



# Terms of Reference

## for

### Supply, Installation, Testing and Commissioning of IoT based Water Level and Weather Sensors, and Data Loggers for Flood Early Warning and Management System in Tirunelveli, Tamil Nadu

<b>Title</b>	Supply, Installation, Testing and Commissioning of IoT based Water Level and Weather Sensors, and Data Loggers for Flood Early Warning and Management System in Tirunelveli, Tamil Nadu
<b>Project</b>	CapaCITIES Phase II
<b>Location</b>	Tirunelveli, Tamil Nadu, India
<b>Timelines</b>	Publishing of ToR on ICLEI SA /CapaCITIES websites: <b>15 Sep 2023</b>
	Last date for acceptance of proposals: <b>27 Sep 2023</b>
	Announcement of successful bidder: <b>30 Sep 2023</b>
	Award of Work Order: <b>4 Oct 2023</b>
<b>Duration of Project</b>	3 months (from date of signing of work order)
<b>Tender Inviting Authority</b>	<b>ICLEI South Asia</b> C-3, Lower Ground Floor Green Park Extension New Delhi – 110016, India Tel: +91 – 11 – 4974 7200 Email: <a href="mailto:iclei-southasia@iclei.org">iclei-southasia@iclei.org</a>



## Contents

Contents .....	2
1. Project Background .....	4
2. Project Overview .....	5
Scope of Work .....	5
Supply, Installation and Commissioning of Early Flood Warning System .....	5
Demonstration and Training .....	6
Comprehensive Annual Maintenance Contract (AMC) .....	6
Technical Specifications and System Features .....	7
Technical specifications of water level sensors .....	7
Technical Specifications of Data Logger .....	7
Technical Specifications for System Integration .....	8
Environmental specifications .....	10
Enclosure and Mounting .....	11
Essential Accessories .....	11
Proposed Sites for Water Level Sensors .....	11
3. Eligibility Criteria and Bid Submission .....	16
Eligibility Criteria for Bidders .....	16
General Conditions: .....	16
Technical Eligibility Criteria: .....	17
Financial Eligibility Criteria: .....	17
Bid Submission .....	17
Documents to be submitted by bidders .....	17
Contact Information for Bid Submission .....	18
4. Instruction to Bidders .....	19
General Instructions .....	19
Tender Evaluation & Bid Assessment .....	19
Award of contract .....	20
Performance Guarantee for Installation and Operation & Maintenance .....	21
Execution of Contract and Payment Schedule .....	21
5. Terms of Contract .....	22
Contractor Obligations .....	22
Compensation for delay .....	22
Extension of date of completion .....	22
Materials/Appliance at site .....	23



Photographs.....	23
Liability.....	23
Confidentiality.....	23
Procurement & Installation.....	24
Testing of equipment.....	24
Final Inspection of Work.....	24
Testing and Commissioning.....	24
Training and Manuals.....	24
O&M.....	25
Defects Liability.....	25
Safety and Surveillance.....	25
Labour and Material.....	25
Quality Control.....	26
Warranty.....	27
Complaint Redressal.....	27
Settlement of Disputes.....	27
6. Annexure 1 – Compliance Statement.....	28



## 1. Project Background

Capacity Building for Low Carbon and Climate Resilient City Development project (CapaCITIES) Phase II project, funded by the Swiss Agency for Development and Cooperation, aims to strengthen the capacities of Indian cities to plan and implement climate resilience actions, considering both climate change adaptation and mitigation measures in an integrated manner in key urban service sectors. After the successful implementation of the first phase of the project in Coimbatore, Rajkot, Siliguri and Udaipur cities, the CapaCITIES project in its second phase focuses on enhancing the capacity of 4 more cities namely, Ahmedabad, Vadodara, Tiruchirappalli, Tirunelveli, in implementing climate resilience actions. The project also engages with the state government of Gujarat and Tamil Nadu to mainstream climate action in urban development through adoption of integrated climate-resilient planning, design of innovative finance mechanisms and development of climate-resilient infrastructure.

ICLEI South Asia, the South Asian arm of ICLEI - Local Governments for Sustainability, is a strong and vibrant local government association with a membership base of over 70 cities in the region. ICLEI South Asia is a consortium partner of the CapaCITIES Phase II Implementing Agency, which also comprises of South Pole Group and econcept AG and is implementing the project across selected cities and states. The primary objectives of the project are to support the city and state governments to integrate climate change aspects (adaptation and mitigation) into urban planning and implementation, and to enhance the capacities of city and state governments to access finance for scaled up urban climate action.

Tirunelveli, as a partner city to the CapaCITIES project, has been receiving technical and funding assistance from the project in preparation of the Climate Resilient City Action Plan addressing both climate change mitigation and adaptation aspects, and in identifying and implementing pilot demonstration projects and bankable projects. As part of their engagement with the CapaCITIES Phase II project, Tirunelveli City Municipal Corporation (TCMC) expressed their interest to deploy an Early Flood Warning System for Thamirabarani river to give them and other local authorities enough time to execute their flood management plan if flooding occurs during monsoon season in Thamirabarani river which flows through Tirunelveli city for a stretch of 17 km.

The intention of TCMC is to deploy IoT based water level sensors and data loggers along key locations on the Thamirabarani river basin up to the city limits such that an early flood warning with a lag time of around 2-3 hrs before the waterfront reaches the city can be given. The system is expected to be integrated to the Integrated Command and Control Centre (ICCC) of Tirunelveli city implemented under the Smart City Mission of the Government of India. The Early Flood Warning System will also help other local authorities such as the Public Works Department, Revenue Department, District Collectorate which are also responsible for flood management under the district level Disaster Management Plan.

The CapaCITIES Phase II project is providing technical and funding support to undertake a feasibility study for implementing the Early Flood Warning System in Thamirabarani river. In this regard, the project tendered out an assignment entailing feasibility assessment for deploying the system and identifying the suitable locations for deploying IoT sensors in consensus with local stakeholders, especially the public works department. The project hired a team of experts that undertook the feasibility assessment, identified 10 locations to deploy IoT sensors and data loggers along the Thamirabarani river basin and submitted a feasibility report based on which this Terms of Reference (ToR) is published.



For the purpose of this document, 'ICLEI – Local Governments for Sustainability, South Asia' shall hereinafter be referred as '**ICLEI South Asia**'; 'Tirunelveli City Municipal Corporation' shall hereinafter be referred as '**TCMC**', and the vendor shall hereinafter be referred to as the '**Contractor**' or '**bidder**'.

## 2. Project Overview

### Scope of Work

Supply, Installation, and Commissioning of Flood Early Warning and Management System for Thamirabarani River and Tirunelveli City:

Through this Terms of Reference (ToR) ICLEI South Asia is inviting bids for supply, installation, testing, commissioning, and maintenance of the Flood Early Warning and Management System in Thamirabarani river for Tirunelveli City Municipal Corporation.

