

# **BIDDING DOCUMENT**

for

## **Hydrological Real Time Telemetry Equipment Purchase Work.**

Procurement of Goods  
Sealed Quotation

---

**Department of Hydrology and  
Meteorology**

2015

## Table of Contents

Introduction and Instructions.....	1
Section I. Invitation for Sealed Quotation .....	2
Section II. Instructions to Bidders .....	3
Section III. Conditions of Contract.....	7
Section IV. Schedule of Requirements .....	12
Section V. Technical Specifications .....	13
Section VI. Sample Forms .....	25

## **Introduction and Instructions**

### **Introduction**

1. This Standard Bidding Documents has been prepared by Government of Nepal (GON), Public Procurement Monitoring Office (PPMO) for use in the public procurement of goods through Sealed Quotations. This Standard Bidding Document is based on the Public Works Directives (PWD) and it incorporates the provisions of Public Procurement Act and Regulations 2007. Further Instruction to Bidders section has been added to the PWD documents to provide information to the Bidders. This SBD is to be used for procurement of goods up to the value of Rs.1.00 million.
2. This Introduction and Instruction part of the SBD should not be incorporated into the bidding documents of Public Entities (PEs) that may be issued to the Supplier as a part of bid documents. This part is only for the use of Purchaser in order to prepare a proper bidding document.
3. If any provision of this document is inconsistent with Public Procurement Act (PPA), 2063 or Public Procurement Regulations (PPR), 2064, the provision of this document shall be void to the extent of such inconsistency and the provision of PPA and PPR shall prevail.

## Section I.

Government of Nepal  
Ministry of Science, Technology & Environment  
Department of Hydrology and Meteorology

**Invitation for Sealed Bids**

Date of first Publication: 2072/08/28

Department of Hydrology and Meteorology (DHM) invites sealed bid from Government of Nepal registered and eligible bidders for the Procurement of following goods and services.

S. N.	Contract ID No.	Description of Works	Price of Bidding Document (Non-refundable (NRs)) and Bid validity Period	Bid security amount (NRs) and Bid Security Validity Period, Account No. to Deposit and Bank	Last Date and Time of Purchase	Last Date and Time of Submission	Date and Time of Bid opening
1	1/RN/HD/DHM/07-2-73	supply, delivery and installation of <i>telemetry equipments</i>	300/- and 45 Days	26000/- and 75 Days AC no.:- 1100 203 000 000 Rastriya Banijya Bank, Thamel, Kathmandu	2072/09/13 04:00 pm	2072/09/14 12:00 pm	2072/09/14 01:00 pm
2	2/MFD/DHM/072-73	Supply and Delivery of Scanner	1000/- and 90 days	52,000. 120 Days AC no.:- 1100 203 000 000 Rastriya Banijya Bank, Thamel, Kathmandu	2072/09/28 04:00 pm	2072/09/29 12:00 pm	2072/09/29 01:00 pm

Bidding will be conducted through the National Competitive Bidding procedures as specified in the Public Procurement Act 2063 and Public Procurement regulation 2064. Eligible Bidders may obtain further information and inspect the bidding documents at the above office.

E-mail: [rajendra\\_706@hotmail.com](mailto:rajendra_706@hotmail.com) [spd\\_acharya@yahoo.com](mailto:spd_acharya@yahoo.com), [cbhetuwal@yahoo.com](mailto:cbhetuwal@yahoo.com)

Telephone no.:- +977 1 4433563

Website: [www.dhm.gov.np](http://www.dhm.gov.np)

Eligible and interested Bidders are invited to submit their unit rate for the goods described as in bidding documents with a certified copy of Company Registration Certificate, PAN/VAT Certificate, and Tax Clearance (2071/72)/ Tax Return Submission receipt for the last fiscal year and Self Declaration letter of not being blacklisted till to submit date.

Bidding documents may be purchased from the above office by eligible Bidders on the submission of a written application accompanied by a letter of Authority from the firm to the address above along with the copy of Company/Firm registration certificate. The payment mode may be direct deposit or bank transfer to the Gov. Revenue A/c Title No.14227 on Rastriya Banijya Bank, Thamel, Kathmandu, Nepal or Bankers cheque payable to Department of Hydrology and Meteorology, Kathmandu, Nepal. (Office Code No. 27-331-04, A/C No. ka-1-1-001)

Sealed bids must be submitted to the Procurement Unit of Department of Hydrology and Meteorology. Documents received after submission deadline shall not be accepted.

Bids shall be opened in the presence of Bidder's representatives who choose to attend on the opening date given in above Table at the office of Department of Hydrology and Meteorology, P.O.Box 406, Nagpokhari, Naxal, Kathmandu, Nepal.

If the last date of purchasing, submission and opening falls on a government holiday, then the next working day shall be considered the last day. In such a case the bid validity and bid security validity shall be recognized with effect from the original bid submission deadline.

Bids should comply in all respects with the Instruction to Bidder included in the Bid Document. Non-compliance with these instructions shall result in disqualification.

The Department of Hydrology and Meteorology reserves the right to accept or reject, wholly or partly any or all the bids without assigning reason, whatsoever.

