

***Request for Proposal***

***for***

**Supply, installation, testing and commissioning of IoT based early warning system for water logging in Thane, using Water Level Sensors, Automatic Weather Station and Data Loggers**

**under**

**‘Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)’**

**ICLEI South Asia,  
Thane, Maharashtra, India**

**Tender Reference no.: ICLEI/Urban LEDS II/Thane/2020-21 Date: 01/04/2021**



## About the project

Thane Municipal Corporation and ICLEI South Asia are implementing a project on 'Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)' in Thane funded by European Commission with support from the UN Habitat as an implementing partner. This project aims to reduce greenhouse gas emissions and support implementation of climate actions at local level by the promotion of Urban Low Emission Development Strategies (Urban LEDS) in cities/towns of emerging economies (Brazil, Colombia, India, Indonesia and South Africa) and Least Developed Countries (Bangladesh, Lao PDR and Rwanda).

Under this project a pilot scale implementation has been proposed to enhance resilience of the city in future by adopting IoT based early warning system for water logging/flooding. A feasibility assessment has been conducted and six (6) sites for water level sensors and one (1) site for automatic weather monitoring station has been finalized. All the sites are within Thane Municipal Corporation limits. For more information please refer to Annexure 1 – Summary of the study

In this regard ICLEI South Asia invites bids from expert(s) (individual/organization) for *supply, installation, testing and commissioning of IoT based early warning system for water logging in Thane, using Water Level Sensors, Automatic Weather Station and Data Loggers*. This project will be implemented by ICLEI – South Asia, in collaboration with Thane Municipal Corporation. The details of work are mentioned in the following table.

Sr.	Item	Particulars
1	Name of the Item/Goods/Work	Supply, installation, testing and commissioning of IoT based early warning system for water logging in Thane, using Water Level Sensors along with Data Logger and Automatic Weather Station along with Data Logger
2	Location of work	Thane, Maharashtra
	Scope of Work	Refer Section 3
4	Date of RfP document issued	01 <sup>st</sup> April 2021
5	Last date for submission of queries/ clarifications	05 <sup>th</sup> April 2021
8	Last date for bid submission (through email)	09 <sup>th</sup> April 2021
9	Last date for receiving bid (physical/hard copy) through courier	12 <sup>th</sup> April 2021
	Selection of the bidder	Within 7 days from the bid submission date
12	Award of work order	Within 10 days from the bid submission date



13	Validity period of Bid	60 days
15	Delivery of the items / goods	21 days from the date of issue of supply order
16	Earnest Money Deposit (EMD)/security deposit for performance guarantee <b>(only for the winning bidder)</b>	<p>1) Five percent (5%) of the total cost of supply, installation, testing and commissioning of the water level sensors and associated work with validity of six (6) months <b>(to be provided at the time of signing the contract)</b></p> <p>2) Ten percent (10%) of the total cost of comprehensive annual maintenance contract (AMC) of the goods with validity of minimum three (3) years <b>(to be provided at the time of signing the contract)</b></p>
	For local information and queries	<p><b>Mr. Nikhil Kulkarni</b> Assistant Manager - Sustainability Management ICLEI - South Asia Thane, Maharashtra, India Email: <a href="mailto:nikhil.kulkarni@iclei.org">nikhil.kulkarni@iclei.org</a> Contact number: 97665 28899</p>



## 1. GENERAL INSTRUCTIONS TO BIDDERS

- 1.1 For the document purpose, 'ICLEI – Local Governments for Sustainability, South Asia' shall be referred as 'ICLEI South Asia' and 'Purchaser'; 'Thane Municipal Corporation' shall be referred as 'TMC' and the vendor shall be referred to 'Service Provider or bidder'.
- 1.2 While all efforts have been made to avoid errors in the drafting of the documents, the service provider is advised to check the same carefully. No claim on account of any errors detected in the documents shall be accepted.
- 1.3 The bidder shall attach the copy of the authorization letter/power of attorney as the proof of authorization for signing on behalf of the service provider or authorized signatory.
- 1.4 "Completion" means the fulfilment of the related services by the bidder or service provider in accordance with the terms and conditions set forth in the RfP.
- 1.5 "Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the bidder is required to supply to the Purchaser under the Contract.

## 2. GENERAL TERMS AND CONDITIONS

- 2.1 Bid documents can be downloaded from ICLEI website - <https://southasiaoffice.iclei.org/>. Any change/corrigendum/extension in respect of this tender shall be issued through the above mentioned website only and no separate communication will be done in this regard. Bidders are therefore requested to regularly visit this website for updates.
- 2.2 Technical and Financial bids should be submitted separately in a sealed envelope addressed to **Mr. Bhaskar Padigala, Manager - ICLEI South Asia, C-3 Lower Ground Floor, Green Park Extension, New Delhi 110016**. Please send your application with "supply, installation, testing and commissioning of IoT based early warning system for water logging in Thane, using Water Level Sensors, Automatic Weather Station and Data Loggers under Urban-LEDs II project" in the subject line and on a sealed envelope. The bidders should send the scanned copy of duly signed full bid documents (.pdf) along with compliance report/statement to the following email ids within the due date.

Sr.	Name	Position	Email id
1	Ms. Soumya Chaturvedula	Deputy Director, ICLEI South Asia	<a href="mailto:soumya.chaturvedula@iclei.org">soumya.chaturvedula@iclei.org</a>



2	Mr. Bhaskar Padigala	Manager, ICLEI South Asia	<a href="mailto:bhaskar.padigala@iclei.org">bhaskar.padigala@iclei.org</a>
3	Mr. Nikhil Kulkarni	Assistant Manager, ICLEI South Asia	<a href="mailto:nikhil.kulkarni@iclei.org">nikhil.kulkarni@iclei.org</a>

- 2.3 The bids received will be scrutinized and evaluated by ICLEI South Asia. The decision shall be informed to the winning bidder.
- 2.4 The amount of Earnest Money Deposit (EMD)/security deposit for performance guarantee shall be (a) Five percent (5%) of the total amount of “supply, installation, testing and commissioning of the service 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 favor of “ICLEI South Asia, payable at New Delhi” should be submitted only at the time of signing the agreement.
- 2.5 Any bidder failed to provide the EMD/security deposit within stipulated time will be disqualified.
- 2.6 Intending bidders may inspect the site before submitting the tenders, with the prior communication with ICLEI South Asia.
- 2.7 The intending bidder, in case of Prime Equipment Manufacturers shall upload a self-declaration on their letter-head as PDF file in Cover - I (Technical bid), along with the tender documents, confirming that they are regularly manufacturing, supplying, installing, testing and commissioning of the similar equipment for the last Three (3) years.
- 2.8 The intending bidder, in case of Authorized Distributor/ Authorized Dealer shall possess valid authorized Distributorship/Dealership license from Original Equipment Manufacturers. The bidder shall enclose the copy of the same as PDF file in Cover - I of the tender while submitting the bid.
- 2.9 The tender accepting authority is not bound to accept the L1 or lowest commercial bid or any other tender and reserves the authority to reject any or all the tenders received without assigning any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.
- 2.10 ICLEI South Asia also reserves the right to alter the scope/or reduce quantum of work before issue of work order and the bidders shall not have any claim what so ever on this account.
- 2.11 ICLEI South Asia reserves the right of accepting the whole or any part of the tender and the bidder shall be bound to perform the same at the rate quoted.
- 2.12 Canvassing directly or indirectly, in connection with tender is strictly prohibited and the tenders submitted by the service providers who resort to canvassing will be liable for rejection.
- 2.13 ICLEI South Asia reserves the option to give preferences to the offers in accordance with the policies of the Thane Municipal Corporation from time to time.





