
- (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,¹⁵ 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 nominated¹⁶;

¹⁴ For the purpose of this sub-paragraph, "party" refers to a participant in the procurement process or contract execution.

¹⁵ 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.

¹⁶ 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

- (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.”

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.

Section IX. Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

GCC 1.1(i)	The Purchaser's country is: People's Republic of Bangladesh
GCC 1.1(j)	The Purchaser is: Bangladesh Water Development Board represented by Project Director, Bangladesh Weather and Climate Services Regional Project (BWCSR); Component-B: Strengthening Hydrological Services and Early Warning Systems (SHEWS) Address: Floor/ Room number: 2nd Floor, Firoz Tower, 152/3/B, Panthapath City: Dhaka ZIP Code: 1215 Country: Bangladesh
GCC 1.1 (o)	The Project Site/Final Destination is :40 places throught out coastal area of the country and /or BWDB Data Center as mentioned in the Annexure-A.
GCC 4.2 (a)	The meaning of the trade terms shall be as prescribed by Incoterms.
GCC 4.2 (b)	The version edition of Incoterms shall be 2020 .
GCC 5.1	The language shall be: English.
GCC 8.1	For <u>notices</u>, the Purchaser's address shall be: Attention: Mashiur Rahman. Street Address: Firoz Tower, 152/3/B, Panthapath. Floor number: 2nd Floor. City: Dhaka. ZIP Code: 1215. Country: People's Republic of Bangladesh Telephone: +880 2 58153785-86 Facsimile number: Not Available Electronic mail address: pd.bwcsrp.shews@gmail.com
GCC 9.1	The governing law shall be the law of: People's Republic of Bangladesh
GCC 9.2	Replaced by "Throughout the execution of the contract, the Supplier shall comply with the import of goods and services prohibitions in the Purchaser's country when"

GCC 10.2	The rules of procedure for arbitration proceedings pursuant to GCC Clause 10.2 shall be as follows: (a) Contract with foreign Supplier: GCC 10.2 (a)—Any dispute, controversy or claim arising out of or relating to this Contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force. (b) Contracts with Supplier national of the Purchaser's country: In the case of a dispute between the Purchaser and a Supplier who is a national of the Purchaser's country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of the Purchaser's country.
GCC 13.1	Details of Shipping and other Documents to be furnished by the Supplier are: i) 06(Six) copies of the Supplier's invoice showing the description of the Goods, quantity, unit price, and total amount; ii) Airway bill; iii) Insurance certificate; iv) Manufacturer's or Supplier's warranty certificate, v) Inspection certificate issued by nominated inspection agency(if any); vi) Supplier's factory shipping details; vii) Country of Origin issued by the Chamber of Commerce. The above documents shall be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses.
GCC 15.1	Contract Price: It is a total price for goods and services (but excludes Operation and Maintenance cost during Comprehensive Annual Maintenance Contract (AMC) period of 03 (three) years, after completion of 01 (one) year mandatory warranty period). The prices charged for the Goods supplied and the related Services performed shall not be adjustable.

GCC 16.1

GCC 16.1—The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:

Payment for Goods supplied from abroad:

Payment of foreign currency portion shall be made in the following manner:

- (i) **On Receiving Goods: Fifty(50)** percent of the Contract Price shall be paid through irrevocable confirmed letter of credit opened in favor of the Supplier in a bank in its country, upon submission of documents specified in GCC Clause 13.
- (ii) **On Acceptance: Thirty (30)** percent of the Contract Price shall be paid within thirty (30) days of receipt of the Goods upon submission of claim supported by the acceptance certificate issued by the Purchaser.
- (iii) **On Operation, Trouble-shooting & Maintenance: Twenty (20)** percent of the Contract price shall be paid as following manner;

Ten (10) percent to be paid Half-yearly basis. The Condition (applicable for payment) shall be governed by Annexure-B: Service Level Conditions and Chick-list mentioned in Chapter 5 (Inspection and Tests) of Section VII (Schedule of Requirements)

Payment of local currency portion shall be made in Bangladesh Taka within thirty (30) days of presentation of claim supported by a certificate from the Purchaser declaring that the Goods have been delivered and that all other contracted Services have been performed.

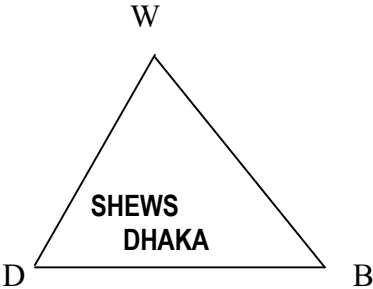
Payment for Goods and Services supplied from within the Purchaser's country:

Payment for Goods and Services supplied from within the Purchaser's country shall be made in Bangladesh Taka as follows:

- (i) **On Delivery: Fifty (50)** percent of the Contract Price shall be paid through irrevocable confirmed letter of credit opened in favor of the Supplier in a bank in its country, upon submission of documents specified in GCC Clause 13.
- (ii) **On Acceptance: Thirty (30)** percent of the Contract Price shall be paid within thirty (30) days upon submission of claim supported by the acceptance certificate issued by the Purchaser.
- (iii) **On Operation, Trouble-shooting & Maintenance: Twenty (20)** percent of the Contract price shall be paid as following manner;

Ten (10) percent to be paid Half-yearly basis. The Condition (applicable for payment) shall be governed by Annexure-B Service