### **Building Resilience to Climate Related Hazards (BRCH)**

**Date of Amendment: - 14<sup>th</sup> December 2015**

#### **Amendment on Bid Security for the Notice of Supply, Delivery, Installation and Commissioning of Upper-air Radio Sounding Equipment**

Bid Notice published for **Supply, Delivery, Installation and Commissioning of Upper-air Radio Sounding Equipment** (Contract ID No. PPCR/DHM/G/ICB-18) dated on 6<sup>th</sup> December 2015 in the national magazine "Gorkhapatra" has been amended in Bid Security as 10, 00, 000/- (NRs:- Ten Lakhs Only)

**Procurement Unit  
Department of Hydrology and Meteorology**

## Section II. Instructions to Bidders

### **Notes on the Instructions to Bidders**

*This section of the bidding documents should provide the information necessary for Interested Suppliers to prepare responsive bids, in accordance with the requirements of the Purchaser. It should also give information on bid submission, opening and evaluation, and award of Contract.*

*These Instructions to Bidders shall not be part of the Contract and shall cease to have effect once the Contract is signed.*

## Section II. Instructions to Bidder

- 1. Scope of Works**                      The Purchaser stated in the Invitation for Quotation invites bids for the supply, delivery and installation of the goods and related services as detailed in attached specifications, drawings and the bill of quantities provided herein. .
  
- 2. Eligible Bidder**                This Invitation for Bids is open to all registered Suppliers with qualifications as described below:

  - a) Up to date Firm/Company Registration Certificate
  - b) VAT and PAN Registration Certificates
  - c) Tax Clearance Certificate ( F. Y. 071/72)
  - d) Power of Attorney
  - e) Other documents as needed
  
- 3. One Bid per Bidder**            **Each Bidder shall submit only one quotation, A Bidder who submits more than one quotation shall cause all the quotations with the Bidder's participation to be disqualified.**
  
- 4. Content of Quotation Form**      The Quotation Form comprise the documents listed below:

  1. Invitation for Sealed Quotations
  2. Instructions to Bidders
  3. General Conditions of Contract (GCC)
  4. Form of Agreement
  5. Sample Forms
  6. Schedule of Requirements
  7. Technical Specifications
  
- 5. Clarification**                    A prospective Supplier/Bidder may obtain clarification on the Quotation Form from the the Purchaser stated in Invitation for Quotation.
  
- 6. Language of Quotation**        All documents relating to the Quotation shall be in English or in Nepali.
  
- 7. Documents Comprising Quotation**      The Quotation by the Bidder shall comprise the following:

  - a. Quotation and Price Schedules
  - b. Bid Security
  - c. Schedule of Requirements
  - d. Technical Specifications
  
- 8. Quotation Prices**                The Bidder shall indicate on the appropriate Price Schedule the unit prices (where applicable) and total price of the goods to be supplied under the contract.

All duties, taxes and other levies payable by the Bidder under the contract shall be included in the rates, prices and total Bid Price submitted by the Bidder.

Price quoted by the Bidder shall remain fixed and valid until completion of the Contract Performance and will not be subject to

variation in any account.

- 9. Quotation Validity** The Quotation shall remain valid for the period of 45 days after opening of the quotation.
- 10. Quotation Security** The Bidder shall furnish a Security in Nepali Rupees in the amount not less than 26,000/- ( NRs:- Twenty Six thousand Only). The Bid Security shall remain valid for a period of 75 days after opening of the quotation.  
The Security shall be in the form of cash voucher deposited in the Bank Account of the Employer specified in the notice for "Invitation for Quotation" or a bank guarantee from a bank acceptable to the Employer.
- 11. Format and Signing of Quotations** The Quotation shall be typed or written in indelible ink and shall be signed by an authorized person. Any entries or amendments including alternations, additions or corrections made shall be initialed by the same authorized person.
- 12. Sealing and Marking of Quotations** The Bidder shall submit his Quotation in sealed envelopes. The envelope shall be addressed to the Purchaser specified in the Invitation for Quotation and shall bear the name and identification number of the quotation.
- 13. Deadline for Submission of Quotations** Quotations shall be delivered to the Purchaser at the address no later than the time and date specified in the Invitation for Quotation.  
Date:- 2072/09/14 Time:- 12:00 noon  
Address:- Deaprtment of Hydrology and Meteorology, Nagpokhari, Naxal, Kathmandu.
- 14. Late Quotation** Any Quotation received by the Purchaser after the deadline shall not be accepted and shall be returned unopened to the Bidder upon request.
- 15. Modification And Withdrawal** Quotations once submitted shall not be withdrawn or modified.
- 16. Bid Opening** The Purchaser shall open the Quotations in the presence of the Bidders' representatives who choose to attend at the time and in the place as specified in the Invitation for Quotation..  
Date:- 2072/09/14 Time:- 02:00 pm  
Address:- Deaprtment of Hydrology and Meteorology, Nagpokhari, Naxal, Kathmandu.  
The Purchaser shall prepare and provide minutes of the opening including the information disclosed to those present.
- 17. Process to be Confidential** Information relating to the examination, evaluation and comparison of Quotations and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any efforts by the Bidder to influence the Purchaser in the Quotation evaluation, comparison or contract

award decisions may result in rejection of Bidder's quotation.