The main scope of this project includes i) deploying 10 Automatic Water Level Recorders (AWLR) along with 3 Automatic Rainfall Gauging Stations (ARGS) in the river stretch from upper catchment areas to Tirunelveli city, ii) installing an Automatic Weather Station (AWS) at 1 location and 7 Automatic Rainfall Gauging Stations (ARGS) within Tirunelveli city, iii) deploying Solar Powered Pan Tilt Zoom Cameras at 50 flood vulnerable locations within Tirunelveli city, iv) installing 4 Ground Water Level Recorders (GWLR) at 4 zones of the city, and v) development of a Flood Early Warning and Management dashboard linked to the ICCC and a mobile application, along with the required system integration works. This scope includes at minimum but not limited to the following key tasks for implementation:

1. Procurement, Supply and Transportation of the Radar based water level sensors, AWS sensors, Ground Water level recorders and data loggers, with independent power supply & back-up and suitable mounting system as per the specifications detailed in *Technical Specifications and System Features* section.
2. Undertaking all civil, electrical, and other associated work required for the installation of the water level sensors along with the data loggers at the ten (10) identified locations along Thamirabarani river basin.
3. Undertaking all civil, electrical, and other associated work required for the installation of the Cameras, AWS, ARGs and GWLR sensors along with the data loggers and telemetry in Tirunelveli city. The locations for installation will be identified in discussion with the city officials and relevant line departments at the time of implementation.
4. Mounting of the Sensors, Cameras, data loggers and the auxiliary equipment, on dedicated mounting structure or suitable and secure structures available or on ground at various sites.
5. Developing a dashboard and mobile application to display water levels (meters/ feet) at locations where AWLRs are deployed, weather data from the AWS and ARGs deployed, and ground water levels from the Piezometric sensors deployed in the city in real time.
6. The dashboard and application should have a module to display the video feed from the 50 Cameras installed across the flood vulnerable locations in the city and access to the stored video feed for enabling monitoring of vulnerable areas in the city at times of extreme weather events.
7. The dashboard should have backend algorithms to calibrate and process the readings from the sensors to accurately ascertain the water level and measure flow rate of the river based on cross-sectional area of river at the sensor locations. The dashboard should also have an integrated flood early warning system wherein estimated flow rate of water in the river beyond defined threshold levels corresponding to flood severity are informed as SMS alerts to the authorities and displayed on the dashboard.
8. The warning threshold levels for the early warning system based on water flow rate in the river should be adjustable to enable calibration of the system based on data recorded by the sensors during flood events or periods of heavy rainfall. The system should also take into consideration



- the rainfall measurements from 3 Automatic Rainfall Gauges to be deployed along the river stretch and the 7 Automatic Rainfall Gauges deployed in the city.
9. The flood early warning system to be developed should be able to give precise information to the authorities on the locations that will be affected in the city based on the water flow rate in the river and rainfall levels recorded by the ARGs deployed.
  10. Integrating the developed Flood Early Warning & Management System to the Integrated Command-and-Control Centre (ICCC) of the TCMC and other departments as decided by TCMC through API integration.
  11. Undertaking the Transfer of Benchmarks to Temporary Benchmark (TBM) from the nearest available ground levels to measure water levels.
  12. Testing and calibration of the installed equipment, and commissioning of the full system within the timelines stipulated in the work order.
  13. Purchasing cloud-based server space for data storage, dashboard, and mobile app for a minimum period of 3 years.
  14. Purchasing of GSM SIM Cards and associated services for Telemetry devices of the sensors and equipment deployed along the river and within the city.
  15. Obtaining all permits and clearances from relevant local stakeholders, including government statutory bodies, as required for installation and commissioning of the Flood Early Warning and Management System. TCMC and ICLEI South Asia will facilitate the obtaining of NOCs, permits etc.,
  16. Undertaking suitable arrangement for material storage and material lifting to the project execution locations. The storage space shall be provided by the TCMC, but the security of the materials will not be the responsibility of TCMC.
  17. Calibrate and certify the Automatic Weather Station (AWS) and Automatic Rainfall Gauging Stations (ARGs) through Indian Meteorological Department (IMD) empaneled third party agencies to ensure data quality and acceptance by IMD.

### Demonstration and Training

For installation and commissioning, the contractor must work with ICLEI South Asia team and the officials of TCMC. Demonstration and training on data downloading, standard operation and maintenance, Frequently Asked Question (FAQs) and other necessary functionalities of the system should be provided by the supplier for ICLEI South Asia and TCMC staff in a document format.

### Comprehensive Annual Maintenance Contract (AMC)

Through an Annual Maintenance Contract (AMC) signed with ICLEI South Asia, the contractor should ensure comprehensive **annual maintenance support for a period of three (3) years** after six (6) months from the full operation of the system. Bidder shall mention all the inclusions and exclusions of the AMC as well as minimum assured time of the service with respect to the routine problems/breakdown/non-functionality.

Bidder shall also include all the details covered under the standard warranty of the instruments and post warranty AMC details. This is to be noted that contractor shall mention the minimum and maximum number of visits for the regular maintenance and visits during the breakdown. Contractor should consider all the necessary parameters under this task for smooth operations throughout the year and critically during monsoon. The bidder to handover all the assets in its functional form after completion of AMC contract period to TCMC.





## Technical Specifications and System Features

### Technical specifications of water level sensors

Feature	Value
<b>Site Conditions</b>	
Ambient Temperature	-20°C to +60°C
Humidity	0 to 100%
<b>Sensor</b>	
Sensor Type	Microwave non-contact sensor or equivalent
Range	Minimum 30 m
Resolution	3 mm or better
Accuracy	0.02% FSO
Beam Angle:	≤16°
Output Interface	SDI-12/RS 485/4-20 mA/compatible with data logger or equivalent
Power Supply	Solar Panel: Rated capacity 10W or better, Open circuit voltage: 21V
Battery	Single 12V chargeable sealed maintenance-free battery ~ 25 AH capacity or higher to accommodate power consumption by GSM / GPRS modem and accessories
Charge Controller	Internal or External
<b>General Features</b>	
Material	Corrosion resistance metal (stainless steel/aluminium or PVC)
Enclosure	Bidder needs to maintain needed security for anti-theft features of instruments and provide adequate enclosure
Anti-Vibration	Appropriate measures to dampen the vibrations are to be factored in while installation of water sensors
Manuals	Full documentation and maintenance manual in English and Tamil
Accessories	Sensor mounting support, cables and other accessories as required
Local Display	Radar sensor should have display feature for diagnostic purpose
Protection	NEMA 4 or IP65 or equivalent
Horizontal mounting/installation Arrangements	Above FRL, below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/ wall/ pedestal