	Level Conditions and Chick-list mentioned in Para-5.10 of Chapter 5 (Inspection and Tests) of Section VII (Schedule of Requirements). <u>Payment for Annual Maintenance Contract (AMC) within the Purchaser's country:</u> Annual Maintenance Contract (AMC) cost inclusive of AIT & VAT payable on it shall be paid on half yearly basis after 01 (one) year of mandatory warranty period. The Condition (applicable for payment) shall be governed by a Supplementary Contract to be established with the Bidder titled "Service Level Agreement for Operation, Trouble-shooting & Maintenance of 20 AWLG, ,20 SVR with Radar water Level,TELEMETRY SYSTEMS & DATA receiving CENTER" (Annexure-C).
GCC 16.5	The payment-delay period after which the Purchaser shall pay interest to the supplier shall be sixty (60) days. The interest rate that shall be applied is LIBOR +1%.
GCC 18.1	A Performance Security shall be required. The amount of the Performance Security shall be: 10% of the Contract price and the Performance Security will remain valid up to 28 days after the date of completion of performance obligations including warranty period.
GCC 18.3	The Performance Security shall be in the form of: Bank Guarantee. The Performance security shall be denominated in the currencies of payment of the Contract, in accordance with their portions of the Contract Price.If the bank guarantee issued by a commercial bank located outside the Purchaser's country, the bank guarantee shall be endorsed by a local commercial bank of the Purchaser's country.
GCC 18.4	The Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days subject to the following condition- (i) The supplier shall submit a Performance Security 10% (ten percent) of the price of the Annual Maintenance Contract for Operation, Trouble-shooting and Maintenance of the 20 AWLG, 20 SVR with Radar water Level,TELEMETRY SYSTEMS & DATA receiving CENTER(for three years) after the Mandatory Warranty period if the Annual Maintenance Contract (AMC) has become effective. Otherwise the Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier's performance obligations under the contract, including warranty obligations.

GCC 23.2	The packing, marking and documentation within and outside the packages shall be: A packing list, showing the contents of each package, shall be enclosed in a water proof envelope and shall be secured to the outside to the packing case. In addition each package shall be painted all around each package which shall be distinctly marked. Each package shall have the following information printed on it in bold letter (i) Port of Loading, (ii) Name of Consignee, (iii) Contract No., (iv) Brief Description of Goods, (v) IFB Number, (vi) Gross & Net Weights and Measurements. Further, the following Monogram measuring about 1/4th of package, must also be painted in red on at least two sides of each package. 
GCC 24.1	The insurance coverage shall be as specified in the Incoterms.
GCC 25.1	The Supplier is required under the Contract to transport the Goods duly insured to the specified final destination, and until the commissioning & final acceptance of each equipment, and all related costs shall be included in the Contract Price.
GCC 25.2	Incidental services to be provided are: (a) performance or supervision of on-site assembly and/or start-up of the supplied Goods; (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods; (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods; (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract.

GCC 26.1	The inspections and tests shall be as detailed in Para 5 of Section VII-Schedule of Requirement: The supplier shall get each item indicated in the Schedule of requirement inspected in manufacturer's works or at the premises of supplier and submit a test certificate and also manufacturer's guarantee /warranty certificate that the items conforms to the laid down specification. The Purchaser or its representative may inspect and /or test any or all the items to confirm their conformity to the contract specification, prior to dispatch from the manufacturer's premises/supplier's premises. Such inspection and clearance will not prejudice the right of the consignee to inspect and test the items on receipt at destination to verify conformity to technical specification. If the items fails to meet the laid down specifications the supplier shall take immediate steps to remedy the deficiency or replace the defective parts of the each to the satisfaction of the purchaser/ consignee.
GCC 26.2	The Inspections and tests shall be conducted at: <i>at remote locations and data center as specified in the technical specification and schedule of requirements.</i>
GCC 27.1	The liquidated damage shall be 0.5% of contract price of delayed Goods or Services per week or part thereof.
GCC 27.1	The maximum amount of liquidated damages shall be: 10% of contract price.
GCC 28.3	The period of validity of the Warranty shall be twelve (12) months from the date of acceptance of the Goods by the Purchaser. For purposes of the Warranty, the place(s) of final destination(s) shall be as per Annexure-A
GCC 28.5	The Supplier should pro-actively detect any such fault and act through service engineer provided under this contract to correct the problem. The failure of the supplier to make the equipment fully functional within 72 hours of such fault would attract a penalty of BDT 2000 per station per day. The amount of penalty would be recovered from the bank guarantee or from pending payments.
GCC 28.6	The period shall be 14(fourteen) days.

GCC 33	Additional clause GCC 33.5 For operation, trouble-shooting and maintenance services after completion of 01 (one) year Warranty period, a separate supplementary 03 (three) years' comprehensive Annual Maintenance Contract (AMC), shall be made between purchaser and supplier at the quoted rates for the annual maintenance services in this bid. The supplementary 03 (three) years' comprehensive Annual Maintenance Contract (AMC) shall be made at least months before expiry of the primary contract. The comprehensive Annual Maintenance Contract (AMC) shall become effective after completion of 01 (one) yeas' warranty period subject to the availability of funds, assessing the performance of services from the bidder as well as need of the services. Draft of Annual Maintenance Contract (Supplementary Contract) is enclosed as Annexure-C.
---------------	---

Section X. Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

Table of Forms

Letter of Acceptance	189
Contract Agreement	190
Performance Security	192
Advance Payment Security	196

Letter of Acceptance

[letterhead paper of the Purchaser]

[date]

To: *[name and address of the Supplier]*

Subject: **Notification of Award Contract No.**

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 SCC]*. .
. for the Accepted Contract Amount of *[insert amount in numbers
and words and name of currency]*, as corrected and modified in accordance with the
Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance
with the Conditions of Contract, using for that purpose the of the Performance Security
Form included in Section X, Contract Forms, of the Bidding Document.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment: Contract Agreement

Contract Agreement

[The successful Bidder shall fill in this form in accordance with the instructions indicated]

THIS AGREEMENT made

the *[insert: **number**]* day of *[insert: **month**]*, *[insert: **year**]*.