- 18. Examination of Quotations** of Prior to the detailed evaluation of Quotations, the Purchaser shall determine whether each Quotation (a) meets the eligibility criteria defined in Clause 2; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the Bidding documents.
- 19. Evaluation and Comparison of Quotations**
- 19.1 In evaluating the Quotations, the Purchaser shall determine for each Quotation the evaluated Bid Price by adjusting any corrections for errors. Quotations shall be checked by the Purchaser for any arithmetic errors. Errors shall be corrected by the Purchaser as follows:
- a. where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern; and
  - b. where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted shall govern
- 19.2 If the Bidder does not accept the corrected amount, the Quotation shall be rejected and the Security pursuant to Clause 10 may be forfeited.
- 20. Award of Contract**
- The Purchaser shall decide the award of the contract, within 15 days of the opening of the quotation, to the Bidder whose Quotation is within the approved estimate and who has offered the lowest evaluated Bid Price, provided that such Bidder has been determined to be eligible in accordance with the provisions of Clauses 2.
- 21. Purchaser's Right to Accept or Reject**
- The Purchaser reserves the right to accept or reject any Quotation or to cancel the bidding process and reject all Quotations, at any time prior to the award of the contract, without assigning any reasons whatsoever and without thereby incurring any liability to the affected Bidder or Bidders.
- 22. Notification of Award and Signing of Agreement**
- 22.1 The Bidder whose Quotation is accepted and all other participating bidders shall be notified of the award by the Purchaser. Within 7 days of receipt of the notification, the successful Bidder shall deliver the Performance Security pursuant to Clause 23 and sign the Agreement.
- 22.3 Inability of the Bidder to make an Agreement within the above stated period shall result in cancellation of the Contract Award and forfeiture of the Bidder's Security, upon which the Contract shall then be awarded to the next successive successful Bidder.
- 23. Performance Security**
- The successful Bidder shall deliver to the Purchaser a Performance Security in cash or Bank Guarantee acceptable to the Purchaser equivalent to 5% of the Quotation amount.



## Section III. Conditions of Contract

- 1. Definitions**
  - 1.1 In this contract, the following terms shall be interpreted as indicated:
    - a. "The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract Form Signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein;
    - b. "The Contract Price" means the price payable to the Supplier under the contract for the full and proper performance of its contractual obligation;
    - c. "The Goods" means Equipment and related Accessories and spare-parts or any other materials which the Supplier is required to supply to the Purchaser under the contract;
    - d. "Services" means services ancillary to the supply of the goods such as transportation and insurance including the installation, commissioning and the operational and maintenance training of the supplied equipment.
    - e. "The Purchaser" means the procuring entity purchasing the goods;
    - f. "The Supplier" means the organization supplying the goods and services under this contract.
- 2. Technical Specification**
  - 2.1 The goods supplied under this contract shall conform to the standards mentioned in the Technical Specification.
- 3. Patent Right**
  - 3.1 The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of goods or any part thereof in the Purchaser's country.
- 4. Performance Security**
  - 4.1 Within seven days (7) of receipt of award of contract from the Purchaser the successful Bidder shall furnish the performance security in accordance with the Sub - Clause 4.3 of the Conditions of Contract in the Performance Security Form provided in the Bidding Documents.
  - 4.2 Failure of the successful Supplier to comply with the requirement of Sub - clause 4.1 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the Purchaser may make the award to the next lowest Supplier or call for new sealed quotations.
  - 4.3 The performance security will be as follows:
    - a. The amount of performance security as a percentage of the contract price shall be five (5) percent of the Sealed Quotation Price in the currency of the Sealed Quotation price.
  - 4.4 The validity of Performance Security shall be one (1) year after the final installation and commissioning of the Goods and the issue of final acceptance certificate to the Suppliers. The Supplier shall promptly extend the validity suitably to cover agreed extension of the warranty period of the supplied goods.

- 4.5 The performance security shall be released within 28 days of completion of warranty period and upon submission of claim by the Supplier.
- 5. Inspection and Tests**
- 5.1 The Purchaser or its Representative shall have the right to inspect and/or test the goods to confirm their conformity to the Technical Specification and the quality of performance after the supply and delivery of good to the Purchaser's premises.
- 6. Packing**
- 6.1 The Supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transmit to their final destination as indicated in the contract.
- 6.2 The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage.
- 6.3 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided in accordance with international standard and practice.
- 7. Delivery of Goods**
- 7.1 Delivery of the goods shall be made by the Supplier in accordance with the terms specified by the Purchaser in its Schedule of Requirements.
- 7.2 The terms "EXW", "FOB", "CIF", "CIP" etc., shall be governed by the rules prescribed in the current edition of INCOTERMS published by the International Chamber of Commerce (ICC), Paris.
- 8. Insurance**
- 8.1 The goods supplied under the contract shall be fully insured in the currency of the Sealed Quotation price against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified.
- 8.2 Where delivery of the goods is required by the Purchaser on a CIF or CIP basis to a specified destination, the Supplier shall arrange and pay for insurance, naming the Purchaser as the beneficiary and the Supplier shall be required to meet all transport and storage expenses until delivery.
- 9. Warranty**
- 9.1 The Supplier warrants that all the goods supplied under the contract shall fully comply with the specification laid down in the contract.
- 9.2 The warranty shall remain valid for one year after the goods have been delivered to the final destination indicated in the contract, and accepted by the Purchaser after installation and commissioning of equipment by the Supplier.
- 9.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.
- 9.4 Upon receipt of such notice, the Supplier shall, with all reasonable speed, replace the defective goods without cost to the Purchaser. The Supplier will be entitled to remove, at its own risk and cost, the defective goods.