### Technical Specifications of Data Logger

Feature	Value
<b>Site conditions</b>	
Ambient temperature	from -20 to +60 degree C
Humidity	5 to 100 %
Altitude	0 to 5000 meters
Wind Speed	47 to 55 m/s
<b>Sensor Interface</b>	
Analogue Inputs	6/ 8 Analogue Input Channels or equivalent
Analogue Inputs	<b>4 to 20 mA; 100% over-range withstand</b> or equivalent
SDI Port	<b>Minimum one SDI-12 Interface Port</b>
Digital Inputs	Minimum 6 Digital Channels, Bidirectional



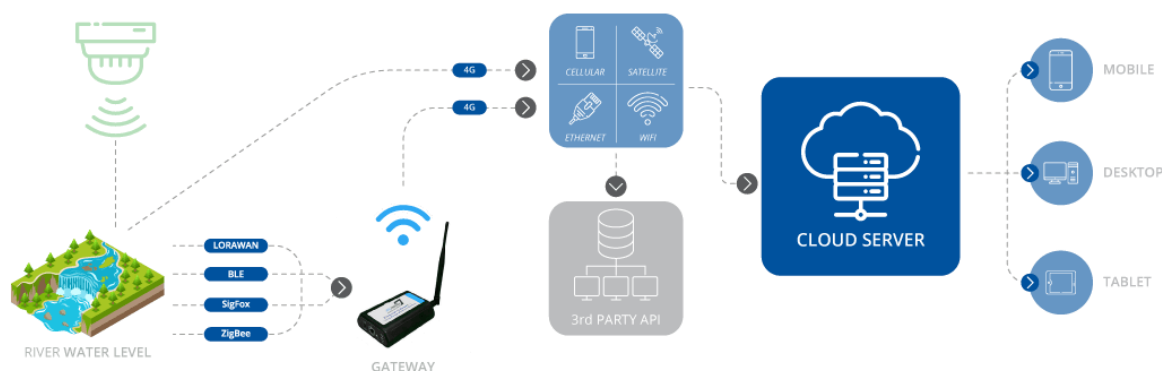
Pulse Input	Minimum 2 Input for Rain Gauge Impulse
<b>Input - Output Interfaces</b>	
Data Transfer	USB stick option for data transfer or SD card
Port for Configuration	Minimum one Serial Port (RS232)/ USB for communication with Laptop for programming
Port for Telemetry	Minimum 2 Ports for Communication with Telemetry Device (GSM/VSAT/INSAT) (see Note below)
Display Port	Data in running text (16X2 LCD)
<b>Analog to Digital Converter</b>	
Resolution	16 bit or better
Conversion accuracy	+/- 1 LSB or equivalent
Sample Interval	1 sec. to 24 hr. in 1 min increments (user selectable)
<b>General Features</b>	
Dashboard and Mobile App	Integration with Dashboard & mobile App for real time data visualisation
Data storage	SD Card
Display	Inbuilt Digital display for viewing current data and setting values
Real-Time Clock	GPS Synchronized
Tools	Complete tool kit for installation and routine maintenance giving full details (number of pieces and type)
Manuals	Full documentation and maintenance instructions in English and Tamil (1 copy per station)

**Please Note:** Cost of SIMs, services and data transfer shall be responsibility of the bidder.

### Technical Specifications for System Integration

IoT based level monitoring system allows automatic measurement of river water level. Sensors operating on RADAR technology to be installed on river crossings, which sends a wave towards the river and measures the distance between them, and the water surface based on the time taken by the wave to reflect and reach the sensor. Gateways must collect the data from sensors and send it to a cloud layer where all the readings are to be stored. These readings need to be made accessible from end-to-end IoT dashboard from anyplace in real-time. The autocalibration algorithms of the system has to process the readings from the sensors to accurately ascertain the level of the river. If the water level reading exceeds the threshold flood stage at each monitoring station of the river, an SMS notification must be sent to alert the decision-making authorities via the SMS gateway of a mobile provider. The dashboard should also be able to integrate readings from the Automatic Weather Station, Automatic Rainfall Gauging Stations, and Ground Water Level Recorders to provide warning on extreme weather conditions and low ground water levels in the city, allowing city authorities to monitor and manage urban flooding and to improve water supply resilience for the citizens. The Cameras to be deployed in the city should also be integrated to the dashboard using their APIs to allow users to monitor the flood vulnerable locations during heavy rainfall and flooding in the river.





**Figure 1 Schematic of Early Warning System Integration**

### Technical Specifications of Automatic Weather Station and Automatic Rainfall Gauging Station Sensors:

Name of Goods-Its Features	Required Specifications and standards
<b>Rainfall Gauge</b>	
Sensor Type	Tipping Bucket type rain gauge with reed switch
Range	250 mm/h or better
Resolution	0.5 mm or better
Accuracy	2% or better
Output Interface	SDI-12/ RS-485 / 4-20 mA / Switching closure output
Material	Corrosion Resistance Metal (Stainless steel/ Aluminum)
Enclosure	NEMA 4 or IP65 (for housing electronics)
<b>Air Temperature</b>	
Sensor Type	Platinum resistance or better or equivalent
Range	-5 to 60 Degree Celsius
Resolution	±0.1°C
Accuracy	Within ±0.2°C in the entire working range
Response Time	10 secs or lesser
<b>Relative Humidity</b>	
Sensor Type	Capacitive/ Solid State Humidity Sensor
Range	0 to 100 %
Resolution	1%
Accuracy	±3% or better
Response time	10 secs or lesser
Output Interface	SDI-12/ RS-485/ Analog
<b>Wind Speed and Direction Sensor</b>	
Sensor Type	Ultrasonic sensor (No Moving Parts)
Range	0-60 m/s for speed and 0– 360 degrees for direction



Resolution	0.1m/s for Speed; $\pm 1$ degree for Direction
Accuracy	Wind speed $\pm 2\% \pm 0.1$ m/s (upto 20 m/s) and $\pm 3\%$ (for 20 to 60 m/s)
	Wind direction $\pm 5^\circ$ or better
Response time	Less than 1-second lag in operating range
Output Interface	SDI-12 / RS-232/ RS-485
<b>Air Pressure Sensor</b>	
Sensor Type	Temperature Compensated
Range	600 to 1100 hPa
Resolution	$\pm 0.1$ hPa
Accuracy	$\pm 0.2$ hPa
Output Interface	SDI-12 / RS-232/ RS-485

The following equipment are to be part of the AWS apart from the Sensor Equipment set necessary and associated hardware as per technical specifications:

- Data Logger with 8 AI channels with GSM & GPRS based telemetry, including antenna and all necessary equipment for data (**Note:** Cost of SIMs & services is to be borne by the vendor)
- Solar panel with all connectors, cables, and conduit as per technical specifications
- Battery, charger regulator with all interconnecting connectors, and cables for DCP as per technical specifications