BETWEEN

- (1) *[insert complete name of Purchaser]*, a *[insert description of type of legal entity, for example, an agency of the Ministry of of the Government of {insert name of Country of Purchaser }, or corporation incorporated under the laws of { insert name of Country of Purchaser }]* and having its principal place of business at *[insert address of Purchaser]* (hereinafter called “the Purchaser”), of the one part, and
- (2) *[insert name of Supplier]*, a corporation incorporated under the laws of *[insert: country of Supplier]* and having its principal place of business at *[insert: address of Supplier]* (hereinafter called “the Supplier”), of the other part :

WHEREAS the Purchaser invited bids for certain Goods and ancillary services, viz., *[insert brief description of Goods and Services]* and has accepted a Bid by the Supplier for the supply of those Goods and Services

The Purchaser and the Supplier 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) the Letter of Acceptance
 - (b) the Letter of Bid
 - (c) the Addenda Nos. _____ (if any)
 - (d) Special Conditions of Contract
 - (e) General Conditions of Contract
 - (f) the Specification (including Schedule of Requirements and Technical Specifications)
 - (g) the completed Schedules (including Price Schedules)
 - (h) any other document listed in GCC as forming part of the Contract

3. In consideration of the payments to be made by the Purchaser to the Supplier as specified in this Agreement, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services 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 *[insert the name of the Contract governing law country]* on the day, month and year indicated above.

For and on behalf of the Purchaser

Signed: *[insert signature]*
in the capacity of *[insert title or other appropriate designation]*
in the presence of *[insert identification of official witness]*

For and on behalf of the Supplier

Signed: *[insert signature of authorized representative(s) of the Supplier]*
in the capacity of *[insert title or other appropriate designation]*
in the presence of *[insert identification of official witness]*

Performance Security

Option 1: (Bank Guarantee)

[The bank, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of Purchaser]*

Date: *_ [Insert date of issue]*

PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *_ [insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the supply of *_ [insert name of contract and brief description of Goods and related Services]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (*[insert amount in words]*),¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the Day of, 2...², and any demand for payment under it must be received by us at this office indicated above on or before that date.

¹ The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Beneficiary.

² Insert the date twenty-eight days after the expected completion dates described in GC Clause 18.4. The Purchaser should note that in the event of an extension of this date for completion of the Contract, the Purchaser 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 Purchaser 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

This guarantee is subject to the

Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[six months][one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

Option 2: Performance Bond- Not Applicable

By this Bond^[insert name of Principal] as Principal (hereinafter called “the Supplier”) and^[insert name of Surety] as Surety (hereinafter called “the Surety”), are held and firmly bound unto^[insert name of Purchaser] as Obligee (hereinafter called “the Supplier”) in the amount of ^[insert amount in words and figures], for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Supplier and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Contractor has entered into a written Agreement with the Purchaser dated the _____ day of _____, 20 ____, for ^[name of contract and brief description of Goods and related Services] in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Supplier shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Supplier shall be, and declared by the Purchaser to be, in default under the Contract, the Purchaser having performed the Purchaser’s obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) complete the Contract in accordance with its terms and conditions; or
- (2) obtain a Bid or bids from qualified Bidders for submission to the Purchaser for completing the Contract in accordance with its terms and conditions, and upon determination by the Purchaser and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Purchaser and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Purchaser to Supplier under the Contract, less the amount properly paid by Purchaser to Contractor; or
- (3) pay the Purchaser the amount required by Purchaser to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Purchaser named herein or the heirs, executors, administrators, successors, and assigns of the Purchaser.

In testimony whereof, the Supplier has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this _____ day of _____ 20_____
_____.

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____

Advance Payment Security

(Not Applicable for this contract package)

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Insert name and Address of Purchaser]*

Date: *[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of Supplier, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of contract and brief description of Goods and related Services]* (hereinafter called "the Contract").

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

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* () *[insert amount in words]*¹ upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has used the advance payment for purposes other than toward delivery of Goods;
or
- (b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to

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

above has been credited to the Applicant on its account number *[insert number]* at *[insert name and address of Applicant's bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, has been certified for payment, or on the *[insert day]* day of *[insert month]*, 2 *[insert year]*, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No.758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Annexure-A