- 10. Payment**
- 10.1 Payment shall be made in the currency in which the contract price has been stated in the Supplier's Sealed Quotation.
- 10.2 Payment of the goods supplied from within Nepal shall be made in Nepali Rupees after the delivery and installation and commissioning of goods to the satisfaction of the Purchaser.
- 10.3 Payment of the goods to be imported from abroad shall be made in the following manner:
- a. Ten (10) percent of the Contract Price shall be paid within fifteen (15) days of signing of the Contract, and upon submission of claim and bank guarantee for equivalent amount valid until the goods are delivered and in the form provided in the SQ documents or another form acceptable to the Purchaser.
  - b. On shipment/Site delivery: Eighty (80) percent of the contract price of the Goods shipped or delivered shall be paid through irrevocable confirmed letter of credit opened in favor of the Supplier in a bank in its country, upon submission of clean Bill of Lading and other documents or on Site delivery
  - c. On acceptance: Ten (10) percent of the contract price of goods received 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.
- 11. Prices**
- 11.1 Prices charged by the Supplier for goods delivered under the contract shall not vary from the prices quoted by the Supplier in its sealed quotation.
- 12. Changed Order**
- 12.1 Where the Purchaser desires to make changes in **Schedule of Requirement**, it shall not exceed more than 15 percent.
- 13. Liquidated Damages**
- 13.1 If the Supplier fails to deliver any or all of the goods within the time period specified in the contract, the Purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as liquidated damages, a sum equivalent to 0.05 percent of the contract price of delayed goods for each day of delay until actual delivery, up to a maximum deduction of 10 percent of the delayed goods' contract price. Once the maximum is reached, the Purchaser may consider termination of the contract.
- 14. Resolution of Disputes**
- 14.1 If any dispute or difference of any kind whatsoever shall arise between the Purchaser and the Supplier in connection with or arising out of the Contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
- 14.2 If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or Supplier may give notice to the other party of it's 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.
- 14.2.1 Any dispute or difference in respect of such 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.

14.2.2 Arbitration proceedings shall be conducted in accordance with in accordance with the rules of Nepal Council of Arbitration (NEPCA).

14.3 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.

**15. Governing Language**

15.1 The Governing Language shall be: Nepali or English

**16. Applicable Law**

16.1 The applicable law shall be Laws of Nepal.

**17. Notices**

17.1 Purchaser's address for notice purposes:

**Department of Hydrology & Meteorology,  
River Network Section  
Naxal, Kathmandu**

17.2 Supplier's address for notice purposes: .....

**18. Taxes and Duties**

18.1 The Supplier shall be entirely responsible for all taxes, duties, licence fees and other such levies imposed by the GON.

**19. Operation, Maintenance and Spare-parts Manuals**

19.1 The successful Supplier shall supply 2 copies of manufacturer's operation, maintenance and spare-part manuals of the goods (Equipment).

**20. Conduct of Suppliers**

20.1 The Supplier shall be responsible to fulfil his obligations as per the requirement of the Contract Agreement, Bidding documents, GoN's Procurement Act and Regulations.

20.2 The Supplier shall not carry out or cause to carry out the following acts with an intention to influence the implementation of the procurement process or the procurement agreement :

- a. give or propose improper inducement directly or indirectly,
- b. distortion or misrepresentation of facts
- c. engaging or being involved in corrupt or fraudulent practice
- d. interference in participation of other prospective bidders.
- e. coercion or threatening directly or indirectly to impair or harm, any party or the property of the party involved in the procurement proceedings,
- f. collusive practice among bidders before or after submission of bids for distribution of works among bidders or fixing artificial/uncompetitive bid price with an intention to deprive the Purchaser the benefit of open competitive bid price..
- g. contacting the Purchaser with an intention to influence the

Purchaser with regards to the bid or interference of any kind in examination and evaluation of the bids during the period after opening of bids up to the notification of award of contract

**21.Blacklisting  
Supplier**

- 21.1 Without prejudice to any right of the Purchaser under this Contract, the GoN, Public Procurement and Monitoring Office(PPMO) may blacklist a Supplier for his conduct up to three years on the following grounds and seriousness of the act committed by the supplier:
- a. if it is proved that the supplier committed acts pursuant to the Sub - clause 20.2,
  - b. if the supplier fails to sign an agreement pursuant to ITB Clause 22,
  - c. if it is proved later that the supplier had committed substantial defect in implementation of the contract or had not substantially fulfilled his obligations under the contract or the completed work is not of the specified quality as per the contract ,
  - d. if convicted by a court of law in a criminal offence which disqualifies the supplier from participating in the contract.
- 21.2 A Supplier declared blacklisted and ineligible by the GON shall be ineligible to bid for a contract during the period of time determined by PPMO.

## **Section IV. Schedule of Requirements**

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of delivery (i) at EXW premises, or (ii) to the carrier at the port of shipment when the contract is placed on FOB or CIF terms, or (iii) to the first carrier when the contract is placed on FCA or CIP terms. In order to determine the correct date of delivery hereafter specified, the Purchaser has taken into account the additional time that will be needed for international or national transit to the Project Site or to another common place.<sup>1</sup>

Line Item No	Description of Goods	Quantity	Physical unit	Final Destination as specified in BDS	Delivery Date		
					Earliest Delivery Date	Acceptable Delivery Date	Bidder's offered Delivery date [to be provided by the bidder]
1.	2	3	4	5	6	7	8
1	Radar Water Level Sensor (Equivalent to ottrls)	1.0	no.	DHM	60 days	90 days	
2	Data Logger	2.0	no.	DHM	60 days	90 days	
3	Cellular communication modem CDMA/GSM	2.0	set.	DHM	60 days	90 days	
4	Charge Controller Device	1.0	no.	DHM	60 days	90 days	
5	Weatherproof Equipment Housing	1.0	no.	DHM	60 days	90 days	
6	Lightning Surge Protector for RS485 and power source	2.0	no.	DHM	60 days	90 days	
7	Shielded cable 100m for RLS	1.0	roll.	DHM	60 days	90 days	
8	Solar Panel 50W with Pole Mount	2.0	set	DHM	60 days	90 days	
9	Metal mast (Galvanized) for RLS	1.0	no	DHM	60 days	90 days	
10	12V 42AH maintenance free battery	2.0	no	DHM	60 days	90 days	

<sup>1</sup> The delivery may be specified for a single shipment, or for several partial shipments, for a specific date, or range of acceptable delivery periods.