#### Technical Specifications of Ground Water Level Recorder:

Feature	Value
Type	Piezometer water level sensor with telemetry as per the guidelines of Central Ground Water Authority
Standard Range	50-meter water head
GPRS/GPRS	Data Logger with GSM & GPRS based telemetry, including all necessary equipment for data
Operating Environment	Humidity 0 to 100%, Console Temp. -20 to 70 DegreeC Sensor Temp. -40 to 105 Degree C

#### Technical Specifications of Cameras:

Feature	Value
Type	Solar Powered Mini Pan Tilt Zoom (PTZ) Camera
Camera Resolution	4 Mega Pixel (4MPx)
Vision	Night vision, All time color, and 360 deg. View
Surveillance Memory Storage	120 GB SD Card
Camera Mounting	At 15 feet with dedicated GI Pole

#### Environmental specifications

The antenna, sensors, cable, connectors, battery, solar panel etc. should be able to operate at optimal efficiency and should withstand harsh environmental conditions (Temperature:  $-10^\circ\text{C}$  to  $50^\circ\text{C}$  and rainfall  $> 100$  mm/day, high wind speeds). The System should be sufficiently sealed to avoid ingress of dust, rain, and moisture.



## Enclosure and Mounting

Enclosure suitable for data logger with an independent power supply and one or more peripherals made of non-corrosive fiberglass. Individual mountings with necessary cables / wires required for each sensor should be provided with the system.

## Essential Accessories

A complete list of items to be supplied as essential accessories may be furnished, and the accessories should meet the following criteria:

1. Battery supplied with the sensors and data logger should be easily available in Indian Market.
2. Appropriate shade with locking arrangement should be provided for weather and vandalism protection for all the sensors and cantilever structure. Example of vandalism protection is given in below figures.
3. All the instruments should be installed at secure place as specified by TCMC and ICLEI South Asia.
4. Grounding and lightning protection, if required, to be provided locally by the Bidder.



## Proposed Sites for Water Level Sensors

It is proposed to install ten (10) Radar based Automatic Water Level Recorders in identified locations along Thamirabarani river basin. Bidder shall propose the sensors satisfying the technical specifications provided with this document. **The successful bidder must seek needed No-Objection**





Certificate from the concerned departments for installations of Sensors. ICLEI South Asia and TCMC will facilitate this process. Details of the proposed sites for installation of AWLR sensors with Google location and actual photographs are as following:

**1. VK Puram Bridge:**

- Google location: <https://goo.gl/maps/D7gpJbBmT6aKoASd9>
- Mounting: On bridge deck/ beam



**2. Manimuthar Bridge near dam:**

- Google location: <https://goo.gl/maps/YdLX3TgQ2pBgJQ9K6>
- Mounting: On bridge deck/ beam





### 3. Kovilkulam Bridge:

- Google location: <https://goo.gl/maps/uuvxyJguopLnmS26>
- Mounting: On bridge deck/ beam



### 4. Kallidaikurichi Bridge:

- Google location: <https://goo.gl/maps/W9gGzpxNnrskbGKK6>
- Mounting: On bridge deck/ beam





#### 5. Mukkudal-Veeravanallur Road Bridge:

- Google location: <https://goo.gl/maps/KuADjYZSaVD6A7ET9>
- Mounting: On bridge deck/ beam



#### 6. Azhvarkurichi-Ambasamudram Road Bridge:

- Google location: <https://goo.gl/maps/qMx6dovHGUo4MmRq8>
- Mounting: On bridge deck/ beam





- Electric supply: Solar powered



#### 7. Pottalpudur-Azhvarkurichi Bridge:

- Google location: <https://goo.gl/maps/Sf4hb5BfikqgfVDW8>
- Mounting: On bridge deck/ beam



#### 8. Gopalamudram Bridge:

- Google location: <https://goo.gl/maps/oPGBaSPzjXfUhgMg6>
- Mounting: On bridge deck/ beam



## 9. Kokkirakulam Bridge:

- Google Location: <https://goo.gl/maps/eaBGfMsAbrmje4kc9>
- Mounting: On bridge deck/ beam

## 10. Sivalaperi Bridge:

- Google location: <https://goo.gl/maps/UQCZ3z1uDav2VUgJ8>
- Mounting: On bridge deck/ beam

# 3. Eligibility Criteria and Bid Submission

## Eligibility Criteria for Bidders

### General Conditions:

1. The contractor should be a body incorporated in India under the Companies Act, 1956 or 2013/NGO/Proprietorship/Partnership/LLB firm & shall be in operation for the last three years.
2. If the contractor ceases to meet the eligibility criteria or the qualification criteria set out in the tender at any time after the application due date and on or after the bid due date, then such contractor shall be disqualified, and its bid shall be liable for rejection.
3. The contractor shall be able to facilitate or attend maintenance works during the performance guarantee/AMC period.
4. ICLEI South Asia reserves the right to assess the capabilities and capacity of the Contractor / his collaborators / associates / subsidiaries / group companies to perform the contract, should the circumstances warrant such assessment in the overall interest of the project.
5. ICLEI South Asia reserves the right to reject any or all bids or cancel/ withdraw the Terms of Reference (ToR) without assigning any reason whatsoever and in such case no contractor/ intending contractor shall have any claim arising out of such action.
6. The contractor may sub-contract part of his deliverables to another agency. In such case, prior information of the same must be provided to ICLEI South Asia at the time of bid submission. The information of such intention must be sufficed with a suitable letter of authorization from sub-contracting agency expressing their consent to work on behalf of the bidding contractor.
7. In case the contractor wishes to sub-contract part of the deliverables, the final responsibility of delivery and performance lies solely with the contractor.
8. The participating contractor must be a single entity and is not allowed to form a "consortium" to execute the project.
9. If the contractor ceases to meet the eligibility criteria or the qualification criteria set out in the tender at any time after the application due date and on or after the bid due date, then such Contractor shall be disqualified, and its Bid shall be liable for rejection.
10. ICLEI South Asia reserves the right to seek information and evidence from contractors regarding their continued eligibility and continued compliance with the Qualification Criteria at any time during the bid process. The contractor shall undertake to provide all the information and evidence sought by ICLEI South Asia and TCMC.





### Technical Eligibility Criteria:

1. The Contractor should have adequate qualification and experience in installation and commissioning of IoT based sensors for water level and automatic weather monitoring. **The contractor should have completed at least 2 such assignments in the last 3 years.**
2. **Prior experience in implementing similar Early Flood Warning System projects within the last 5 years** commissioned within the last 36 months prior to the Bid Submission date **shall be given weightage.**
3. The Contractor shall submit, in support to the above, the list of projects commissioned within the last 36 months along with their work order/ LOI/Commissioning certificates and the letter from Client/Employer/Owner confirming satisfactory performance of the Plant. The certificates shall be in English language with name of contact details of the beneficiaries.