- 2.14 On concluding the tender, an agreement shall be drawn with the successful bidder.
- 2.15 The bidder must ensure to quote his/her item rate / percentage rate /Lump-sum bid in the attached Bill of Quantity (BoQ) Cover - II (Financial Bid) in a prescribed format only
- 2.16 The hard copy of bid document (Cover – I and II) shall reach to the address mentioned in this document not later than 3 days (12<sup>th</sup> April 2021) from the last date of submission of bid document, provided the bid has been submitted through email before the due date of submission (09<sup>th</sup> April 2021).
- 2.17 List of Documents to be scanned and submitted within the specified date and time that is period for bid submission with following details:

### **COVER – I (Technical Bid)**

- i. Detailed proposal and plan of implementation: Bidders shall submit a detailed proposal and plan of implementation along with time requirements. This proposal shall clearly mention the roles and responsibilities of the bidder during and post implementation. In case bidder requires any support (externally) or exclusions of the proposed bid, it should be clearly mentioned and highlighted. The time requirement of each task starting from the design till commissioning including civil and/or electrical work and communication with host server should be clearly mentioned. Apart from the implementation plan and timeline the submitted technical proposal should also include the following:
- ii. Organization's credentials/profile
- iii. Details of past experience of similar works along with duly signed work completion letters/work orders
- iv. Printed catalogue and technical specification/literature and test certificates
- v. Details of manpower involved on ground and CVs of individuals supervising the proposed tasks
- vi. Original Equipment Manufacturers (OEM) certificate/Authorized Distributor/Authorized Dealer shall possess valid authorized Distributorship/Dealership license from OEM.
- vii. Duly signed bid submission letter, compliance report/statement

### **COVER – II (Financial Bid)**

- i. Price Schedule/ Bill of Quantities (BoQ) in the prescribed format (Annexure 3), This shall not contain any alternative items or suggestions, comments or conditions.
- ii. Details of taxes





- iii. Details of Annual Maintenance Contract (AMC) and number of visits for minimum 3 years
  - iv. Certificate of Registration for GST
  - v. ITR/ Audited Balance sheets for last Two (2) financial years
  - vi. Valid PAN registration
- 2.18 All the communications with respect to the tender or required clarifications shall be addressed aforesaid team members on their officials email ids only. For local information and site visits please contact Mr. Nikhil Kulkarni, Assistant Manager, ICLEI South Asia, C/o Thane Municipal Corporation, Panchpakhadi, Thane, Maharashtra, India. Tel: 97665 28899 Email id: [nikhil.kulkarni@iclei.org](mailto:nikhil.kulkarni@iclei.org)

### 3. SCOPE OF WORK

Through this RfP ICLEI South Asia is inviting bids for supply, installation, testing and commissioning of the water level sensors with data loggers and automatic weather monitoring station with data logger. The task includes all the civil, electrical and any other associated work with this installation and Internet of Things (IoT) based communication with the Integrated Command and Control Centre of TMC, including 3 years of Comprehensive Annual Maintenance Contract (AMC). Except the core task of supply, installation, testing and commissioning of the IoT based water level sensors and data loggers other associated tasks like automatic weather monitoring station, Transfer of Bench Marks (TBM ) from nearest available ground levels and work related to civil and electrical aspects can be sub-contracted by the bidder with prior approval by ICLEI – South Asia. In that case completion and quality assurance shall be the sole responsibility of the bidder. Such sub-contracts shall comply to local District Schedule of Rates (DSR) and shall be paid at actual by ICLEI South Asia.

#### 3.1 PROPOSED SITES FOR WATER LEVEL SENSORS AND AUTOMATIC WEATHER MONITORING STATION (AWS)

It is proposed to install six (6) water level sensors and one (1) automatic weather station within Thane Municipal Corporation's jurisdiction. Bidder shall propose the sensors satisfying the technical specifications provided with this document or even better. The nearest possible source of electricity from the TMC's secured site and tentative distances are provided in Annexure 1 - **Summary of a pilot project on 'Feasibility assessment for installing early warning system on flood/water logging through IoT measures in Thane'**

Details of the preselected sites for water level sensors and automatic weather station along with Google location and actual photographs are as following. For more information regarding water bodies and catchment please refer to Annexure 1.

### 3.1.1 Proposed installation sites of water level recording sensors:

#### 1. Water supply pipeline Bridge near Saket

- Type of sensor: Radar based
- Location: Location on Google map is shown in Figure 1 and pipe line bridge is shown in Figure 2.
- Google location: <https://maps.app.goo.gl/caGhHBM3oNWosWwQ9>
- Mounting: On bridge
- Electric supply source: Water tanker supply office of TMC near the bridge

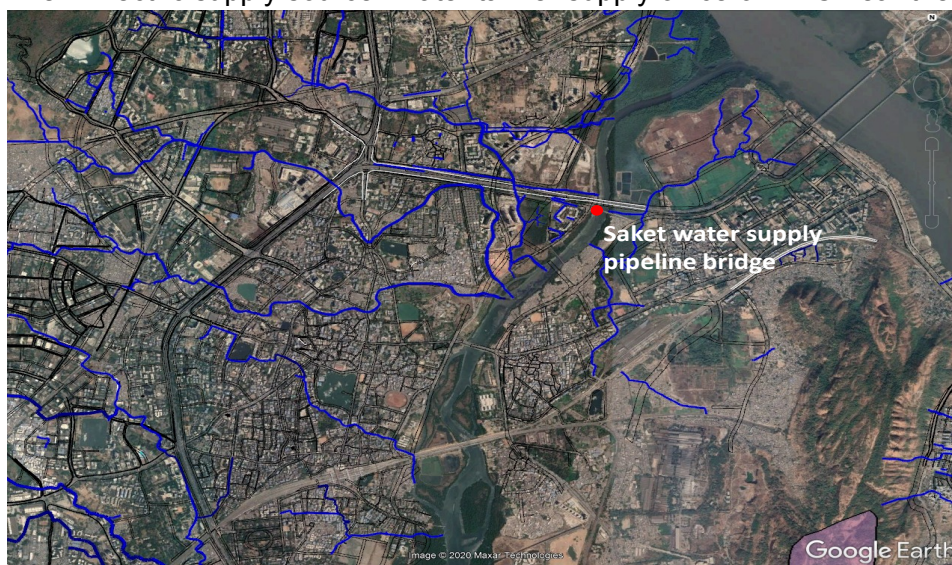


Figure 1. Location of real-time water levels sensors at Saket water supply pipeline bridge



Figure 2. Location of real-time water levels sensors on Saket pipe line bridge



## 2. Gaimukh river front area

- Type of sensor: Radar based
- Location: Location on Google map is shown in Figure 3 and Gaimukh river front area is shown in Figure 4.
- Google location: <https://maps.app.goo.gl/dwP8YDc7C8oUa4an8>
- Mounting: Retaining wall of water front development.
- Electric supply source: Security cabin in river front area.

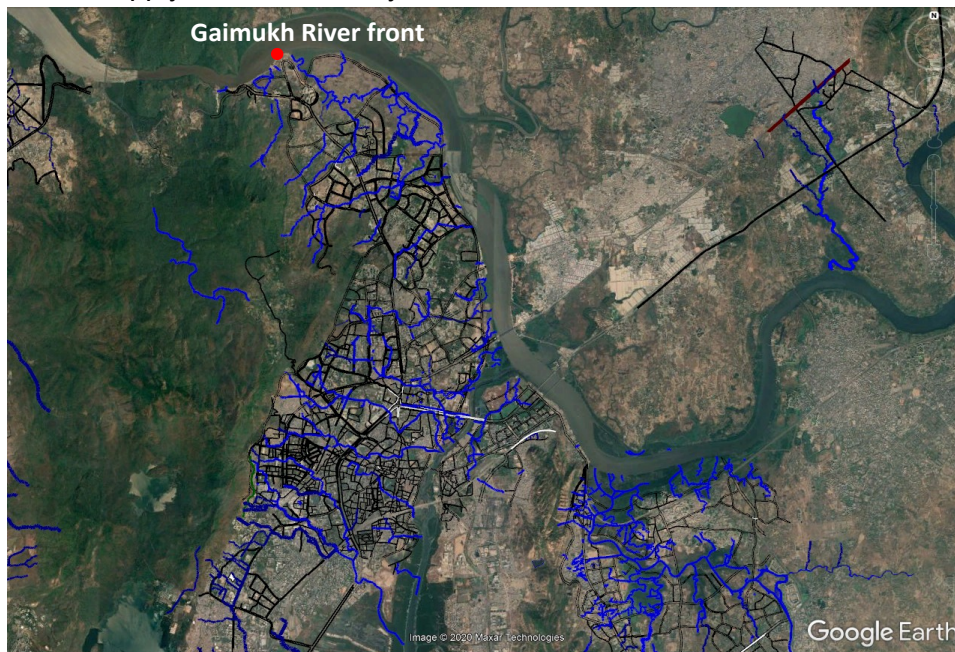


Figure 3. Location of real-time water levels sensors at Gaimukh river front area



Figure 4. Location of real-time water levels sensors at Gaimukh river front area



### 3. Thana College (N. G. Bedekar College) nalla

- Type of sensor: Radar/ ultrasonic based
- Location: Location on Google map is shown in Figure 5 and at Thane College nalla is shown in Figure 6.
- Google location: <https://maps.app.goo.gl/xBfRC5mfQQwjUiRS8>
- Mounting: Retaining wall of nalla.
- Electric supply source: TMC's urban rest room for women near college student gate.



Figure 5. Real-time water levels sensors at Thane College



Figure 6. Location of water levels sensors at Thane College nalla.