---

## **Section V. Technical Specifications**

### **Introduction**

River Hydrology Division under DHM is looking after 5 sections namely River Network Section, Flood Forecasting Section, Snow Water Quality and Environment Section, Data Section and Technical and Coordination Section. There are 141 Hydrometric stations under River Network Section and the procurement is for 1 Telemetry station among these stations. These stations provide river level data thrice a day which is manually observed.

With advancement in technologies in communication such as GSM, GPRS, and CDMA which is spread throughout Nepal these days. Also sensors for monitoring river water level with the help of Radar, Bubbler Sensor etc. which are compatible with disseminating information in digital form to data control center. More precise data with short interval of time become possible. This information has crucial value for continuous data which ultimate can serve for hydrological extremities. The live monitoring and cross checking of manual observation can improve the quality of data and the verification of such observation be made for one another viz. manual versus automatic observation.

Since the telemetry system is emerging technology for DHM, it has both opportunities and challenges. Technicians of DHM have to have knowhow with technology, both in field and at data center and it is must that capacity building of technician is of utmost importance. For sustainable telemetry system, the knowledge of general operation and maintenance of equipment, calibration work, database management work with some basic electronic concept is essential for staff involved. So the training incorporating basic ideas of O&M after installation of telemetry system is needed.

Next, the performance of sensors available in the market are beyond the knowledge of we purchaser. So supplier of these sophisticated equipments has to be maintained by engineers from the side of supplier too.

### **Area of Work**

The following hydrological station is selected for the purpose of installation of telemetric system for fiscal year 2071/72.

S.No.	Station No.	River	Location	Latitude	Longitude	Elevation	Basin
1		DHM	Naxal				

---

## Scope of Work

1. Supply and Delivery of following equipments for real time data acquisition system.
  - a. Radar Sensor
  - b. Data Logger
  - c. Cellular communication modem(CDMA+GSM)
  - d. 12V 42AH maintenance free battery
  - e. Solar Panel 50W
  - f. Charge Controller Device
2. Transportation and installation of one set of above equipments to the site and rest for spare.
3. Produce data transmission facility through CDMA/GSM including RUIM/SIM cards from Nepal Telecom Service Provider and provide CDMA/GSM Bandwidth for all the transmission system for a year.
4. Develop web-based system to post and display data in real time at DHM website.
5. Provide Operation and Maintenance for continuous data acquisition for 2 years warranty period.

## Specification for Sensors

The general specification for sensors along with the accessories and facilities for the monitoring of hydrological parameters are the following

- a) The sensors along with the accessories and facilities shall be fully compatible with the data logger and transmission system specified in the document.
- ii) In the case of sensors with certain optional features which are required to be ordered separately and are not included as a part of the main offer the same shall be clearly specified in the bid along with the functions of such features. The bidder shall provide all necessary information to enable taking decision regarding ordering for any such features or not.
- iii) All the accessories, tools and fixtures required for the installation and dismounting remounting of the equipment shall be treated as a part of the supply for each type of sensors. Details of each item should be mentioned and quoted in the bid,

## Specification for Data Logger and Other Accessories

The data logger is a device that collects the data from various sensors such as water level sensors, tipping bucket rain gauge etc. This data is stored in the memory and transmitted.



---

## General Function

- a. The system shall automatically collect the observation from attached sensors, process them same and store them into its memory as per the pre-programmed procedure at a specified time interval and data shall be transmitted over the internet to a database server.
- b. The number of analog/digital/SDI channels in the data logger must be compatible to the sensors being supplied.
- c. The sensor's signal conditioning unit should be an integral part of the system.
- d. The Polling rate should be user configurable remotely via internet.
- e. The Polling rate should be variable according to battery levels or A/C power status for prolonged battery operation.
- f. All data logger configuration settings must be accessible and controllable via the internet.
- g. The system should be stand alone independent of the PC/Laptop.
- h. The system should be able to store observed data along with time for all the parameters in the memory. Memory capacity should be able to retain at least one year's data. Data shall be available even if the power supply to the system has failed for one year.
- i. The stored data should be transmitted through CDMA/GPRS transmission. In case of failure of both the CDMA and GPRS modules, the stored data needs to be retrieved via serial port/USB/Ethernet to a PC/Laptop or from the storage card.
- j. A LCD display for displaying current Date/Time by default and incase of errors show the latest error for one minute.
- k. Should have capability to send SMS and email for threshold conditions. E.g. If water level reaches 10 meters or higher then send SMS and email to set number and email address respectively.
- l. A warning system to be provided along with the error log including the date and time of failure and also invalid data type.
- m. All the errors should be logged in the system and accessible via the internet.
- n. Communication error logs should be transmitted to a number by SMS.
- o. Should incorporate a watch dog timer, in case of software faults.
- p. The battery voltage and power supply input (adapter or photovoltaic cell) voltage should be logged and posted to the database server to monitor power conditions and battery health.

## Specification for Keeping Log

The log kept in the data logger needs to hold the following information for complete analysis of the hydrological and Meteorological parameters and also the internal working of the devices used in the system. Every log should have time and date stamp except invalid date and time log. The data logger should log following information.