### Financial Eligibility Criteria:

1. An eligible bidder should have a minimum turnover of at least INR 40 Lakhs per year in the last 3 financial years ending March 2023.
2. The bidder must have completed projects worth a minimum of Rs. 20 Lakhs per year related to the tasks indicated in this ToR.
3. The net worth of the contractor for the last financial year should be positive.
4. The Contractor will provide a copy of the audited annual report for each of the previous three financial years to ascertain their turnover.
5. The contractor should have GST/VAT registration and up-to-date TIN certificate and should comply to all applicable financial regulations for operating in India.

### Bid Submission

#### Documents to be submitted by bidders:

1. The contractor shall possess a valid registration certificate for the said firm.
2. The contractor shall submit GST/VAT registration, up-to-date TIN certificate and all relevant financial & registration documents declared by relevant authorities of Government of India for organization to operate in India.
3. The contractor must not have defaulted under any of the applicable Acts like Income Tax, GST Act, PF & ESI Act or any other Act which as per the nature of contract is required (Declaration/Return Copies to be furnished).
4. Last 3 Financial Year's balance sheet audited by a certified Chartered Accountant.
5. Details of similar work previously carried out, mentioning Beneficiary, Capacity of Installation, Contract Value, Date of Commencement, Date of Commissioning, contact details (with telephone no.) of contact person for the given contract etc. shall be provided.
6. Details of tools, tackles, machinery available with contractor.
7. Technical Specifications (TS) document with all relevant enclosures for all equipment such as printed catalogues, technical specification sheets, technical literature and test certificates. No deviations from the above-mentioned specifications leading to the impact on overall quality would be accepted. Any deviation between the equipment offered and the literature supplied should be clearly specified.



8. Original Equipment Manufacturers (OEM) certificate/Authorized Distributor/Authorized Dealer shall possess valid authorized Distributorship/Dealership license from OEM.
9. Details of all the manpower whom the contractor shall engage for this project. For the individuals supervising the proposed tasks, their CVs providing name, qualification, nature of work (field or office), mode of employment, and previous experience shall be furnished.
10. The contractor shall submit a detailed proposal and plan of implementation including timelines of each task starting from the design till commissioning including civil and/or electrical work and communication with host server, roles, and responsibilities of the bidder during and post implementation. In case the contractor requires any support (externally) or exclusions of the proposed bid, it should be clearly mentioned and highlighted.
11. The contractor shall produce original documents for cross verification as and when requested by ICLEI South Asia.
12. Each page of all the documents mentioned above as well as technical and price bid documents shall be duly signed by the contractor.
13. Duly signed bid submission letter, compliance report/statement

Financial proposal for the scope mentioned above and comprising all the minimum technical specifications as specified in this ToR. The unit cost of each component should be mentioned as per the BOQ. The financial bid shall be inclusive of all the costs including taxes associated with the project. It is clarified that, for the purposes of evaluation, the financial bid should be prepared in Indian Rupees (INR). In submitting the price bid, the Consultant shall adhere to the following requirements:

1. The price quoted shall be fixed and firm and not subject to any escalation or variation. The price should be inclusive of all transportation and installation charges including all required material to successfully complete tasks, duties & taxes, insurance.
2. The contractor shall submit a separate quotation for conducting O&M of the Early Warning System for 3 years along with the financial bid. However, the overall cost for supply, installation, and commissioning, and O&M for 3 years will be considered for bid evaluation.
3. ICLEI South Asia reserves the right to add/delete to the final number of sensors and components of the Early Warning System at the unit rate quoted by the contractor.
4. All or any accessories/consumables/items required for satisfactory commissioning of the work shall be deemed to be included in the contract and shall be provided by the contractor without extra charges.

#### Contact Information for Bid Submission

1. The Terms of Reference (ToR) shall be downloaded free of cost from the [ICLEI South Asia](#) and [CapaCITIES](#) project websites.
2. The bid documents consisting of both technical and financial bids, and the supporting documentation shall be submitted by contractors through email to the below mentioned email IDs on or **before 27/09/2023:**
  - a) **Soumya Chaturvedula, Deputy Director, ICLEI South Asia**  
(Email: [soumya.chaturvedula@iclei.org](mailto:soumya.chaturvedula@iclei.org))
  - b) **Daniel Robinson, State Project Lead (Tamil Nadu), ICLEI South Asia**  
(Email: [daniel.robinson@iclei.org](mailto:daniel.robinson@iclei.org))
  - c) **Senthil Kumar Arumugam, Senior Project Officer (Energy & Climate), ICLEI South Asia**



(Email: [senthil.arumugam@iclei.org](mailto:senthil.arumugam@iclei.org))

3. For any queries, please write to the below mentioned email contacts for clarification at least 3 days in prior to the last date of bid submission:  
[senthil.arumugam@iclei.org](mailto:senthil.arumugam@iclei.org)  
[daniel.robinson@iclei.org](mailto:daniel.robinson@iclei.org)
4. The bid shall be valid for a period of 60 days from the date of submission of the bid document.
5. A contractor shall submit the bid documents that satisfies every condition laid down in this notice, failing which, the bid will be liable to be rejected by ICLEI South Asia.

## 4. Instruction to Bidders

### General Instructions

1. The bidder shall be deemed to have carefully examined the work and site conditions. In this regard, he/she will be given necessary information to the best of knowledge of ICLEI South Asia in consultation with but without any guarantee to it.
2. While all efforts have been made to avoid errors in the drafting of the tender documents, the contractor is advised to check the same carefully. No claim on account of any errors detected in the documents shall be accepted.
3. If he/she shall have any doubt as to the meaning of any portions of the scope of the work, or any other matter concerning the contract, he/she shall in good time, before submitting his tender, set forth the particulars thereof and submit them to the point of contacts, as given in this TOR, by email in order that such doubts may be clarified authoritatively before tendering. ICLEI South Asia will respond to queries until 3 days before the last date of bid submission. Once a tender is submitted, the matter will be decided according to the tender conditions in the absence of such authentic pre clarification.
4. The contractor/ consultant shall address all aspects of the proposed outputs and deliverables mentioned in this TOR.
5. The comments and suggestions provided by the bidder on the TOR are not binding and should not affect the financial proposal.
6. It should be noted that the project is being implemented in areas under the jurisdiction of TCMC, and other local government statutory bodies, and hence instructions to bidders will be given by ICLEI South Asia in consultation with officials from the TCMC. ICLEI South Asia will be overall in-charge of all the work that would be executed under the present scope of work.