#### 4. Vrindavan Society nalla culvert

- Type of sensor: Radar/ ultrasonic based
- Location: Location on Google map is shown in Figure 7 and Vrindavan nalla is shown in Figure 8.
- Google location: <https://maps.app.goo.gl/f8FwrR85A5xt9q8h9>
- Mounting: Nalla retaining wall.
- Electric supply source: TMC's wastewater pumping station

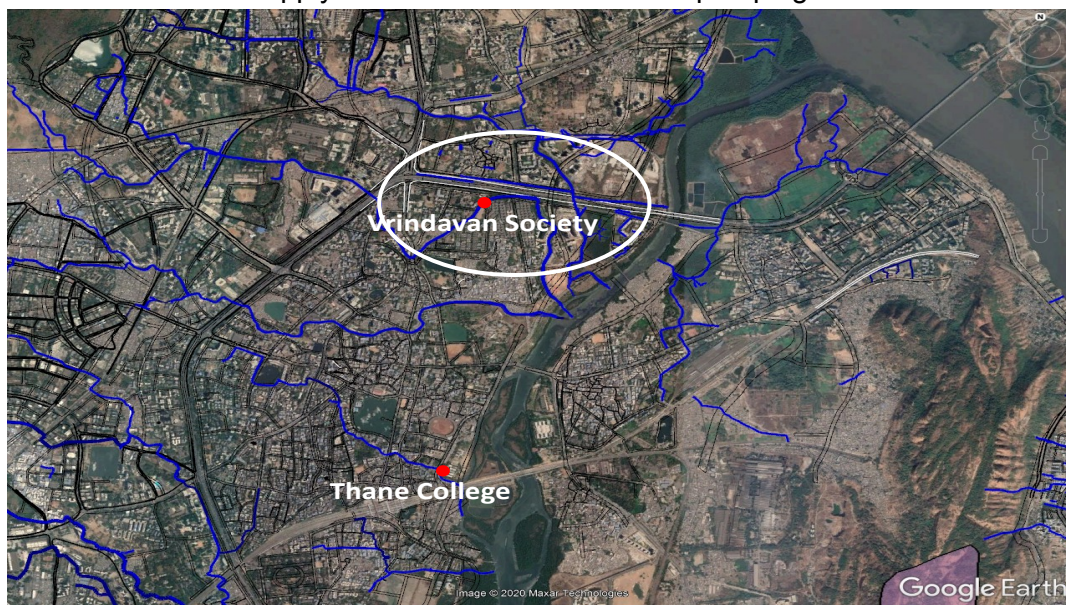


Figure 7. Real-time water levels sensors at Vrindavan Society.



Figure 8. Location of water levels sensors at Vrindavan nalla



## 5. Hiranandani Estate

- Type of sensor: Radar/ ultrasonic based
- Location: Location on Google map is shown in Figure 9 and nalla passing through Hiranandani Estate is shown in Figure 10.
- Google location: <https://maps.app.goo.gl/MF4cQXxbvrJ9G87q9>
- Mounting: Nalla parapet wall.
- Electric supply source: TMC ESR office at Hiranandani Estate (200 m from location).

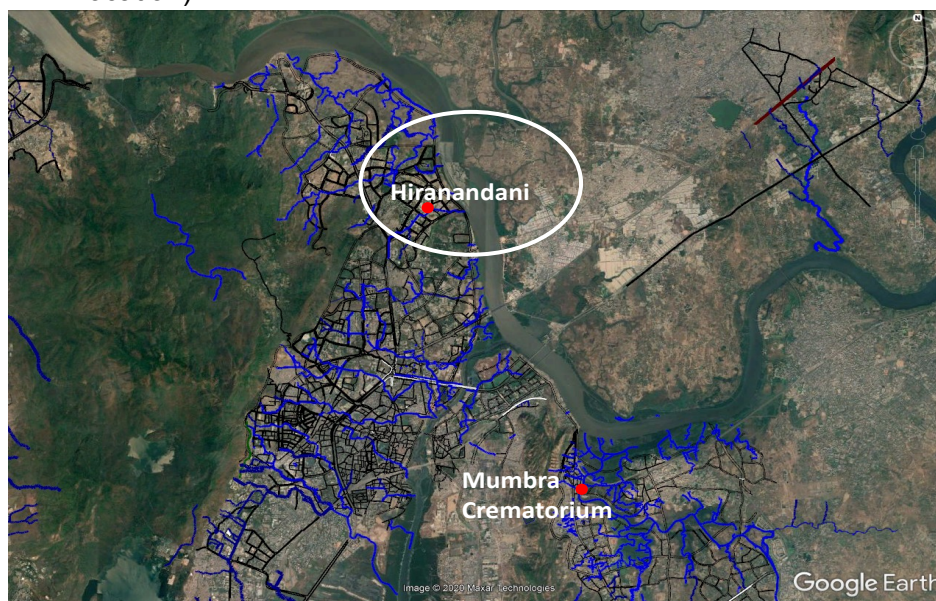


Figure 9. Real-time water levels sensors at Hiranandani



Figure 10. Location of water levels sensors at nalla passing through Hiranandani Estate.



## 6. Mumbra Crematorium (near fire brigade office)

- Type of sensor: Radar/ ultrasonic based
- Location: Location on Google map is shown in Figure 11 and near Mumbra Crematorium is shown in Figure 12.
- Google location: <https://maps.app.goo.gl/VefGje1PGRuztoAs5>
- Mounting: Concrete foundation block need to be constructed.
- Electric supply source: TMC Crematorium.

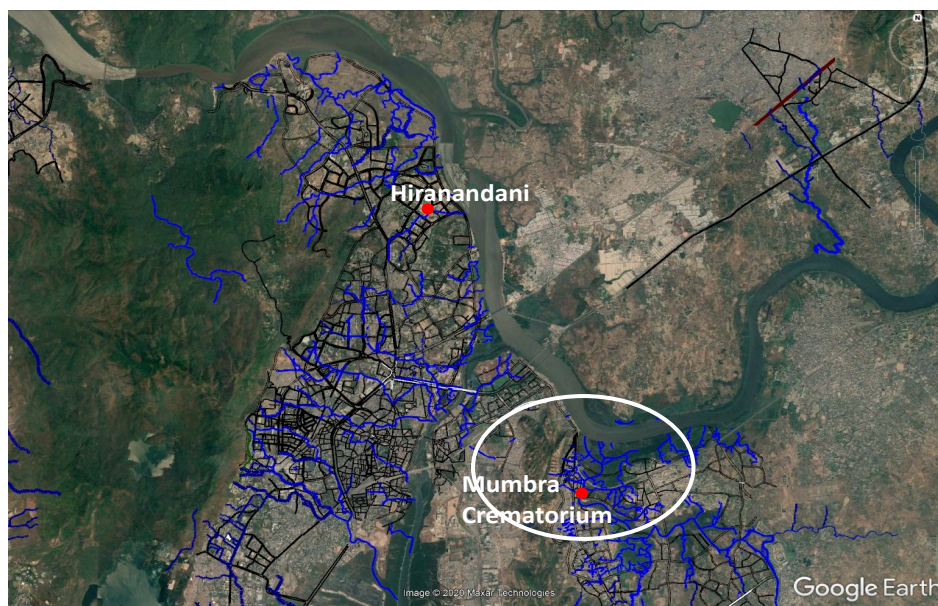


Figure 11. Real-time water levels sensors at Mumbra Crematorium



Figure 12. Location of water levels sensors near Mumbra Crematorium



### 3.1.2. Proposed site for automated weather stations (AWS)

Bidder should carry out complete integration, installation and commissioning of the automatic weather monitoring system including necessary civil and electrical work required for the system. AWSs will be installed on the roof top of the TMC's Integrated Command and Control Centre, Hajuri. The location of this building is shown in Figure 13.

Google location: <https://maps.app.goo.gl/Z3hRMP8C6X1Lex548>



Figure 11. Location of automatic weather station.



## 3.2 TECHNICAL SPECIFICATIONS

The technical specifications consist of the complete supply, installation, testing and commissioning of two types of water level sensors (Radar and/or Ultrasonic) at the various sites located in Thane. RADAR and/or Ultrasonic type sensors should be mounted on suitable and secure cantilever structures available at various sites (e.g. walls of nallahs, bridges, dedicated structure etc.).