- 1) System Reset Information
- 2) Invalid Date and Time
- 3) Watch Dog Timeout
- 4) Data from the sensor
  - a) Timeout

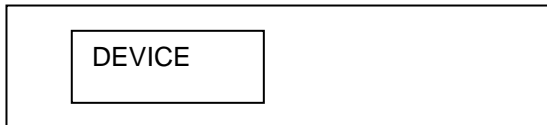
- 
- b) Invalid Range
  - 5) Log for the communication unit
  - 6) Modem not responding
    - a) Modem PPP open command not successful
    - b) If modem connection not successful
  - 7) Valid response from the server
  - 8) Invalid response from the server
  - 9) Connection close if not successful
  - 10) Battery voltage
  - 11) Input power voltage

## Communication Protocol

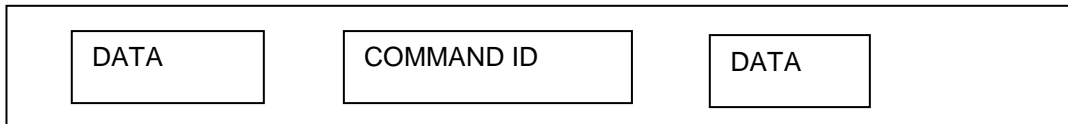
The system should implement CDMA/GPRS data transmission module following the given protocol.

- Data must be sent using secured HTTP protocol
- GET or POST method must be used for sending/setting the data in the device
- Latest encryption technology to be used for transmitting data
- Each unit of information must be separated by a unique character

### Data packet format to be used for sending information from the Server to the Device



### Data from the Server

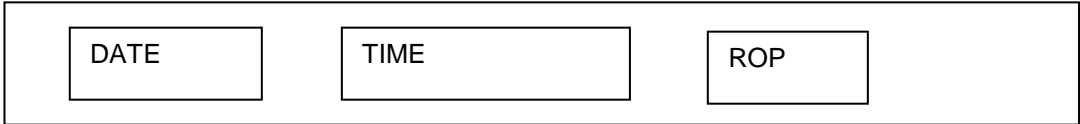


DATA ID: Category of Data

---

COMMAND: Indicates Kind of Operation fro instance: insert data, update data, delete data  
Data: Format of data depends upon DATA ID

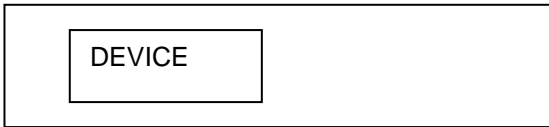
**Format of DATA**



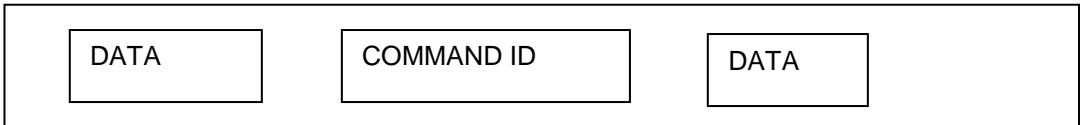
ROP: Rate of Polling

**Data packet format to be used for sending information from Device to Server**

Station Information



**Data to the Server**



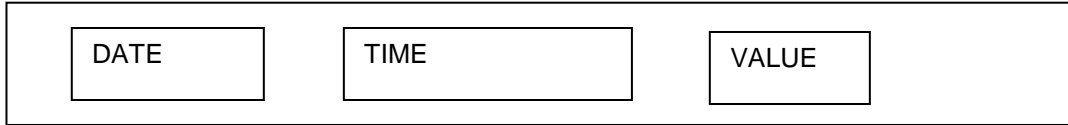
DATA ID: Category of Data  
COMMAND: Indicates Kind of Operation for instance: insert data, update data, delete data  
Data: Format of data depends upon DATA ID

Can be 1 or more frames  
There can be various categories of data.

---

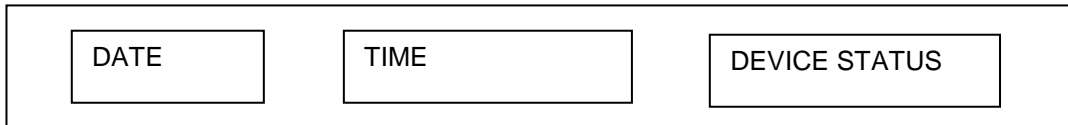
## Format of DATA

### 1) Data From sensors

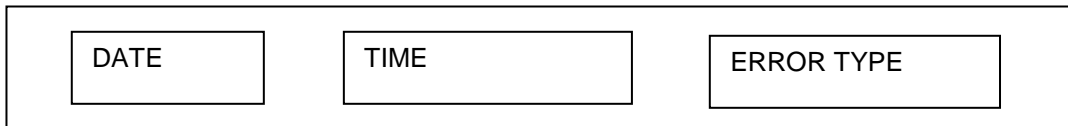


VALUE: Measurement from the Sensor

### 2) Device Status



### 3) Error Log



## Penalty in the case of data discontinuity

If there is break or discontinuity of the data during the maintenance contract period the contractor has to bear a penalty of NRs. 500.00 per day if he is unable to sort out the problem within 7 days of information.