Sl/No	Station Name	Latitude	Longitude	Division/ District/ Upazila /Union/ Mouza	Proposed Foundation Type
1	Moheshkhali (New Jetty Ghat)	21.524559	91.980619	Chittagong /Cox's Bazar/Moheshkhali/Saflapur/Maheshkhali Chanal	Type -1
2	Raju-Khal Steel Bridge (near Inani Beach)	21.294491	92.050812	Chittagong/Cox's Bazar/Ramu/Khuniapalong/Jungle Goalia Palong	Type -1
3	Cox's Bazar (Kolatoli Beach)	21.405771	91.988267	Chittagong/Cox's Bazar/Cox's Bazar Sadar/Jhilwanja/Jhilwanja	Type -1
4	St. Martin's Island (Lonch Jetty Ghat)	20.632566	92.328765	Chittagong/Cox's Bazar/Teknaf/St.Martin Dwip/Zinzira Dwip (Sentmartin)	Type -1
5	Shahporir Dwip (Naf River, Jetty Ghat)	20.768945	92.34153	Chittagong/Cox's Bazar/Teknaf/Sabrang/Shahpra Dwip	Type -2
6	Naf River, Teknaf (Lonch Jetty Ghat)	20.870860	92.311049	Chittagong/Cox's Bazar/Teknaf/Teknaf/Teknaf	Type -1
7	Chaktai River (Near of Wapda Fery Ghat)	22.321965	91.863692	Chittagong /Chittagong /Karnaphuli /Paschim Gomdandi /Chittagong	Type -1
8	Potenga Port	22.226928	91.801207	Chittagong/Chittagong/Patenga /Patenga	Type -1
9	Rupsha Bridge, Khulna	22.778157	89.582383	Khulna/Khulna/Batiaghata/Amirpur/Jabusa	Type -2
10	Mongla Port	22.494289	89.590029	Khulna/Khulna/Mongla/Pourasabha/Pourasabha	Type -1

SI/No	Station Name	Latitude	Longitude	Division/ District/ Upazila /Union/ Mouza	Proposed Foundation Type
11	Shamlapur (Monkhali Bridge)	21.084177	92.131857	Chittagong /Cox's Bazar /Teknaf /Baharchhara /Shilkhali	Type -2
12	Kutubdia (Boroghop Lonch Ghat)	21.813151	91.875237	Chittagong /Cox's Bazar /Kutubdia /Baraghop /Baraghop	Type -1
13	Banshkhali (Jolkadar Canal Bridge)	21.960832	91.933827	Chittagong /Chittagong /Banskhali /Chambal /Chittagong	Type -2
14	Bashkhali Toildarwip Bridge	22.173127	91.911116	Chittagong /Chittagong /Anowara /Barakhain /Chittagong	Type -2
15	Barokumaria-Sitakunda (Jetty Ghat)	22.505163	91.693714	Chittagong /Chittagong /Sitakunda /Kumira /Chittagong	Type -1
16	Sandwip (Guptochora Jetty Ghat)	22.505839	91.544064	Chittagong /Chittagong /Sandwip /Sandwip /Chittagong	Type -1
17	Muhuri Project Tourist Spot and Sluicgate	22.836344	91.453719	Chittagong /Feni /Sonagazi /Sonagazi /Sonagazi	Type -2
18	Musapur (Regulator)	22.769175	91.349822	Chittagong /Noakhali /Companiganj /Musapur /Musapur	Type -2
19	Char Amanullah	22.580612	91.250533	Chittagong /Noakhali /Subarna Char /Char Clerk /Char Clerk	Type -1
20	Motirhat-Moju Chowdhury (Sluicgate)	22.871230	90.784784	Chittagong /Lakshmipur /Lakshmipur Sadar /Shak Char /Char Ramani Mohan	Type -2
21	Char Jabbar Bridge	22.585497	91.023298	Chittagong /Noakhali /Subarna Char /Char Jabbar /Char Jabbar	Type -2

SI/No	Station Name	Latitude	Longitude	Division/ District/ Upazila /Union/ Mouza	Proposed Foundation Type
22	Dopdopia Bridge	22.662999	90.356129	Barisal /Barisal / Barisal Sadar/ Char Kowa / Dakshin Char Aicha	Type -2
23	Khunjerhat Bridge	22.488698	90.708094	Barisal /Bhola /Burhanuddin / Kutba / Kutba	Type -1
24	Charfeshion (Launch Terminal)	22.191733	90.822126	Barisal /Bhola /Charfasson / Aslampur/ Ayeshabagh	Type -1
25	Monpura (Hajirhat Lonch Ghat)	22.257295	90.960566	Barisal /Bhola /Manpura / Hajirhat / Char Jnan	Type -1
26	Hatiya (Char Chenga to Noakhali Sea Track Bridge)	22.229696	91.071258	Chittagong /Noakhali /Hatiya /Sonadia /Chengar Char	Type -2
27	Hatiya-Nijhum Dwip Fery Rte	22.091957	91.049534	Chittagong /Noakhali /Hatiya /Jahajmara /Nutan Sukh Char	Type -1
28	Ulania Dashmina (Bridge)	22.194404	90.488673	Barisal /Patuakhali /Dashmina /Rangopaldi /Dakshin Rangopaldi	Type -2
29	Taltali (Choto Bogi Bazar Sluice gate)	22.061228	90.115019	Barisal / Borguna /Amtali /Pancha Koralia /Pancha Koralia	Type -2
30	Maya Bridge	22.140095	90.649457	Barisal /Bhola / Charfasson / Char Kalmi/ Char Maya	Type -2
31	Char Montaz Sluij Bazar	21.908484	90.513766	Barisal /Patuakhali /Galachipa /Rangabali /Char Momtaj	Type -1
32	Kolapara (Bridge)	22.022793	90.269884	Barisal /Patuakhali /Kalapara /Tiakhali /Tiakhali	Type -2