### 3.2.1 Technical specifications of water level sensors

#### 1. Radar type Sensor:

Functional Requirement: To measure the water level

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

Feature	Value
<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 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	10-15 V DC
<b>General Features</b>	
Material	Corrosion resistance metal (stainless steel/aluminum 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 or equivalent
Horizontal mounting/installation Arrangements	Above FRL, below a bridge girder wherever available otherwise horizontal cantilever arrangement from a mast/ wall/ pedestal





## 2. Ultrasonic type Sensor:

Functional Requirement: To measure the water level

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

Feature	Value
<b>Site Conditions</b>	
Ambient Temperature	From -20 to +60oC
Humidity	5 to 100%
Altitude	0 to 2,500 m
<b>Sensor</b>	
Sensor Type	Ultrasonic non-contact sensor
Range	Up to 10 m
Resolution	3 mm or better
Accuracy	0.02% FSO
Output Interface	SDI-12/RS 485/4-20 mA/compatible with data logger or equivalent
Power Supply	10-15 V DC
<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
Protection	NEMA 4 or IP65 or equivalent





## 3.2.2. Technical Specifications of Data Logger

Feature	Value
<b>Site conditions</b>	
Ambient temperature	from -20 to +50 degree C
Humidity	5 to 100 %
Altitude	0 to 5000 meter
<b>Sensor Interface</b>	
Analogue Inputs	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
Port for Configuration	Minimum one Serial Port (RS232) for communication with Laptop for programming
Port for Telemetry	Minimum 2 Ports for Communication with Telemetry Device (GSM/VSAT/INSAT) (see Note 1 below)
Display Port	Optional port for connecting external display screen for Data in running text (see Note 2 below)
<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 second increments (user selectable)
<b>Computer Software</b>	
Operating System	Windows software for system configuration / communication
Version	English language version
Licenses	All required licenses included





General Features	
Flash Memory	Non-volatile flash memory that can store one year of data and expandable to a minimum of 1GB.
Resolution	A/D Resolution $\geq 16$ bit
Recording Interval	Individual recording intervals for each sensor/parameter
Firmware Operating System	Multi-tasking operating system - must log data and transmit at same Time or equivalent
Display	Inbuilt Digital display for viewing current data and setting values
Power Supply	Power supply 12V DC, low current drain (quiescent $\leq 10.0$ mA) with battery and solar charger or equivalent
Battery Voltage	Monitoring of battery voltage level
Internal Battery	Internal battery backup for clock, Lithium Battery, storage for minimum 2 years
Charge Controller	Internal or External
User Permissions	Different user levels, system of user rights / passwords, access restricted to authorized personnel
Internal Clock	Internal clock with drift less than 2 seconds per year or using GPS
Keypad	Keypad for displaying or transferring data to memory stick, configuration of data logger and sensors
Real-Time Clock	GPS Synchronized
System Integrity	System integrity check procedures
Enclosure	For wall-mounting in a shelter / enclosure with IP65 (NEMA 4) protection or better
Accessories	Serial cable + adaptor (if required) for notebook connection. All accessories (fixing units, etc.) as required
Tools	Complete tool kit for installation and routine maintenance giving full details (number of pieces and type)
Manuals	Full documentation and maintenance instructions in English (1 copy per station).

Note 1: The data logger should have at least 2 ports for data transmission via telemetry devices (GSM/VSAT/INSAT). Both telemetry systems should work simultaneously for redundancy. The type of port required for telemetry device may be different (Serial, RS485, RS232, RJ-45 etc.) and proposer may offer multiple models having different combination of ports.

Note 2: The port for attaching external display device to show data as running text is optional. The proposer may offer two different models, with or without port for display device.



### 3.2.3. Technical specifications of automatic weather station

**Required sensors:** Temperature, relative humidity (with radiation shield), wind speed and direction, rain gauge and solar radiation supported by mountings.

Sr.	Parameter	Feature	Specification
1	Air Temperature	Range	-10°C to +60°C
		Accuracy	±0.2 °C or better (with radiation shield)
		Resolution	±0.1°C
		Response Time	10 sec or better
2	Wind Speed	Range	0 to 60m/s or better Sustainability Up to 75 m/sec
		Accuracy	±0.5 m/s or better
		Resolution	0.1 m/s
		Threshold	0.5 m/s or less
		Response time	10 sec. or better
3	Wind Direction	Range	0-359°
		Accuracy	±5° or better
		Resolution	1 deg.
		Threshold	0.5 m/s or better
		Response Time	10 sec or better
		Damping Ratio	Max 0.25
4	Pressure	Sensor Range (With single sensor)	600 to 1100 hPa
		Accuracy	±0.2 hPa or better
		Resolution	0.1 hPa
		Response time	10 Sec. or better
		Operating Temperatures	10°C to + 60°C
5	Relative Humidity	Sensor Range	0 to 100% RH
		Accuracy	±3% or better
		Resolution	1%
		Response Time	10 sec. or better
		Settling Time	Max 500 ms
		Temperature Dependence	max ±0.05% RH/°C
6	Rainfall sensor	Range	0 to 1023 mm/hr
		Accuracy	±5% or better
		Resolution	0.5 mm
7	Global Radiation	Sensor Range	0 to 1500 W/m2
		Accuracy	±5% or better
		Resolution	5 W/m2
8	Wind chill	Range	-79 to 54°C
		Accuracy	± 1°C



## Data acquisition and telemetry

1. Data logger capable to interface with GSM- GPRS modem for transmission of data in real or near-real time to meteorology server via GPRS and to TMC server via FTP at Central Command Centre.
2. Software should be compatible with Windows higher version.
3. Bidder shall provide real-time display software.
4. Software should be capable of retrieving the data from the solid state recorder and present the data in Excel Importable format.
5. The software should also generate reports (Daily/Weekly/Monthly and Yearly) in Word, PDF format and making wind rose
6. Storage of observed data along with time for all the parameters in the memory. Memory capacity to retain at least one year's data is required. Data shall be available even if the power supply to the system has failed (RAM Backup battery) for one year
7. The stored data shall be retrievable via serial port to a PC/laptop and a PCMCIA card or any other compact and commercially available solid state memory device. Additionally, a serial port should make the latest data accessible for alternate telemetry devices.
8. The system should be stand-alone and all programming functions/set-ups to be carried out through system keypad and display independent of a PC/Laptop.
9. The system should be capable of continuous updating of the values of sensed weather parameters and post processing the instantaneous values into average values over a specified period of time for transmission to the AWS earth station.
10. The system shall provide a complete health status of the battery, transmitter and other components.
11. The system shall have in-built sensor simulation system options to conduct tests on the system for field installation, two-point calibration/re-calibration and maintenance of the sensors.
12. The system shall have self-diagnostic facility and be capable of displaying Station ID/Sensor ID codes and messages on the display panel for general identification of the fault. Facility to monitor these codes and other health status through an external lap top/PC.





### Other features

1	Operating Temperature range	-10°C to + 55°C
2	Internal Memory	1 MB RAM minimum
3	Battery Backup (internal)	Lithium Battery, storage: minimum 2 years
4	Real-Time Clock	GPS synchronised
5	Watchdog Timer	System Reset upon microprocessor failure
6	Sample Intervals	1 sec. to 24 hr. in 1 second increments (user selectable)
7	Visual display	16 Character or more, alphanumeric LED/LCD to operate in temp. range -10°C to +55°C
8	Power consumption	Average over an hour shall be less than 0.5 A at 12V D.C. including that of sensors, GPS and transmitter.

### Power supply

1	Battery	Single 12V chargeable maintenance-free battery 65 AH capacity
2	Charge controller	Internal or External
3	Solar panel in addition to grid connection facility	Rated capacity 30W, Open circuit voltage: 21V, Short circuit current 2.4 A

## 3.3 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°C to 50° C and rainfall > 100 mm/day). The System should be sufficiently sealed to avoid ingress of dust, rain and moisture.

## 3.4 Enclosure and mounting

Enclosure suitable for data logger with a power supply and one or more peripherals made of non corrosive fiberglass. A 3 meter height of tripod with the self supporting structure should be provided with the system. Individual mountings with necessary cables / wires as





required for each sensor should be provided with the system. All the atmospheric sensors will be mounted at 3 meter height unless specified.

### 3.5 DEMONSTRATION AND TRAINING

For installation and commissioning service provider has to work with the officials of TMC as well as Thane Smart City Ltd. 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 TMC and/or Thane Smart City Ltd. staff in a document format.

### 3.6 COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (AMC)

Bidder should ensure comprehensive annual maintenance support for the minimum period of three (3) years from the date of commissioning 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 service provider shall mention the minimum and maximum number of visits for the regular maintenance and visits during the breakdown. Service provider should consider all the necessary parameters under this task for smooth operations throughout the year and critically during monsoon.