Item No.	Name of Goods or Related Services	Technical Description, Specifications, and Standards		The bidder shall state as Fully compliant/ Partially compliant/ Non compliant
		Particulars	Requirements	
1	2	3	4	5
1	Radar Water Level Sensor (Equivalent to OTRLS))	<b>Standard Range</b> Accuracy (Distance<10m) <b>Radar Unit</b> Frequency Beam angle <b>Interface</b> Baud Rate Protocol  <b>Response Time</b> SDI-12 measurement Sequence <b>Power Requirements</b> Voltage Input Surge Protection Supply Current Active (measuring) <b>Environmental</b> Operating Temperature Storage Temperature Temperature Sensitivity	0.8m to 20m ±5 mm  24~26 GHz 6° to 12° SDI-12/RS485 1200 SDI-12, 7-bit even parity, 1 stop bit  ≤30 seconds  12V ±2V DC Built in, 1.5 KVA Sleep mode<10mA type < 20mA  -40°C to +60°C -40°C to +60°C Average T K: <3mm/10K	

2	Data Logger	<b>Analog Input</b> No. of Channels Resolution Input Range <b>SDI-12</b> Mode Baud Rate Info <b>Modbus 485/ SDI 485</b> Mode Baud Rate Info <b>Event Counter Input</b> Event counter input <b>Storage</b> Primary Device Capacity  Data Retention Rewrite Cycle Secondary Device <b>Display</b> Device Web Based Other <b>Data Transfer</b> 1 2 3 <b>Power Supply</b> 1 2 3  <b>Operating Condition</b> <b>Operating Temperature</b> <b>Power Optimization</b> Data Transmission Frequency Server	5 10bit 0-20V  SDI-12, Master Mode 1200 7 bits, 1 parity, 1 Start bit, 1 Stop Bit  Master Mode for Sensor 9600 8 Bits, No parity, 1 Start Bit, 1 Stop Bit  Flash Can store data for at least 1 year for 2 channels at a sampling rate of 10 minutes ~10years ~100,000times Micro SD card (upto 8 GB)  Multiline Alphanumeric LCD Real Time Status Display Power, Status, Error Indicators  MMC Card/USB Direct to Database Server (internet based) email, SMS RS485/RS232  15V, 32W Solar AC 220V, 50Hz Battery 12V, 7AH (Backup Power Supply)	
			-10°C to +60°C Remotely adjustable	

3	Cellular communication modem	<p><b>Data Security</b></p> <p><b>Working Conditions</b>  Working Temperature:  Storage temperature:  Humidity:</p> <p><b>CDMA Modem</b>  Standard:  Access mode:  CDMA protocols:</p> <p>Frequency:  Frequency interval between Tx and Rx:</p> <p>Rx sensitivity:  Rx signal Transmission range: -</p> <p>Rx signal Receiving range: -</p> <p>SMS:  Data:  Data Speed:  UIM Interface:  Antenna interface:</p> <p><b>GSM / GPRS modem</b>  Access Mode:  Rx/ Tx frequency interval:</p> <p>SMS:  Data:  Data Speed:</p> <p>(Depends on encoding modes)</p> <p>SIM Interface:  Antenna Interface:</p>	<p>AES Encryption (128-bit)</p> <p>-20C to +75C  -40C to +85C  0 to 95%</p> <p>CDMA 2000 1X  CDMA  IS-95 A/B,  IS-98A, IS-126,IS-637A, IS-683,  IS-707A, IS-2000</p> <p>800Mhz</p> <p>45Mhz for 800M Cellular</p> <p>-104 dBm (FER &lt;=0.5%)  25 dBm - 104dBm (FER&lt;=0.5%)</p> <p>25dBm - 104dBm (FER&lt;=0.5%)</p> <p>Supports Text  Supports internal TCP/ IP stack  Up/down link data rate 153.6kbps  UIM card Interface  50 Ohms input impedance</p> <p>GSM  45Mhz for GSM 850  45Mhz for EGSM 900  95Mhz for DCS 1800  80Mhz for PCS 1900</p> <p>Supports text for Alarms and Data  Supports Internal TCP/IP stack</p> <p>Maximum upload at 85.6Kbps and  download at 42.8Kbps  SIM Card Interface</p>	
---	------------------------------	---	--	--



4	12V 42AH maintenance free battery	Voltage setting per 12V unit for ambient temperature 20 – 30 °C  Current Setting  Temperature Compensation	13.7 V +/- 0.1V (float) 14.7 V +/- 0.1 V (cyclic)  Maximum: 0.2 CA Minimum: 0.1 CA  18 mV/°C/ 12V unit (float) 30 mV/°C/ 12V unit (cyclic)	
5	Solar Panel 40W	V <sub>oc</sub> I <sub>sc</sub> R <sub>s</sub> R <sub>sh</sub> P <sub>max</sub> V <sub>pm</sub> I <sub>pm</sub> V <sub>ld</sub> I <sub>vid</sub> P <sub>vid</sub> FF Eff,m Eff, c	21.363 V 2.440A 0.830 Ω 267.325 Ω 39.580 W 17.684 V 2.238 A 16.4V 2.319V 38.026 W 0759 11.301% 14.074%	
6	Charge Controller Device	Should be compliant with System (*SDI-12 Interface* Three stage battery charging * Real time battery voltage, charging current, load current, panel voltage, battery temperature * Integrated temperature compensation * Negative grounding) OR Equivalent		

---

[Provide information on Column 1 to Column 4]

---

## Section VI. Sample Forms

### 1. Quotation and Price Schedules

Date:

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

Gentlemen and/or Ladies:

Having examined the Sealed Quotation (SQ) documents, we the undersigned, offer to supply and deliver *[description of goods and services]* in conformity with the said SQ documents for the sum of *[total SQ amount in words and figures]* or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this SQ.

We undertake, if our SQ is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our SQ is accepted, we will obtain the guarantee of a bank in a sum equivalent to Five ( 5) percent of the Contract Price for the due performance of the Contract, in the form prescribed by the Purchaser.

We agree to abide by this SQ for a Period of **45** days from the date fixed for SQ opening it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed, this SQ, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any SQ you may receive.