SI/No	Station Name	Latitude	Longitude	Division/ District/ Upazila /Union/ Mouza	Proposed Foundation Type
33	Patharghata Badurtala Bridge	22.049267	89.975981	Barisal /Borguna /Patharghata /Patharghata /Badurtala	Type -2
34	Kuakata (Alipur Bridge)	21.856134	90.1252	Barisal /Patuakhali /Kalapara /Lata Chapli /Lata Chapli	Type -2
35	Rayenda (Bridge)	22.316063	89.848605	Khulna /Bagerhat /Sarankhola /Royenda /Royenda	Type -2
36	Nalian Coast Guard Office	22.459873	89.435282	Khulna /Khulna /Dacope /Sutarkhali /Nalian	Type -1
37	Paikgacha-Koyra (Bridge)	22.457554	89.284578	Khulna /Khulna /Koyra /Bagali /Islampur	Type -2
38	Gabura Hat Bridge	22.288626	89.273739	Khulna /Satkhira /Shyamnagar /Burigoalini /Gabura	Type -2
39	Vetkhali Bazar Port (Bridge)	22.235776	89.087488	Khulna /Satkhira /Shyamnagar /Kaikhali /Kaikhali	Type -2
40	Dublar Char (Forest)	21.730851	89.601642	Khulna /Bagerhat /Mongla	Type -1

Coastal Monitoring Stations shall be placed in a suitable position with existing bridge (for Type-2) where ever possible and nal point of installation will be fixed upon discussion and approval of Client. For type 1 the locations are tentative and locations will be finalized after discussions and approval of client in the flood plains.

Annexure-B of SCC Clause 16.1

SERVICE LEVEL CONDITIONS

1. The bidder is fully responsible to keep the system functional during installation, commissioning and 1 warranty period. The bidder should take sue-moto action to repair any faulty instrument and should not wait for a complaint from purchaser to initiate action.

2. DEFINITIONS

i. REMOTE SITE

Remote site is the site at remote location where hydrometeorological sensors for monitoring coastal inundation and storm data for sea water are installed.

ii. INVALID DATA

A data would be considered **invalid** if

- The value recorded / transmitted is beyond permissible limit for that variable. The examples of invalid data are negative water level, etc. The valid permissible upper limits and lower limits for each monitoring variable for each site would be provided to bidder by the purchaser.
- If the sensor value recorded / transmitted is absurd values or sudden variation in the value (may be within the specified limits) which is not in-line with the actual physical parameter. (e.g. If the Water level sensor recorded / transmitted value is showing absurd sudden variation of 2mts (beyond the limits of rate of change of sensor value) with respect to the previous measurement interval, then this data is the invalid data).
- If the sensor value recorded / transmitted is having frequent / periodic gapes, then the data will be considered as invalid data.
- If the sensor value recorded / transmitted is remain constant, even if there is variation in the physical parameters. (e.g. If the Water level recorded / transmitted value is showing constant / fix value even there is variation in the water level, then this data is the invalid data)
- If the sensor value recorded / transmitted is not in line with the value of co-located automatic / manual observation of the same sensor parameter.

iii. FAILED DATA TRANSMISSION

For each remote station, each scheduled transmission (for all variables including battery voltage) would consist of one data transmission. A data transmission would be considered failed if any of the following conditions are true

- There is no transmission of data from **remote site**
- Data is transmitted from **remote site** but not received at **data centre**.
- Data is recorded in datalogger but not transmitted.
- Data is not recorded by datalogger.
- Battery voltage and / or GPS status not transmitted.
- Only battery voltage is transmitted without any actual data from sensors.
- Data is transmitted but data values are **invalid**.

iv. FAULTY STATION

A station would be considered faulty if:

- In case of daily transmission cycle, there are three or more than three failed daily data transmissions.
- In case Datalogger is not recording any of the sensor Data / Battery voltage OR recording the **invalid** data of any of the sensor / Battery voltage for three or more than three days.

v. FAULTY DATA CENTRE

A Data Centre shall be treated as Faulty if

- Vital Hardware Equipment's installed by bidder at Data Centre GSM modem, online system etc. are not functioning properly.
- Bidder has failed to pay the communication charges (SIM, GSM/GPRS etc.) & system is not in function due to unpaid communication charges.
- Unauthorized absence of Bidders Operator/ Service engineer at Data Centre.

vi. MAXIMUM RESPONSE TIME FOR REPAIR (MRTR)

- The MRTR for Remote station would be 72 hours.
- The MRTR for Data Centre would be 48 hours.

vii. MINIMUM TIME BETWEEN REPAIRS PER STATION

- The minimum time between repairs is six months. If a station went faulty for reasons attributed to bidder and availed of MRTR once, it would not be eligible to avail the free repair period within payment period (six months)

3. PAYMENT FOR DATA RECEPTION

- The payment would be released proportion to data received at the Data centre. A table below presents the percentage of data reception and corresponding payment

Percentage of data received	Payment to be made to vendor
98-100%	100% of (5% of contract price to be paid six monthly as per SCC clause no. 16.1 (ii))
95-97.99 %	90% of (5% of contract price to be paid six monthly as per SCC clause no. 16.1 (ii))
90-94.99 %	80 % of (5% of contract price to be paid six monthly as per SCC clause no. 16.1 (ii))
Below 90%	NIL of (5% of contract price to be paid six monthly as per SCC clause no. 16.1 (ii))

Annexure-C Draft of Annual Operation and Maintenance Effectiveness Agreement

ANNUAL MAINTENANCE CONTRACT FOR OPERATIONS, TROUBLE-SHOOTING & MAINTENANCE OF 20AWLG, 20 SVR WITH LEVEL,TELEMETRY SYSTEMS & DATA RECEIVING AT EXISTING CENTER

between

BANGLADESH WATER DEVELOPMENT BOARD

and

<to be inserted>

for

OPERATIONS, TROUBLE-SHOOTING & MAINTENANCE OF 20 AWLG, 20 SVR WITH LEVEL SENSOR, TELEMETRY SYSTEMS& DATA RECEIVING AT EXISTING CENTER

<DAY><MONTH><YEAR>

**ANNUAL MAINTENANCE CONTRACT FOR OPERATIONS, TROUBLE-SHOOTING
& MAINTENANCE OF automated 20 AWLG, 20 SVR with Level Sensor & TELEMETRY
SYSTEMS & DATA receiving at existing CENTER**

Agreement No. BWDB/SHEWS/G6/AMC/ /2019-20

THIS AGREEMENT made

the [*insert: number*] day of [*insert: month*], [*insert: year*].