## 4. Eligibility Criteria

Any individual/company/organization with their registered office in India can bid for this RfP document. However bidder shall fulfil following eligibility criteria:

Sr.	Eligibility criteria	Document and proof of eligibility
1.	<p>The bidder may be one of the following entities:</p> <p>a) Individual (Tax payer of India)</p> <p>b) Company (registered under Companies Act, India)</p> <p>c) Authorized Distributor/ Authorized Dealer</p> <p>Subject to,</p> <p>1) The bidder shall be able to facilitate or attend maintenance works during performance guarantee/AMC period</p> <p>2) Joint Venture is not allowed, however, subcontracting is allowed excluding the core task</p>	<p>1) Registration Certificate as a proof of existence</p> <p>2) OEM certificate (shall provide license/certificate for the same)</p> <p>3) Valid authorized Distributorship/Dealership license from Original Equipment Manufacturers</p>
2.	<p>The bidder must have adequate qualification and experience of supply, installation, testing and commissioning of IoT based sensors for water level and automatic weather monitoring.</p>	<p>The bidder shall provide minimum 3 work orders/work completion letters of similar tasks undertaken within last 3 years</p> <p>(Details of similar work previously carried out mentioning: Beneficiary, Capacity of Installation, Contract Value, Date of Commencement, Date of Commissioning, Contact details with telephone numbers of the beneficiary along with the performance certificate issued by the clients. In addition to this information bidder shall use prescribed format as provided in Annexure 5 - Performa for Performance Statement )</p>
3.	<p>The minimum turnover of the bidder should be above Rs. 50 Lac per year i.e bidder must have completed projects worth minimum Rs. 60 Lac per year related to the tasks indicated in this RfP</p>	<p>1. Balance sheets of last 2 years, audited by certified Chartered Accountant or ITR filed for last 2 years.</p> <p>2. A copy of valid PAN</p>

## 5. Payment schedule and terms

Sr.	Instalments	Terms
1	First instalment for mobilization of resources (50%)	Acceptance of work order and signing the contract
2	Second instalment (40%)	Satisfactory supply, installation, testing and commissioning of the instruments and its communication with TMC's Integrated Command and Control Centre (ICCC).
3	Third Instalment (10%)	Satisfactory completion of necessary training for the TMC and/or Thane Smart City officials post commissioning and signing Annual Maintenance Contracts (AMC) for minimum three (3) years.

## 6. Instructions to Bidders (ITB)

- |   |                                   |   |
|---|-----------------------------------|---|
| 1 | Eligible Bidders                  | A Bidder shall not have a conflict of interest. All bidders found to have conflict of interest shall be disqualified.   |
| 2 | Corrupt and Fraudulent Practices  | The ICLEI South Asia requires compliance with its policy in this regard   |
| 3 | Documents Comprising              | The Bid shall comprise of Two Parts, namely the Technical Part and the Financial Part, to be submitted simultaneously.  |
| 4 | Letter of Bid and Price Schedules | The Bidder shall submit the Letter of Bid – Technical Part, and Price Schedules using the forms furnished in Annexure 2 - Bidding Forms. The forms must be completed without any alterations to the text. All blank spaces shall be filled in with the information requested. |
| 5 | Alternative Bids                  | Alternative bids shall not be considered.   |
| 6 | Bid Prices and Discounts          | Price Schedules shall conform to the requirements specified below:<br>a) All lots (Contracts) and items must be listed and priced separately in the Price Schedules.<br>b) The price to be quoted in the Financial Part shall be the  |





total price of the Bid, including any discounts offered and taxes.

c) Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account. A Bid submitted with an adjustable price quotation shall be treated as non-responsive and shall be rejected.

Prices shall be quoted as specified in the Price Schedule included in Annexure 3 – BoQ as stated below:

(i) Prices:

(a) For domestic goods: the price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable), including Goods and Services Tax (GST)

(b) For imported goods: the price of the Goods quoted EXW shall be excluding GST but including customs duty and any other taxes as applicable.

(ii) Other taxes which will be payable on the Goods if the contract is awarded to the Bidder; and

(iii) The price for inland transportation, insurance, and other local services required to convey the Goods to their Final Destination (Project Site), namely Thane city.

(iv) Price for Related Services (civil and electrical works), if any.

- |   |   |  |
|---|---|--|
| 7 | Currencies of Bid   | The Bidder shall quote in Indian Rupees only in BoQ.   |
| 8 | Documents Establishing the Conformity of the Goods and Related Services | To establish the conformity of the Goods to the Bidding Documents, the Bidder shall furnish as part of its Technical Part of Bid, the documentary evidence that the Goods conform to the technical specifications and standards specified at Annexure 6. - Technical specifications of this RfP.   |
| 9 | About Manufacturer's Authorization and prior experience                 | <p>The documentary evidence of the Manufacturer's Authorization and prior experience to perform the contract, if its bid is accepted, shall be submitted as part of its Technical Part of Bid, to establish to the Purchaser's satisfaction:</p> <p>(a) (i) that if a Bidder that does not manufacture or produce the Goods it offers to supply, it shall submit with its Bid the Manufacturer's Authorization and confirmation to provide Manufacturer's warranty/guarantee for the goods along with the supply, on the form included in Annexure 4. The Bidder</p> |





has the option to furnish the said Authorization from the Authorized Dealer or Distributor in which case, the Form provided in Annexure 4 may be modified by the Bidder suitably. However, if the Bidder itself is an Authorized Dealer or Distributor, it may submit Certificate evidencing this position – in lieu of Manufacturer's Authorization.

(ii) that supplies for any particular item in each schedule of the bid should be from one manufacturer only. Bids from agents offering supplies from different manufacturers for the same item of the schedule in the bid will be treated as non-responsive.

(b) that the Bidder shall prove the following criterion:

(i) The bidder should have supplied goods similar to the type (and capacity) specified in the Schedule of Requirements up to at least 100% of the quantity in any one of last 3 years.

(ii) At least 50 % of the quantity in case of equipment offered for supply should have been in successful operation for at least one year as on date of bid opening.

10 Period of  
Validity of Bids

Bids shall remain valid for the period of 60 days after the bid submission deadline date prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.

11 Earnest Money  
Deposit (Security  
deposit) as  
performance  
guarantee

The selected bidder shall furnish as part of agreement and acceptance of work order,

- i) EMD/security deposit in original for an amount of Five percent (5%) with validity of 6 months.
- ii) EMD/security deposit in original for an amount of Ten percent (10%) with validity of minimum 3 years or AMC period.

EMD/security deposit should be in the form of Demand Draft issued by a nationalized bank in favour of "ICLEI South Asia" payable at New Delhi. The two EMD/security deposits shall be returned as promptly as possible upon satisfactory performance of all agreed tasks during the two periods mentioned above.

The EMD/security deposit may be forfeited:

- (a) if a Bidder withdraws its Bid after awarding the work order; or any extension thereto provided by the Bidder; or
- (b) if the successful Bidder fails to satisfactorily complete the scope of this RfP.





- 12 Preparation and Signing of Bid
- The Bid shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of Power of Attorney and shall be submitted with the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature.
- 13 Confidentiality
- Any effort by a Bidder to influence the Purchaser in the examination, evaluation, comparison, and post qualification of the bids or contract award decisions may result in the rejection of its Bid.
- From the time of bid opening to the time of Contract Award, if any Bidder wishes to contact the Purchaser on any matter related to the bidding process, it should do so in writing.
- 14 Clarification of Bids
- To assist in the examination, evaluation, comparison and post qualification of the bids, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder in respect to its Bid and that is not in response to a request by the Purchaser shall not be considered. The Purchaser's request for clarification and the response shall be in writing.
- 15 Evaluation
- The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself.
- A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the Bidding Documents without material deviation, reservation, or omission.
- A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the Bidding Documents without material deviation, reservation, or omission.
- If a bid is not substantially responsive to the Bidding Documents, it shall be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.
- The Purchaser shall determine, to its satisfaction, whether all eligible Bidders, whose Bids have been determined to be substantially responsive to the bidding document, meet the



Eligibility Criteria specified in this RfP.