### Tender Evaluation & Bid Assessment

1. The bids received will be scrutinized & evaluated by ICLEI South Asia, and if required, in consultation with senior city officials from TCMC involved in the execution of the project.
2. The bids will first be evaluated to determine responsiveness to the ToR. A Bid shall be considered responsive only if:
  - a) the Bid is received by the Bid Due Date, including any extension thereof,
  - b) it is signed, sealed, and marked as stipulated in ToR,
  - c) it contains the following information and documents (complete in all respects) as requested in this ToR:
    - Technical bid



- Financial bid
  - Supporting documents
- 3 ICLEI South Asia shall evaluate and determine whether the contractors have submitted a technically responsive bid. The decision of ICLEI South Asia shall be final with respect to the selection of the qualified bidders. If required, clarification or additional documents from the contractor shall be sought.
  - 4 ICLEI South Asia will inform those contractors whose proposals did not meet the minimum qualifying requirements or were considered technically non-responsive to the terms of reference and their Price Bids will not be opened.
  - 5 Total Contract Value quoted by each qualified Bidder that has submitted a substantially responsive Financial Proposal will be tabulated and shall be checked for arithmetical errors. If there is a discrepancy between words and figures quoted as the Total Contract Value, then the amount in words shall prevail.
  - 6 Only contractors whose bids are found to be responsive shall be shortlisted and a meeting may be called virtually or individually, if desired by the team, seeking any further clarification/s, in which case the contractors shall be informed accordingly.
  - 7 Selection of the qualified contractor to undertake the work detailed in this ToR shall be a techno-commercial decision based on price negotiation and agreed terms and conditions as per the contract.

## Award of contract

- 1 Detailed Work Order will be issued to the winning contractor within 5 days of announcing the winning contractor.
- 2 The winning contractor is to forward the signed and sealed work order to ICLEI at the earliest or not more than 3 (three) days of issue of work order.
- 3 In case the winning contractor fails to indicate his intent to undertake the said work within the stipulated time of 3 (three) days and observe the formalities as above, the Work Order will be cancelled, and the next contractor will be finalized by ICLEI South Asia in Consultation with senior city officials.
- 4 After selection of the qualified bidder, ICLEI South Asia will issue the Letter of Award (Work Order) to the selected contractor in duplicate:
  - a) declaring it as the successful contractor,
  - b) accepting its Financial Proposal,
  - c) requesting it to fulfil the conditions specified in the tender,
  - d) requesting it to pay the Performance Security in accordance with the tender,
  - e) subject to fulfilment of the conditions specified in the ToR, requesting it to execute the Contract within specified timelines.
- 5 Within 7 days of receipt of the Work Order, the contractor declared as the successful contractor shall sign and return, as acknowledgement, the duplicate copy of the Work Order.
- 6 If the duplicate copy of the Work Order duly signed by the successful contractor is not received by the stipulated date, the ICLEI South Asia may, unless it consents to an extension, without prejudice to any of its rights under the Bid Documents or law, withdraw the Work Order and encash the Bid Security.
- 7 Upon withdrawal of the Work Order issued to the successful contractor, ICLEI South Asia has the





discretion to select from other qualified bidders.

## Performance Guarantee for Installation and Operation & Maintenance

The amount of Earnest Money Deposit (EMD)/bank security deposit for performance guarantee shall be (a) Five percent (5%) of the total amount of “Supply, installation, testing and commissioning of the Early Flood Warning System in Thamirabarani river”, and (b) Ten percent (10%) of the total AMC contract of minimum three years (including taxes) in the form of Demand Draft of any nationalized bank in favour of “ICLEI South Asia, payable at New Delhi” should be submitted only at the time of signing the agreement.

## Execution of Contract and Payment Schedule

1. The contractor shall execute the contract signed with ICLEI South Asia within 90 days of issuance of the Work Order
2. The contractor shall submit the Performance Bank Guarantee for the Contract to ICLEI South Asia within 7 days of award of work order.
3. The contractor shall submit the Master Deliverable List (MDL) and Level 2 Project Schedule within seven (7) days from the date of award of work order. The contractor shall provide the project schedule along with a detailed work plan comprising of all key milestones.
4. If the contractor fails to satisfy the above conditions or fails to execute the Contract on or before the date stipulated in the Work Order, ICLEI South Asia has the right to disqualify the contractor and revoke the Work Order.
5. If, after the execution of the Contract, the successful contractor fails to fulfil any of the conditions precedent to the effectiveness of the Contract, ICLEI South Asia may terminate the Contract and encash the performance guarantee.
6. The payment schedule for the contract will be as per the schedule mentioned below:

**Payment Schedule:** Payment will be made within 15 days from the date of submission of invoice accompanied by an acceptance certificate/ letter from ICLEI South Asia and photographs depicting work progress printed in color.

Milestones		Payment Terms
1	Signing of Work Order	10%
2	Installation of Radar based AWLRs in 10 locations, 50 Cameras, 1 AWS, 10 ARGs, and 4 Ground Water level sensors as per ToR	40%
3	Dashboard and Mobile App development	20%
4	Training and handing over source code	20%
5	Six months after installation	10%
	<b>Operation and Maintenance:</b> after six months of installation	
6	AMC (6 to 12 months)	15%
7	AMC (12 to 18 months)	15%
8	AMC (18 to 24 months)	15%
9	AMC (24 to 32 months)	15%
10	AMC (32 to 36 months)	20%
11	AMC (36 to 42 months)	20%



## 5. Terms of Contract

### Contractor Obligations

In addition to obligations of the contractor specified elsewhere in other sections, the contractor shall be bounded by the following basic obligations:

1. Adherence to all the sections of this document is essentially a key obligation of the contractor.
2. The contractor shall independently conduct resource assessment and predict energy yields clearly specifying losses and degradation over Project lifecycle. ICLEI South Asia / Third Part Agency representing ICLEI South Asia and TCMC shall closely monitor the implementation of the system, its maintenance, and link the observations with the project performance.
3. The contractor shall be responsible for required liaison with TNPWD, State Highways and other local government statutory bodies as per requirement for NOC, permits and clearances, including any application, charges/fees that may be payable. ICLEI South Asia and TCMC will facilitate this process.
4. The project scope shall include everything as required for successful implementation, commissioning and functioning of the Early Flood Warning System for its entire lifecycle. No variation shall be entertained on this account by ICLEI South Asia or TCMC.
5. The Contractor shall perform works strictly adhering to the technical specifications for the equipment and supporting software as approved by ICLEI South Asia as well as requirements established by the applicable technical regulations.
6. The Contractor shall strictly follow the start-up and functional requirements of the project; this shall essentially include all the material and construction equipment supply, implementation, testing and commissioning of the system as required for successful completion, and commissioning of the Early Flood Warning System.

### Compensation for delay

1. Time is the essence of the contract and as such all work shall be completed within the time stipulated in the contract/ work order.
2. If the bidder, without reasonable cause or valid reasons, commits default in completing the work within the aforesaid time limit, ICLEI South Asia shall without prejudice to any other right or remedy, be at liberty, by giving 15 days' notice in writing to the contractor to commence the work, to forfeit the balance payment depending on the status of work, and to cancel the Work Order.