BETWEEN

- (1) Bangladesh Water Development Board represented by Project Director, Bangladesh Weather and Climate Services Regional Project (BWCSR); Component-B: Strengthening Hydrological Services and Early Warning Systems (SHEWS) (hereinafter called “the Purchaser”), of the one part, and
- (2) [*insert name of Supplier*], a corporation incorporated under the laws of [*insert: country of Supplier*] and having its principal place of business at [*insert: address of Supplier*] (hereinafter called “the Supplier”), of the other part :

WHEREAS the Purchaser invited bids for certain services, viz., operation, trouble-shooting & maintenance of 20 AWLG, 21 SVR with Level, TELEMETRY SYSTEMS & DATA receiving at existing CENTER has accepted a Bid by the Supplier for the supply of those and Services

The Purchaser and the Supplier reach an agreement (hereinafter called “Service Level Agreement”), as follows:

- | | |
|--|--|
| 1. Effectiveness of the Agreement | <p>This agreement shall become effective-</p> <p>(i) Once the purchaser has issued a letter of commencement of the services to be rendered by supplier mentioning availability of fund, purchaser’s satisfaction on services rendered & necessity of the supplier’s further services; <u>AND</u></p> <p>(ii) The Supplier has submitted a performance Security as stated in clause no.15 (fifteen) of this agreement.</p> |
| 2. Purpose of the agreement | <p>The purpose of this Service Level Agreement (SLA) is to formalize an arrangement between Bangladesh Water Development Board (hereinafter, the <i>Purchaser</i>) and <NAME OF SUPPLIER>(hereinafter, the <i>Supplier</i>) to deliver operations, trouble-shooting & maintenance of 20AWLG, 2 0SVR with water Lever sensor,TELEMETRY SYSTEMS & DATA receiving at existing CENTER at specific levels of support, and at an agreed-upon cost.</p> |
| 3. Core activity under the | <p>To keep the systems (Operations, Trouble-Shooting and Maintenance 20 AWLG, 20 SVR with Level gauge, TELEMETRY SYSTEMS & DATA at</p> |

agreement

existing receiving CENTER 100% functional during 03 (three) years after completion of 01 (one) year mandatory warranty period. The Supplier should take sue-moto action to repair any faulty instrument and should not wait for a complaint from purchaser to initiate action.

4. Definition

viii. REMOTE SITE- Remote site is the site at remote location where hydrological sensors for monitoring groundwater are installed.

ix. DATA CENTRE-Data center is the respective server where data is expected to be received. In case of GSM & GPRS based telemetry, the data center is the server installed in BWDB data center for receiving GSM & GPRS transmission.

x. INVALID DATA-A data would be considered **invalid** if

- The value recorded / transmitted is beyond permissible limit for that variable. The examples of invalid data are negative water level, etc. The valid permissible upper limits and lower limits for each monitoring variable for each site would be provided to Supplier by the purchaser.
- If the sensor value recorded / transmitted is absurd values or sudden variation in the value (may be within the specified limits) which is not in-line with the actual physical parameter. (e.g. If the Water level sensor recorded / transmitted value is showing absurd sudden variation of 2mts (beyond the limits of rate of change of sensor value) with respective to the previous measurement interval, then this data is the invalid data).
- If the sensor value recorded / transmitted is having frequent / periodic gapes, then the data will be considered as invalid data.
- If the sensor value recorded / transmitted is remain constant, even if there is variation in the physical parameters. (e.g. If the Water level recorded / transmitted value is showing constant / fix value even there is variation in the water level, then this data is the invalid data)
- If the sensor value recorded / transmitted is not in line with the value of co-located automatic / manual observation of the same sensor parameter.

xi. FAILED DATA TRANSMISSION -For each remote station, each scheduled transmission (for all variables including battery voltage) would consist of one data transmission. A data transmission would be considered failed if any of the following conditions are true

- There is no transmission of data from **remote site**

- Data is transmitted from **remote site** but not received at **data centre**.
 - Data is recorded in datalogger but not transmitted.
 - Data is not recorded by datalogger.
 - Battery voltage and / or GPS status not transmitted.
 - Only battery voltage is transmitted without any actual data from sensors.
 - Data is transmitted but data values are **invalid**.
- xii. **FAULTY STATION** -A station would be considered faulty if:
- In case of daily transmission cycle, there are three or more than three failed daily data transmissions.
 - In case Datalogger is not recording any of the sensor Data / Battery voltage OR recording the **invalid** data of any of the sensor / Battery voltage for three or more than three days.
- xiii. **FAULTY DATA CENTRE**- A Data Centre shall be treated as Faulty if
- Vital Hardware Equipment's installed by Supplier at existing Data Centre Viz., GSM modem with SIM card, system etc. is not functioning properly.
 - Supplier has failed to pay the communication charges (SIM, GSM/GPRS etc.) & system is not in function due to unpaid communication charges.
 - Unauthorized absence of Suppliers Operator/ Service engineer at Data Centre.
- xiv. **MAXIMUM RESPONSE TIME FOR REPAIR (MRTR)**-
- The MRTR for Remote station would be 72 hours.
 - The MRTR for Data Centre would be 48 hours.
- xv. **MINIMUM TIME BETWEEN REPAIRS PER STATION**--The minimum time between repairs is six months. If a station went faulty for reasons attributed to Supplier and availed of MRTR once, it would not be eligible to avail the free repair period within payment period (six months).