- |    |  |  |
|----|--|--|
| 16 | Notification of Result of Evaluation of Bids                       | <p>Only Bids that are both substantially responsive to the bidding document, and meet all Eligibility Criteria shall qualify for opening of the Financial Parts of their bids.</p> <p>Only selected bidders will be contacted by the purchaser.</p>  |
| 17 | Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids | <p>The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders.</p>   |
| 18 | Award Criteria   | <p>The Purchaser shall award the Contract to the Bidder whose offer has been determined best evaluated bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.</p>            |
| 19 | Purchaser's Right to Vary Quantities at Time of Award              | <p>At the time the Contract is awarded, the Purchaser reserves the right to increase or decrease the quantity of Goods and Related Services originally specified in this RfP without any change in the unit prices or other terms and conditions of the Bid and the Bidding Documents.</p> |







## 7. Other Terms and Conditions

1. **Testing commissioning and training:** Testing, commissioning and training, if any, should be undertaken by the supplier within 30 days from the commissioning of the system at Thane. It would be opened to the competent authority to take serious action against the service provider, if timely action is not taken.
2. **Technical literature:** The bid should accompany detailed technical literature and leaflets of the equipment quoted. 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.
3. **Testing of equipment:** The equipment shall be tested at Thane and at appropriate site for full range operation of sensor during the presence of purchaser representatives.
  - i. 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.
  - ii. 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 service provider at own cost.
  - iii. ICLEI South Asia would not be liable to pay any costs of material/labour/transport/other for any below standard material used for implementation.
4. **Essential accessories:** A complete list of items supplied as essential accessories may be furnished. Battery supplied with the sensors and data logger should be easily available in Indian Market.
  - i. Appropriate shade with locking arrangement should be provided for weather and vandalism protection for all the sensors and cantilever structure.
  - ii. All the instruments should be installed at secure place as specified by ICLEI South Asia and TMC.
  - iii. Grounding and lightning protection to be provided locally by the Bidder.
5. **Consumable items:** Specification of all expendable/consumable items may be given.
6. **Variations during implementation:** If during implementation, the service provider and ICLEI South Asia deem it necessary to undertake any task or implement any works that were not envisaged at the time of contract signing but are crucial for successful implementation of the contract and it has been verified that the service provider did not intentionally hide such a requirement or the task is not arising due





to incompetence or inexperience of the service provider, then in such cases, an amendment to the contract would be required for the project as an annexure. The costing for this additional task shall be as per the item wise costs quoted by the service provider at the time of bidding and the total amount of such variation cannot exceed 15% of the total contract value.

7. **Safety and surveillance:** The following measures need to be taken by the service provider:
  - I. Provision of safety equipments like boots/shoes, gloves and jackets for workers
  - II. Provision of all equipment and solutions/items required for maintaining adequate cleanliness and hygiene standards, to the satisfaction of ICLEI South Asia and local government authority.
  - III. Service provider is fully responsible for the safety and security of the equipments/material stored temporarily at construction site. ICLEI – SA and/or TMC authorities should not be held responsible for any damage/loss to the equipments/material in any manner and no claim will be entertained thereafter.
  - IV. 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.
8. **Labour and Material:** All labour required for the completion of the task would be provided by the service provider in accordance with the laws of the land.
  - a. Any incidents that occur on site or with the labour during the course of the contract would be the liability of the service provider alone. ICLEI South Asia and local government authority would not have any liability in such case
  - b. Service provider'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.
  - c. All labour or manpower involved in the project by the service provider should be above 18 years of age
  - d. The service provider shall in respect of labour employed by him or his/her sub-service provider comply with or cause to be complied with the Service provider Labour Regulation in regard to all matters provided therein.
  - e. Any loss of material or accidents or loss of life during the course of the contract would be the sole responsibility of the service provider.
  - f. Any accidents or damages caused to users or any other person from structures/systems created under the projects would be the liability of the service provider alone. ICLEI South Asia or TMC would have no legal or financial bindings for the incidents or any implications arising out of the incident.





- g. Service provider has to 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.
- h. The service provider 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
- i. The Service provider shall indemnify and keep indemnified ICLEI South Asia and local government authority against:
  - i. Any claim arising out of third party loss/ damage to life or property caused by/ during execution of the work.
  - ii. Any claim arising out of loss/ damage to the workmen engaged by the service provider during execution of the work.
  - iii. Any claim due to non-compliance of applicable PF/ Labour laws, ESI regulations etc.
  - iv. Any claims arising from any accidents or emergency situations related to labour or residents, arising from the project, during the course of the tender or afterwards
- j. Drinking water, food and other requirements for the labour shall be met by the service provider.
- k. The compliance of the Safety and Health provisions are of utmost importance to ICLEI South Asia. The service providers 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.
- l. Provision of First Aid Kit should be ensured on site during the entire implementation period.
- m. Service provider 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 service provider, including COVID-19 safety and precautions. The service provider will have to adhere to COVID-19 directives and guidelines of the State and TMC.
- n. Information on emergency contact numbers and details shall be provided to labour supervisor by the Service provider







9. **Quality Control:** Officials from ICLEI South Asia or TMC would undertake regular inspection of the site work during implementation phase as well as during performance guarantee/AMC period.
- I. The officials will check the service provider's work and notify him/her for any defects that are found. The officials from ICLEI South Asia and/or TMC can visit the site at any time for inspection without prior notice and can instruct the service provider to search for a defect and to uncover and test any work that the official considers may have a defect.
  - II. If the official instructs the service provider 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 service provider at his own cost and shall be deemed to be included in the rates given by service provider.
  - III. The official(s) from ICLEI South Asia and/or TMC can give notice to the service provider informing him/her of any defects after or during implementation and/or during maintenance phase. Every time notice of a defect is given, the service provider shall correct the notified defect within the length of time specified by ICLEI South Asia in the notice issued to the service provider for defect correction. If the service provider 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 service provider.
  - IV. 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 service provider would have to replace the same with good quality product, as per the satisfaction of ICLEI South Asia, at own costs.
  - V. Service provider 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 service provider. No additional costs for this would be entertained.
10. **Sub-contracting:** Except core task of this RfP other associated works like civil, electrical etc can be subcontracted. In any condition prior written approval is required for subcontracting any work related to this RfP. In case of subcontracting, the costs would have to be borne by the service provider and ICLEI South Asia shall not liable to pay any costs to the sub-contracted work. Management of the subcontractor would be the responsibility of the service provider.
11. **Manuals:** 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 TMC users.



12. **Tool kit and carrying case:** Calibration and tool kit and carrying case should be supplied with the equipment. Also a recommended list of spares may be given.
13. **Warranty:** **Warranty of minimum three years** from the date of installation and commissioning/acceptance of the equipment at TMC. 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 15 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.)
14. **After sales service:** Minimum three years annual maintenance contract will be made with supplier. The terms, conditions and scope of after sales services, maintenance, repairs, replacement, installation, commissioning etc. should be indicated in the Bid.
15. **Manufacturer's/supplier's warranty certificate** and supplier's **factory inspection report:** Pre-dispatch inspection certificate issued by the purchaser's nominated inspection agency, if so specified.
16. **Inspections and Tests:** The inspections and tests shall be conducted by the Purchaser at the Goods final destination. The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser.
17. **Complaint Redressal:** The Service provider 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.
  - i. Any complaints arising during the implementation phase would be the responsibility of the service provider and ICLEI South Asia or local government authority would not be liable to address these complaints. These complaints would be addressed by the service provider at his/her own costs.
  - ii. 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 service provider shall be liable to address the same within 48 hours of the complaint



being informed to the service provider (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 service provider 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 service provider 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.

18. 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 TMC but without any guarantee to it.
19. If bidder has any doubt as to the meaning of any portions of these general contract terms, or 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 contact, as given in this RfP, by email in order that such doubts may be clarified authoritatively before tendering. Once a tender is submitted, the matter will be decided according to the tender conditions in the absence of such authentic pre clarification.
20. In case the winning bidder fails to indicate his intent to undertake the said work within the stipulated time of 7 (seven) days and observe the formalities as above, the work order will be cancelled and the next bidder will be finalized by ICLEI South Asia in Consultation with TMC senior officials.
21. ICLEI South Asia reserves all the rights to reject any proposal, and to terminate the selection process and reject all proposals at any time, without thereby incurring any liability to the affected applicant or any obligation to inform the affected applicants of the grounds for such decision.
22. It should be noted that the service provider has to work in Thane – Thane Municipal Corporation (TMC) jurisdiction and hence instructions to bidders will be given by ICLEI South Asia in consultation with TMC officials.
23. The successful bidder shall also obtain necessary permissions from concerned government departments in coordination with TMC and ICLEI South Asia.
24. All data and information received from Thane Municipal Corporation and ICLEI South Asia for the purpose of this assignment 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 written approval from ICLEI South Asia and TMC.







25. **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.
26. **Materials/Appliance at site:** Neither ICLEI South Asia nor TMC undertake any responsibility for supply of any materials/ equipment/ Appliance/ tool for site analysis to the bidder before installation. All materials/ equipment/ tools brought to site by the bidder shall be the responsibility of the bidder. TMC 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.
27. **Final Inspection of Work:** TMC 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 work is completed and ready for acceptance.
28. **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.
29. **Termination:** Termination for Default in the case of;
- (a) The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part:
    - (i) If the Supplier fails to deliver any or all of the Goods within the period specified in the Contract, or within any extension thereof granted by the Purchaser;
    - (ii) If the Supplier fails to perform any other obligation under the Contract; or
  - (b) In the event the Purchaser terminates the Contract in whole or in part,

In case the bidder is unable to perform as per the expectations of the project team and/or project cities, the contract of the service provider can be terminated based on mutual consent. In case of contract termination, the bidder would be paid on the basis of deliverables completed to the satisfaction of ICLEI – South Asia.