### Extension of date of completion

On occurrences of any events causing delay as stated hereunder, the bidder shall intimate immediately in writing to ICLEI South Asia-

#### Force Majeure:

1. Natural phenomena, including but not limited to abnormally bad weather, unprecedented floods and draught, earthquakes & epidemics.
2. Political upheaval, strikes, lockouts, acts of any Government (domestic/foreign) including but not limited to war, properties, and quarantine embargoes.

**Please note** that this clause will only account if an event occurs during site surveys / construction /



commissioning period.

## Materials/Appliance at site

1. Neither ICLEI South Asia nor TCMC undertake any responsibility for supply of any materials/ equipment/ Appliance/ tool for site analysis to the bidder.
2. All materials/ equipment/ tools brought to site by the bidder shall be the responsibility of the bidder. TCMC and ICLEI South Asia shall extend help as and when approached by the bidder to keep any materials/ equipment/ Appliance/ tool, however not liable for any loss, theft, or damage due to fire or other cause, the responsibility for which shall lie entirely on the bidder.

## Photographs

To observe the progress of work at different stages of execution of works the Contractor shall take out colored photograph at 3 stages i.e., 1) Before execution 2) During execution 3) After completion of work. Contractor shall take out at least 15 photographs of each sub works at each stage. The photographs will be of postcard size and the same shall be submitted along with the running bill in duplicate. No extra cost shall be paid to Contractor on this account.

## Liability

ICLEI South Asia may, upon written notice of default to Contractor, terminate the contract in circumstances detailed hereunder:

- If in the judgment of ICLEI South Asia, Contractor fails to complete within the time specified in the contract or within the period for which extension has been granted by ICLEI South Asia in writing in response to written request of Contractor, &/ or,
- If in the judgment of ICLEI South Asia, Contractor fails to comply with any of the provisions of this contract.

In the event ICLEI South Asia terminates the contract either in whole or in part, ICLEI South Asia reserves the right to purchase upon such terms and in such a manner as deemed appropriate work similar to those terminated and Contractor will be liable to the TCMC for any additional costs for such similar work and/or for penalty for delay until such reasonable time as may be required for the final completion of work

## Confidentiality

All data and information received from ICLEI South Asia and TCMC for the purpose of this work order are to be treated confidentially and are only to be used in connection with the execution of these Terms of Reference. The contents of written materials obtained and used in this assignment may not be disclosed to any third parties without the expressed advance written notice of ICLEI South Asia.

The documents/ report generated during the work order and submitted to ICLEI South Asia will be jointly owned by TCMC, ICLEI, and Contractor and will be exclusively used for the purpose of this work order only.



## Procurement & Installation

The Contractor shall be responsible for proper receipt, inspection, unloading and security of all materials and equipment in accordance with the laws and the Contract. Upon securing approval from TCMC and necessary NOCs from relevant authorities, the Contractor shall commence execution of civil, mechanical, and electrical Works required for the installation of the AWLR sensors in Thamirabarani river basin. The Contractor shall install all equipment in accordance with the applicable laws/ rules. The contractor shall ensure that installation works shall not cause any disturbance to the locals.

## Testing of equipment

The equipment shall be tested at Tirunelveli and at appropriate site for full range operation of sensor during the presence of purchaser representatives.

1. Full range testing of the water level sensors should be arranged at appropriate site. The logistic arrangements for such testing should be made by the bidder.
2. All material supplied or used for the project shall be in accordance with National Standards. Officials from ICLEI South Asia and/or local government authority can inspect the materials being used for the implementation work and any material found defective or below standards would have to be replaced by the contractor at own cost.
3. ICLEI South Asia would not be liable to pay any costs of material/labour/transport/other for any below standard material used for implementation.

## Final Inspection of Work

TCMC and ICLEI South Asia team shall jointly make final inspection of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as soon as practicable after notification by the bidder that the entire scope of work is completed and ready for commissioning and acceptance by TCMC.

## Testing and Commissioning

The Contractor shall conduct or manage inspections and tests, prepare, and submit documentations to the ICLEI South Asia as per standard processes and procedures set forth in the Contract. The Contractor shall commission the system in accordance with the ICLEI South Asia's Requirements and the requirement laid down in this document and the contract.

The Contractor shall perform all works in accordance with the Contract and in a manner so that the works meet the associated requirements of the ICLEI South Asia/TCMC. The Contractor shall provide all staffs, equipment and materials required to complete the Works, including everything necessary to achieve the agreed commissioning Date, save the specific requirements which are to be fulfilled by ICLEI South Asia/TCMC. The Contractor shall meet all applicable safety and performance standards set out by applicable Laws and Standards.

## Training and Manuals

Training should be undertaken by the supplier within 30 days from the commissioning of the system at Tirunelveli. It would be opened to the competent authority to take serious action against the contractor if timely action is not taken. All technical manuals, operation and maintenance manual in English language should be supplied in duplicate with the equipment. The bidder should arrange for appropriate training for the team of TCMC users.



## O&M

The Contractor shall take full responsibility of comprehensive O&M, starting after a Defects Liability Period of 6 months, for a period of three (3) years. The Contractor shall submit a comprehensive O&M Plan consisting of maintenance schedule, and preventive, corrective and contingency maintenance philosophies. The Contractor shall prepare and submit all training and O&M Manuals. The terms, conditions, and scope of after sales services, maintenance, repairs, replacement, installation, commissioning etc. should be indicated in the plan.

## Defects Liability

During the Defects Liability Period of 6 months, the Contractor shall execute any work required to remedy Defects in accordance with the Conditions of the Contract. The response time for remedying defects on working days shall be within maximum Forty-Eight (48) hours from the time of intimation. In case of holidays, the Contractor shall respond on the next working day.

## Safety and Surveillance

The following measures need to be taken by the contractor:

1. Provision of safety equipment like boots/shoes, gloves, and jackets for workers
2. Provision of all equipment and solutions/items required for maintaining adequate cleanliness and hygiene standards, to the satisfaction of ICLEI South Asia.
3. Contractor is fully responsible for the safety and security of the equipment / material stored temporarily at construction site. ICLEI – SA and/or TCMC authorities should not be held responsible for any damage/loss to the equipment / material in any manner and no claim will be entertained thereafter.
4. Eco-friendly or local material should be used wherever possible without any compromise with quality of the structure. The same should be informed to ICLEI South Asia.

## Labour and Material

All labour required for the completion of the task would be provided by the contractor in accordance with the laws of the land.