5. Corrupt and Fraudulent Practices

The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in **Appendix-1**.

6. Services and Requests Covered Under

The following services shall be provided by the Supplier to the Purchaser in accordance with a Request for Bids for the Bangladesh Weather and Climate Services Regional Project (BWCSR): Component-B Strengthening

this Agreement	Hydrological Information Services and Early Warning Systems (SHEWS). 1. Operation, Trouble-Shooting and Maintenance of 905 groundwater monitoring stations, telemetry systems & equipment of data center.
7. Scope of Services	The scope of Services includes the following activities. 1. Undertake services of Operations, Maintenance & keep automated 905 groundwater stations 100 % functional. 2. Provide hydrological technicians for operation, maintenance and keep the automated 905 groundwater stations 100 % functional. 3. Replace spare parts as and when required. 4. Develop reports and products as directed by the Purchaser 5. Provide staff at data center to operate newly acquired data center computer systems. 6. Provide documentation.
8. Scheduled Maintenance visits	The supplier shall make sure that preventive maintenance is carried out at all stations for at least twice a year, During maintenance visit, the Supplier's personnel should follow standard maintenance procedures, the procedures to be developed and submitted by the Supplier. During these maintenance visits, the representative should make sure that: • Desiccant is replaced • The battery is in proper operating condition, and free from leads/corrosion • All the sensors and devices are working • Confirmation of Hydromet level (note changes in field maintenance software and monthly report) • All wires are tight with no loose connection • Any damage to equipment by environment, animal or human factors • The site is clean free from any kind of grass and debris. The Supplier's representative shall take time stamped geo-tagged photographs during each such maintenance visits for each site. The pictures should clearly show 1) Status before maintenance, 2) status during maintenance and 3) status after maintenance. All these three photographs along with maintenance report should be submitted to purchaser.
9. Notice	The purchaser shall not be obliged to give any notice to the supplier regarding any non-functional station. The Supplier shall pro-actively detect any such fault and act through service engineer provided under this contract to correct the problem. The failure of the supplier to make the equipment fully functional within 72 hours of such fault would attract a penalty of BDT 2000 per station per day. The amount of penalty would be recovered from the bank guarantee or from pending payments.

- 10. Penalty** The failure of the supplier to make the equipment fully functional within 72 hours of any fault (as per definition) would attract a penalty of BDT 2000 per station per day. The amount of penalty would be recovered from the bank guarantee or from pending payments.
- 11. Settlement of Dispute**
- (i) The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- (ii) If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the services under the Contract. Arbitration proceedings shall be conducted in accordance with the following rules of procedure.
- (a) **Contract with foreign Supplier:** Any dispute, controversy or claim arising out of or relating to this Contract, or breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force.
- (b) **Contracts with Supplier national of the Purchaser's country:** In the case of a dispute between the Purchaser and a Supplier who is a national of the Purchaser's country, the dispute shall be referred to adjudication or arbitration in accordance with the laws of the Purchaser's country.
- (iii) Notwithstanding any reference to arbitration herein,
- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- (b) the Purchaser shall pay the Supplier any monies due the Supplier.
- 12. Nature of Agreement in terms of Price** It is a total price contract for Operation, Trouble-shooting and Maintenance (Comprehensive Annual Maintenance Contract) for a period of 03 (three) years. The prices charged for the Goods supplied and the related Services performed shall not be adjustable.
- 13. Agreement Price** Total Agreement price is –
Bangladesh Taka-
Foreign currency-

14. Payment Mode **Comprehensive Annual Maintenance Contract (CAMC) price inclusive of AIT & VAT payable on it shall be paid in 06 (six) installments on half yearly basis within 30 (thirty) days upon submission of claim supported by agreed documents.**

15. Payment Condition

The payment would be released proportion to data received at the Data centre. A table below presents the percentage of data reception and corresponding payment

Percentage of data received	Payment to be made to vendor
98-100%	100% of (16.66% of contract price to be paid six monthly.
95-97.99 %	90% of (16.66% of contract price to be paid six monthly.
90-94.99 %	80 % of (16.66% of contract price to be paid six monthly.
85-89.99 %	70 % of (16.66% of contract price to be paid six monthly.
Below 85%	NIL of (16.66% of contract price to be paid six monthly.

16. Performance Security

- (i) A Performance Security shall be required (within 21 days of receiving the letter of Commencement for rendering services issued by the Purchaser).
- (ii) The amount of the Performance Security shall be: 10% of the Contract price valid up to 28 days after the date of completion of performance obligations.
- (iii) The Performance Security shall be in the form of: Bank Guaranty.
- (iv) The Performance security shall be denominated in the currencies of payment of the Contract, in accordance with their portions of the Contract Price. If the bank guarantee issued by a commercial bank located outside the Purchaser's country, the bank guarantee shall be endorsed by a local commercial bank of the Purchaser's country.
- (v) The Performance Security shall be discharged by the Purchaser and returned to the Supplier not later than twenty-eight (28) days following the date of Completion of the Supplier's performance obligations under the contract.