30. **Force Majeure:** In case of extraordinary events under force majeure (Natural phenomena, including but not limited to abnormally bad weather, unprecedented flood and draught, earthquakes & epidemics, Political upheaval, strikes, lockouts, acts of any Government (domestic/foreign) including but not limited to war, properties, and quarantine embargoes) , the terms of contract can be redrafted through mutual consent. In such cases, none of the parties can be held liable under the Contract.



## Annexure 1

### **Summary of a pilot project on ‘Feasibility assessment for installing early warning system on flood/water logging through IoT measures in Thane’ under the project**

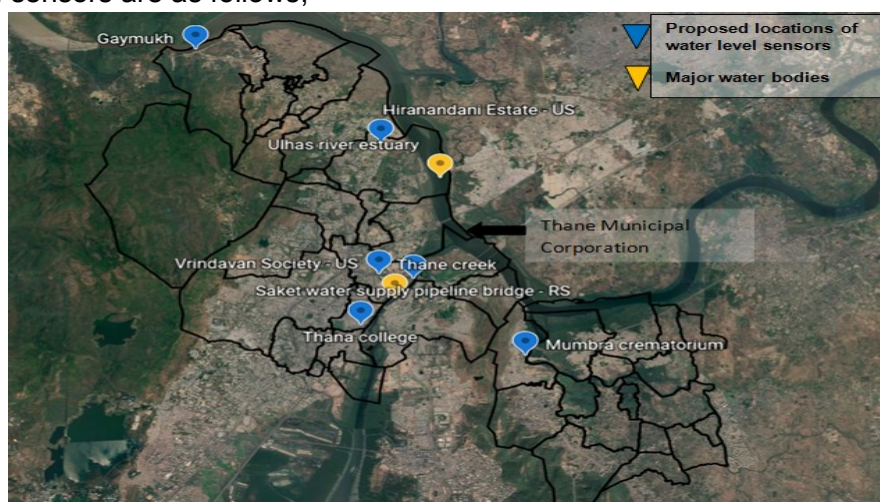
### **‘Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDs II)’**

#### **Introduction**

**Thane Municipal Corporation** and **ICLEI South Asia** are implementing a project on ‘Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDs II)’ in Thane funded by **European Commission** with support from the **UN Habitat** as associate partner. This project aims to reduce greenhouse gas emissions and support the climate actions at local level by the promotion of Urban Low Emission Development Strategies (Urban LEDs) in cities/towns of emerging economies (Brazil, Colombia, India, Indonesia and South Africa) and Least Developed Countries (Bangladesh, Lao PDR and Rwanda). This objective is aligned with the implementation of the Paris Agreement under the UNFCCC.

#### **About the project**

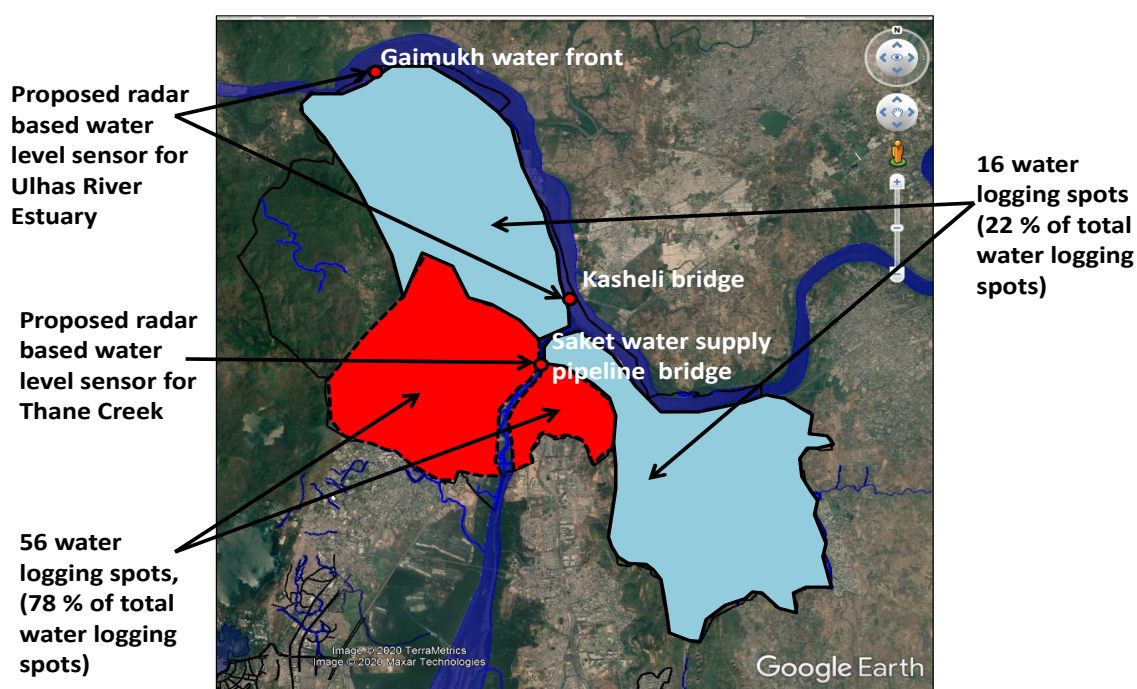
Under the Urban LEDs II project a pilot project on ‘Feasibility assessment for installing early warning system on flood/water logging through IoT measures in Thane’ was selected for implementation based on discussions with core committee of the project. A consultant was appointed to conduct a detailed study of selected nallahs and to select suitable locations for installation of water level sensors. The feasibility study has shortlisted 6 locations for water level sensors on various water bodies including nallahs, Thane creek and Ulhas river estuary. The selection was based on analysis of climatic parameters, previous events of water logging, plans and projects of TMC. Storm water management (nala) department, Electrical department, Pollution control cell and Disaster management cell were involved at various stages of this study. The selected locations for water level sensors are as follows,







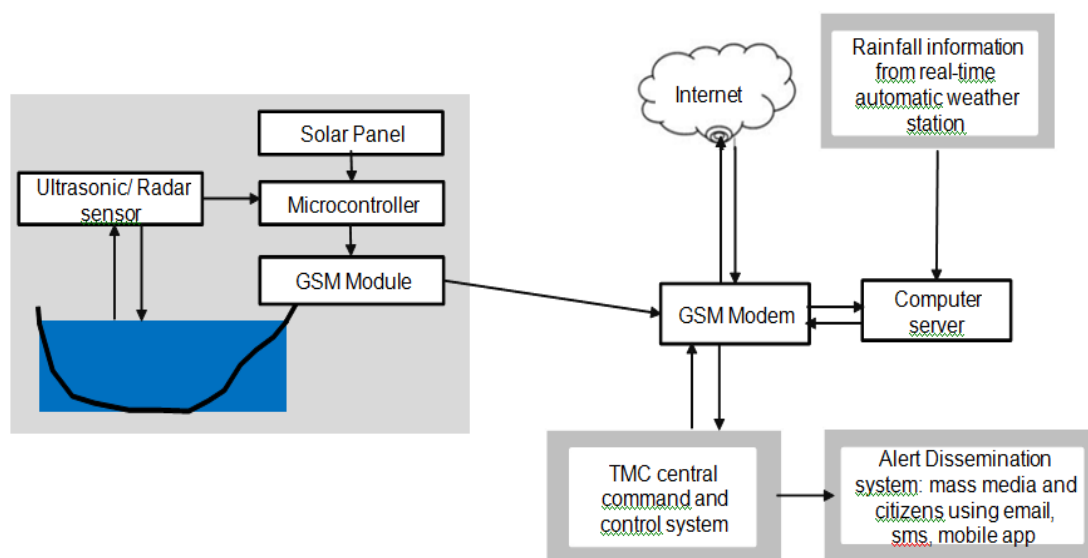
Sr	Location	Remark	Water body and utilization
1	Saket Water Supply pipe Line Bridge	Sensor can be fixed to TMC's water supply pipeline bridge and possible power supply is from TMC's office below the bridge.	To understand the tidal water level in <b>Thane creek</b>
2	Gaymuch riverfront development area	TMC owned infrastructure. Gaymukh riverfront development area is a well secured location with power source.	To understand the tidal water level in <b>Ulhas river estuary</b>
3	Thana College (N. G. Bedekar College)	Secured location to get more lead time while predicting warnings.	To understand the water level in <b>Nalla no. 3</b> (runoff from Navpada area) and tidal impact
4	Vrindavan Society	Sewage pumping station at Vrindavan Society will be the secured location with power supply.	To understand the water level in <b>Nalla no. 6</b> (runoff from Wagle, Vartak Nagar, Uthalsar)
5	Hiranandani Estate	Bridge on the nala having parapet wall and artificial bush fencing can be used as a secure location. Power supply needs to be pulled from nearby street light.	To understand the water level in <b>Nalla no. 11</b> (Contributing to Ulhas river estuary and conveys runoff from Patlipada, Hiranandani area).
6	Mumbra Crematorium (near fire brigade)	Secure location and power supply is available. Need to construct foundation/base to support the sensor	To understand the water level in Mumbra nalla (contributing to Ulhas river estuary)



The proposed sensors are expected to work on solar panels as well as direct electricity from the nearby secured sources. The details of electricity sources and requirements are as follows.