1. Any incidents that occur on site or with the labour during the contract would be the liability of the contractor alone. ICLEI South Asia and local government authority would not have any liability in such case.
2. Contractor's supervisor should visit the site at least once a week to ensure smooth and safe working during implementation and at least once a month during maintenance phase.
3. All labour or manpower involved in the project by the contractor should be above 18 years of age.
4. The contractor shall in respect of labour employed by him or his/her sub-contractor comply with or cause to be complied with the Contractor Labour Regulation regarding all matters provided therein.
5. Any loss of material or accidents or loss of life during the contract would be the sole responsibility of the contractor.
6. Any accidents or damages caused to users or any other person from structures/systems created under the projects would be the liability of the contractor alone. ICLEI South Asia or TCMC would have no legal or financial bindings for the incidents or any implications arising out of the incident.
7. Contractor must make his own arrangement for power and water required for implementation work. Any other terms for water tanker or electricity supply or generator will not be accepted.





8. The contractor shall maintain safety of workers on site and should provide the appropriate safety equipment and gears for the same. No additional costs for this can be charged to ICLEI South Asia
9. The Contractor shall indemnify and keep indemnified ICLEI South Asia and local government authority against:
  - a. Any claim arising out of third-party loss/ damage to life or property caused by/ during execution of the work.
  - b. Any claim arising out of loss/ damage to the workmen engaged by the contractor during execution of the work.
  - c. Any claim due to non-compliance of applicable PF/ Labour laws, ESI regulations etc.
  - d. Any claims arising from any accidents or emergency situations related to labour or residents, arising from the project, during the tender or afterwards.
10. Drinking water, food and other requirements for the labour shall be met by the contractor.
11. The compliance of the Safety and Health provisions are of utmost importance to ICLEI South Asia. The contractors must note that ICLEI South Asia will take a serious view of any noncompliance report of safety norms and standards. ICLEI South Asia has a right to order stoppage of work till rectification is carried out for all safety norms and standards.
12. Provision of First Aid Kit should be ensured on site during the entire implementation period.
13. Contractor may arrange for regular medical check-ups of his/her labour during the execution phase. To maintain health and hygienic conditions for labour is the sole responsibility of the contractor, including COVID-19 safety and precautions. The contractor will have to adhere to COVID-19 directives and guidelines of the State and TCMC.
14. Information on emergency contact numbers and details shall be provided to labour supervisor by the Contractor.

## Quality Control

Officials from ICLEI South Asia or TCMC can undertake regular inspection of the site work during implementation phase as well as during performance guarantee/AMC period.

1. The officials will check the contractor's work and notify him/her for any defects that are found. The officials from ICLEI South Asia and/or TCMC can visit the site at any time for inspection without prior notice and can instruct the contractor to search for a defect and to uncover and test any work that the official considers may have a defect.
2. If the official instructs the contractor to carry out a test not specified in the specification to check whether any work has a defect, all such test/tests shall be carried out by the contractor at his own cost and shall be deemed to be included in the rates given by contractor.
3. The official(s) from ICLEI South Asia and/or TCMC can give notice to the contractor informing him/her of any defects after or during implementation and/or during maintenance phase. Every time notice of a defect is given, the contractor shall correct the notified defect within the length of time specified by ICLEI South Asia in the notice issued to the contractor for defect correction. If the contractor has not corrected a defect within the time specified in the notice, ICLEI South Asia will assess the cost of having the defect corrected, and the amount will be recovered from the contractor.
4. Samples or details of items should be discussed (including specifications/brand/make) with ICLEI South Asia before ordering. If upon delivery without prior approval, the product is found below





standards, the contractor would have to replace the same with good quality product, as per the satisfaction of ICLEI South Asia, at own costs.

5. Contractor shall bear all costs of any repairs/replacement of faulty material/items for the structures and systems created under the project within performance guarantee/AMC period that comes under the scope of work of the contractor. No additional costs for this would be entertained.

## Warranty

**Warranty of minimum three years** from the date of installation and commissioning/acceptance of the equipment at TCMC. Warranty shall include replacement of all unserviceable parts. If warranty of any parts cannot be provided the same may be clearly mentioned while submitting the technical bids. The bidder shall warrant that the stores to be supplied shall be new and free from all defects and faults. This warranty shall survive inspection or payment for /and acceptance of goods but shall expire (except in respect of complaints notified prior to such date) twelve months after the stores have been taken over. The bidder should bear all charges at site including freight, insurance and other incidental charges and shall make replacement under warranty clause. Upon receipt of such notice of failure/breakdown/non-functioning, the Supplier shall, within 10 days, expeditiously repair or replace the defective Goods or parts thereof; at no cost to the Purchaser (The same notice during monsoon should be treated as urgent requirement and action must be taken at earliest not more than 3 days.)

## Complaint Redressal

The Contractor shall ensure that the work on site should be conducted such that no construction or other works lead to any disturbance or complaints from neighbouring areas.

1. Any complaints arising during the implementation phase would be the responsibility of the contractor and ICLEI South Asia or local government authority would not be liable to address these complaints. These complaints would be addressed by the contractor at his/her own costs.
2. In case of any complaints related to quality or timing or other aspects of the work or material used for the project (by ICLEI South Asia), the contractor shall be liable to address the same within 48 hours of the complaint being informed to the contractor (verbally or in writing) at own cost. In case of failure to address complaints within the stipulated time, a written notice shall be sent to the contractor by ICLEI South Asia to resolve the complaint within a period of one week. In case of noncompliance to meet the terms of the notice, the contractor can be penalized, or the contract can be terminated at ICLEI South Asia's discretion in accordance with 'Penalty and Termination of Contract' of this document.

## Settlement of Disputes

ICLEI South Asia and the selected bidder 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. If, after Seven (7) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either of the parties 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. In case the conflict cannot be



mutually sorted, the ICLEI South Asia's decision would be final and binding. This contract shall be governed by the laws of India. Bidder shall apply Indian law to the merits of any dispute or claim, without reference to rules of conflict of law. The courts at Delhi alone shall have the jurisdiction in this regard.

## 6. Annexure 1 – Compliance Statement

### Compliance Statement for Radar type Automatic Water Level Recorder (AWLR) Sensor:

Feature	Value	Bidder's Compliance Yes/No/Deviation if any
<b>Site Conditions</b>		
Ambient Temperature	-20°C to +60°C	
Humidity	0 to 100%	
Altitude	0 to 2,500 m	
<b>Sensor</b>		
Sensor Type	Microwave non-contact sensor	
Range	30 m	
Resolution	3 mm or better	
Accuracy	0.02% FSO	
Beam Angle:	≤16°	
Output Interface	SDI-12/RS 485/4-20 mA/compatible with data logger	
Power Supply	Solar Power	
<b>General Features</b>		
Material	Corrosion resistance metal (stainless steel/aluminium or PVC)	
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	
Local Display	Radar sensor should have display feature for diagnostic purpose	
Protection	NEMA 4 or IP65	
Horizontal mounting/installation arrangements	Above FRL, below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/ wall/ pedestal	



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Agency for Development  
and Cooperation SDC