17 Supplier's Liability

The following limitation of the Supplier's Liability towards the Purchaser:

“Limitation of the Supplier's Liability towards the Purchase:

- (a) Except in the case of gross negligence or willful misconduct on the part of the Supplier t or on the part of any person or a firm acting on behalf of the

Supplier in carrying out the Services, the Supplier, with respect to damage caused by the Supplier to the Purchaser's property, shall not be liable to the Client:

(i) for any indirect or consequential loss or damage;

(b) This limitation of liability shall not

(i) affect the Supplier's liability, if any, for damage to Third Parties caused by the Supplier or any person or firm acting on behalf of the Suppliers in carrying out the Services;

(ii) be construed as providing the Suppliers with any limitation or exclusion from liability which is prohibited by the **Applicable Law**.

18. Insurance

The insurance coverage against the risks shall be as follows:

(a) Professional liability insurance, with a minimum coverage of 110% of the total Annual Maintenance Contract ceiling.

19. Reporting obligation of the Supplier

The monthly reports will include the summary of the entire Hydromet network. The report will include:

1. Station summary of the following:

- a. Number of days reporting for the previous month.
- b. The number of days missing for the previous month.
- c. The number of penalty days for the previous month.
- d. Notes on exceptional activities, such as equipment theft/damage.
- e. Hydromet level maximum.
- f. Hydromet level minimum.

2. Summary of field maintenance activities including:

- a. The number of station visits for preventative maintenance for the previous month.
- b. The number of station visits for emergency maintenance for the previous months including problem and action taken.
- c. Other technician activity, such as the number of days worked, vacation, sick, etc.

3. Existing Data Center Summary of the following:

- a. Software/hardware upgrades
- b. Daily maintenance activity log

This report will be provided to the purchaser no later than the 7th day of the month for the previous month.

The supplier provided technicians/IT personnel will be responsible for using the time series database to perform quality control and establish a "data for record" database. Data will be processed and stored no later than two months after the data is received at the server.

**20.
Documentation**

The **Supplier** will provide complete written documentation, including data sheets and operating manuals of the data logger, sensor and ancillary equipment, such as solar panels, batteries and solar regulators. This will be bound in binder(s) with 5 copies of this written material provided to the **Purchaser**.

The documentation will also be provided in electronic form on USB drives supplied by the **Supplier**. The **Supplier** will prepare 5 such USB drives with all required documentation on each of the 5 USB drives.

**21.
Responsibility
of Purchaser
under the
Agreement**

1. The Purchaser is responsible for taking permissions for land to be used to install the stations. The space required is free from obstacles.
2. The purchaser is responsible for food, per-diem and incidental charges for purchaser's personnel during field visits for installation / maintenance / troubleshooting.
3. The purchaser will provide list and location details of 905 GW stations.
4. The purchaser will provide training venue with related facilities (projector, white board etc.)

**22.
Responsibility
of Supplier
under the
Agreement**

1. The Supplier will be responsible for obtaining all tools and equipment necessary to complete Maintenance & kept the hydromet network 100 % functional.
2. The Supplier will be responsible in acquiring vehicles for field use and paying all expenses related to these vehicles. It is recommended that the vehicles be 4x4 trucks.
3. The Supplier will be responsible for arranging the vehicle for transport during maintenance and troubleshooting visits to remote sites, which includes Supplier's personnel and accompanying purchaser's representatives.
4. The Supplier is responsible for obtaining office devices and supplies for their use, such as computer printers, paper stock, pens, etc.
5. The Supplier will be responsible for acquiring computers for field use, and prepare reports, etc.
6. The Supplier will be responsible for acquiring internet connectivity at the field offices for their own staff (technicians).
7. The Supplier is responsible for paying all the GSM mobile charges for SIM cards and data at remote sites.
8. The Supplier is responsible for paying all the data and telemetry

charges, subscriptions for satellite telemetry at remote sites and BDWD headquarters.

9. The Supplier is responsible for paying all the salaries, per-diem, travel and all incidental charges for their personnel deployed at BDWD headquarters and field offices.
10. The Supplier is responsible for paying all transport and shipping, packing / unpacking, installation / un-installation charges for replacement / repair of defective equipment.
11. The Supplier is responsible for paying all replacement spare parts, batteries, etc. whenever required.
12. The Supplier is responsible for all training related costs.
13. Submit Geo-tagged time stamped photographs during maintenance visits

23. Inspection and Audit by the Bank

- 23.1 The Supplier shall keep, and shall make all reasonable efforts to cause its Subcontractors to keep, accurate and systematic accounts and records in respect of the Goods in such form and details as will clearly identify relevant time changes and costs.
- 23.2 The Supplier shall permit, and shall cause its Sub-contractors to permit, the Bank and/or persons appointed by the Bank to inspect the Supplier's offices and all 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 Supplier's and its Subcontractors and consultants' attention is drawn to Clause 3 [Fraud and Corruption], which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under this Sub-Clause 11.1 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures)

24. General Terms

- i. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them.
- ii. In consideration of the payments to be made by the Purchaser to the Supplier as specified in this Agreement, the Supplier hereby covenants with the Purchaser to provide the Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
- iii. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Services 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 Bangladesh on the day, month and year indicated above.

For the Purchaser:

For the Supplier:

In the presence of

1.

3.

2.

4.

Appendix -1

Bank's Policy- Corrupt and Fraudulent Practices

(text in this Appendix 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.¹⁷ 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;¹⁸;
 - (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;¹⁹
 - (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;²⁰

¹⁷ In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

¹⁸ 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.

¹⁹ 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.

²⁰ 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.

- (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;²¹
- (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.
- (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,²² including by publicly declaring such firm or

²¹ For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution.

²² 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.

individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated²³;

- (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.”

²³ 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.