---

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

\_\_\_\_\_  
*[signature]*

\_\_\_\_\_  
*[in the capacity of]*

Duly authorized to sign SQ for and on behalf of \_\_\_\_\_

## Price Schedule for Goods

Name of Supplier \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Item	Description	Country of Origin	Quantity	Unit price <sup>2</sup> EXW		Total price EXW (in NRs) (cols. 4x5)	Remarks
				(in NRs)			
				In Figure	In Words		
1	2	3	4	5	4x5=6		
1	Radar Water Level Sensor (Equivalent to ottrls)	1.0	no.				
2	Data Logger	2.0	no.				
3	Cellular communication modem CDMA/GSM	2.0	set.				
4	Charge Controller Device	1.0	no.				
5	Weatherproof Equipment Housing	1.0	no.				

6	Lightning Surge Protector for RS485 and power source	2.0	no.				
7	Shielded cable 100m for RLS	1.0	roll.				
8	Solar Panel 50W with Pole Mount	2.0	set				
9	Metal mast (Galvanized) for RLS	1.0	no				
10	12V 42AH maintenance free battery	2.0	no				
						Total	
						Vat 13%	
						Total	

<sup>1</sup> The price shall include 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 item or the customs duties and sales and other taxes paid on the previously imported item offered ex warehouse, ex showroom, or off-the-shelf. These factors should not be entered separately

---

Total CIP (place of destination) Price ..... (in words)

Signature of Bidder \_\_\_\_\_

Note: In case of discrepancy between unit price and total, the unit price shall prevail.

.Unit price indicated in col.8 is not the total cost per unit of goods but only inland delivery cost per unit starting from the CIF named port or CIP named place to final destination.

---

## 2. Bid Security

Date :

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

Whereas, *[name of Bidder]* (hereinafter called “the Bidder”) has submitted his Sealed Quotation (SQ) dated *[date of submission of SQ]* for the supply of *[name and/or description of the goods]* (hereinafter called “the Sealed Quotation”).

KNOW ALL PEOPLE by these presents that WE *[name of Bank]* of Nepal having our registered office at *[address of bank]* (hereinafter called “the Bank”) are bound unto *[name of the procuring entity]* (hereinafter called “the Purchaser”) in the sum of *[specify amount in figure and words]* for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

THE CONDITIONS of this obligation are:

- (1) If, the Bidder withdraws its SQ during the period of bid validity specified by the Bidder on the SQ Form; or
- (2) If the Bidder having been notified of the acceptance of its SQ by the Purchaser during the period of bid validity:
  - (a) fails or refuses to execute the Contract Form, if required; or
  - (b) fails or refuses to furnish the performance security, in accordance with the Instruction to Bidders;

we undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser’s having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to ninety (75) days from the date of opening of the Sealed Quotation, and any demand in respect thereof should reach the Bank not later than the above date.

---

*[signature of the bank]*



---

---

*[common seal of the bank]*

---

### **3. Form of Agreement**

THIS AGREEMENT made the \_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ between **Department of Hydrology and Meteorology** (hereinafter called “the Purchaser”) of the one part and *[name of Supplier]* of *[city and country of Supplier]* (hereinafter called “the Supplier”) of the other part:

WHEREAS the Purchaser invited Sealed Quotation for certain goods and ancillary services, viz., **supply delivery and installation of *telemetry equipments*** and has accepted a SQ by the Supplier for the supply of those goods and services in the sum of *[contract price in words and figures]* (hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
  - a. Quotation Form and the Price Schedule submitted by the Supplier;
  - b. The Schedule of Requirements;
  - c. The Technical Specifications;
  - d. The Conditions of Contract; and
  - e. The Purchaser’s Notification of Award.
3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, 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 their respective laws the day and year first above written.

On behalf of the Purchaser	On behalf of the Supplier
Name:	Name:
Designation:	Designation:
Sign:	Sign:

---

Seal:

Seal:

#### **4. Performance Security**

Date :

To: **Department of Hydrology and Meteorology**  
**Naxal, Kathmandu**

WHEREAS **Department of Hydrology and Meteorology** (hereinafter called “the Supplier”) has undertaken, in pursuance of Contract No. *[reference number of the contract]* dated \_\_\_\_\_ 20\_\_\_\_ to **supply delivery of telemetry equipments** (hereinafter called “the Contract”).

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a bank guarantee by a reputable bank for the sum specified therein as security for compliance with the Supplier’s performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier a guarantee:

---

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of *[amount of the guarantee in words and figures]*, and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limits of [amount of guarantee] as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

Signature and seal of the Guarantors

---

*[name of bank or financial institution]*

---

*[address]*

---

*[date]*

---

## **5. Bank Guarantee for Advance Payment**

To: **Department of Hydrology and Meteorology**  
**Naxal, Kathmandu**

### **Hydrological Real Time Telemetry Equipments**

Gentlemen and/or Ladies:

In accordance with the payment provision included in the Contract, which amends Clause 10 of the General Conditions of Contract to provide for advance payment, *[name and address of Supplier]* (hereinafter called “the Supplier”) shall deposit with the Purchaser a bank guarantee to guarantee its proper and faithful performance under the said Clause of the Contract in an amount of *[amount of guarantee in figures and words]*.

We, the *[bank or financial institution]*, as instructed by the Supplier, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the Purchaser on its first demand without whatsoever right of objection on our part and without its first claim to the Supplier, in the amount not exceeding *[amount of guarantee in figures and words]*.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed there under or of any of the Contract documents which may be made between the Purchaser and the Supplier, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition, or modification.

The validity period of the guarantee shall be 30 days beyond the period scheduled for repayment of the advance payment and the guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until the Purchaser receives full repayment of the same amount from the Supplier.

Yours truly,

Signature and seal of the Guarantors

\_\_\_\_\_  
*[name of bank or financial institution]*

\_\_\_\_\_

---

*[address]*

---

[date]