S. No	Sensor location	Length (m)	Type of installation	Electricity source
1	Saket Water Supply pipe Line Bridge	125	Excavation/ clamping	TMC water tanker supply office
2	Gaimukh river front development area	100	Excavation/ clamping	TMC river front development area security cabin/ office
3	Thana College	130	Excavation/ clamping	Urban rest room to women near college gate entry
4	Vrindavan Society	20	Excavation	TMC wastewater pumping station
5	Hiranandani Estate	200	Excavation	TMC ESR office at Hiranandani Estate
6	Mumbra Crematorium (near fire brigade)	50	Excavation	TMC Crematorium
7	Central command and control centre, Hajuri (AWS)		clamping	TMC building

Once installed, water level sensors and automatic weather station will feed data to TMC's Central Command and Control Centre at Hajuri area for further analysis. The overall architecture of the system is shown in following diagram.



### Architecture of the real-time flood warning system

The data from the automatic weather station (AWS) will be recorded in real-time at the AWS location and is proposed to be transmitted to the central server over the internet every five minutes on continuous basis. Based on the last 20-25 minutes rainfall data, water level in nalla is proposed to be forecasted based on the real-time nalla and tidal



water levels. When the threshold rainfall is exceeded, it is expected that the water level is likely to cross the danger mark. Nalla at the downstream catchment areas has been designed for rainfall intensity of 50 mm/h. At a certain time, if rainfall is more than 10 mm in 15-min (rainfall intensity of 40 mm/h); the 1<sup>st</sup> set of alert in the form of email/SMS will be automatically generated and warning will be issued by disaster managers at respective locations. 20-30 minutes early warning can be issued to disaster managers on an event if a forecasted value crosses the threshold limit. The lead time can be increased by setting minimum threshold limits. It will enable emergency services to take necessary actions.

TMC's existing data centre is capable to receive sensor/IoT based data, filter, analyse, store and process for further actions. A warning in the form of SMS/alarm/email will be provided based on the standard operating procedures (SOPs) of the data centre to inform respective departments for quick response.

### **Ownership and handover**

The installation of sensors and AWS will be carried out by ICLEI – South Asia through bidding process based on consultation with TMC officials. The commissioning and communication of the sensors with data centre and achieving intended outputs from the system will be taken care by the selected bidder and existing consultant of the project under the supervision by ICLEI South Asia and TMC. The necessary hands-on experience, training material and training program will be arranged for TMC officials. A responsibility matrix and MRV framework will also be prepared in consultation with TMC officials. Once established the system will be handed over to TMC. However, ICLEI – South Asia will ensure to include comprehensive annual maintenance contract (AMC) for minimum 3 years with the selected bidders from the date of commissioning. IT Department of TMC will be responsible for overall coordination and communication with the bidders in future.





## Annexure 2

### Letter of Bid –Technical Part

*The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the*

*Bidder's complete name and address.*

***Note: All italicized text is for Bidder's guidance in preparing these forms and shall be deleted from the final products.***

Our Reference: No..... Dated.....

To:

**Executive Director,**  
ICLEI South Asia,  
C-3, Lower Ground Floor,  
Green Park Extension,  
New Delhi - 110016, India

**Subject: Supply, Installation, Testing and Commissioning of Water Level Sensors, Automatic Weather Station and Data Logger under the project Urban LEDS II.**

**Ref : \_\_\_\_\_**

Madam/Sir,

1. We, the undersigned, hereby submit our Bid, in two parts, namely:

- (a) Technical Part; and
- (b) Financial Part

2. In submitting our Bid, we make the following declarations:

- (a) **No reservations:** We have examined and have no reservations to the Bidding Documents;
- (b) **Conformity:** We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the RfP document.
- (c) **Ineligibility:** Our firm, its affiliates or subsidiaries—including any subcontractors or suppliers for any part of the contract - has not been declared ineligible by the Bank, or under Indian laws or official regulations;
- (d) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.



(e) **Suspension and Debarment:** We have not been debarred from participation in bidding/removed from approved list (dealings suspended) by the Central or any State Government or by the World Bank.

**Yours faithfully,**

**Authorized Signature**

**Name and Title of Signatory** \_\_\_\_\_

**In the capacity of** *[insert legal capacity of person signing the Letter of Bid]*

**Name of Bidder** \_\_\_\_\_

**Address** \_\_\_\_\_

**Dated on** \_\_\_\_\_



## Annexure 3

### BILL OF QUANTITIES (BoQ)

Name of Bidder *[insert complete name of Bidder]* ;

Price in INR

1	2	3	4	5	6	7	8	9	10	11
S. No.	Description of Goods/ Related Services	Quantity	Unit	Delivery Date at place of Final destination	Country of Origin	Unit price EXW [including GST for Domestic goods only]	Price for inland transportation, insurance and other services required to convey the Goods to their final destination including related services	Other taxes payable if Contract is awarded (such as Customs duty for imported goods etc)	Total EXW price (including GST for Domestic and Excluding GST for Imported) (Col 3X7)	Total Price (Grand Total) (Col 10+9+8)
Supply, Installation, Testing and commissioning of										
1	Radar type Water Level Sensor with solar power	2	No.	Within 21 days						
2	Ultrasonic Water Level Sensor with solar power	4	No.							





3	Telemetry with software and sim cards (with recharge for 3 years plan)	6	No.							
4	Mounting structures and Installation	6	No.							
5	Automatic weather station and data logger	1	No.							
6	Comprehensive AMC (Annual Maintenance Contract)	3.0	Years	After regular warranty of _____years						
7	Associate civil, electrical and any other work		Lump sum or unit rate							
8										
9										
							Total Price			

## Annexure 4

### Manufacturer's Authorization

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

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

**NIT No.:** \_\_\_\_\_

**To:**

**Executive Director,  
ICLEI South Asia,  
C-3, Lower Ground Floor,  
Green Park Extension,  
New Delhi - 110016, India**

WHEREAS

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

We hereby extend our full guarantee and warranty in accordance with Clauses 13 to 16 of the section '7- Other Terms and Conditions' of this document, with respect to the Goods offered by the above firm.

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

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

Title: [insert title]

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ [insert date of signing]

## Annexure 5

### PROFORMA FOR PERFORMANCE STATEMENT

**Proforma for Performance Statement (for a period of last 3 years)**

**Name of bidder** \_\_\_\_\_

Order placed By (full address of Purchaser)	Order No. and date	Description and quantity of ordered equipment	Value of order	Date of completion of delivery		Remarks indicating reasons for late delivery, if any	Has the equipment been satisfactorily functioning (Attach a certificate from the Purchaser/Consignee)
				As per contract	Actual		
1	2	3	4	5	6	7	8

**Signature and seal of the Bidder**



## Annexure 6

### Compliance Statement

#### 1. Radar type water level 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	10-15 V DC	
<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	



## 2. Ultrasonic type water level sensor:

Feature	Value	Bidder's Compliance Yes/No/Deviation if any
<b>Site Conditions</b>		
Ambient Temperature	From -20 to +60oC	
Humidity	5 to 100%	
Altitude	0 to 2,500 m	
<b>Sensor</b>		
Sensor Type	Ultrasonic non-contact sensor	
Range	Up to 10 m	
Resolution	3 mm or better	
Accuracy	0.02% FSO	
Output Interface	SDI-12/RS 485/4-20 mA/compatible with data logger	
Power Supply	10-15 V DC	
<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	
Protection	NEMA 4 or IP65	





### 3. Automatic weather station

S. No.	Parameter	Feature	Specification	Bidder's Compliance Yes/No/Deviation if any
1	Air Temperature	Range	-10°C to +60°C	
		Accuracy	±0.2 °C or better (with radiation shield)	
		Resolution	±0.1°C	
		Response Time	10 sec or better	
2	Wind Speed	Range	0 to 60m/s or better Sustainability Up to 75 m/sec	
		Accuracy	±0.5 m/s or better	
		Resolution	0.1 m/s	
		Threshold	0.5 m/s or less	
		Response time	10 sec. or better	
3	Wind Direction	Range	0-359°	
		Accuracy	±5° or better	
		Resolution	1 deg.	
		Threshold	0.5 m/s or better	
		Response Time	10 sec or better	
		Damping Ratio	Max 0.25	
4	Pressure	Sensor Range (With single sensor)	600 to 1100 hPa	
		Accuracy	±0.2 hPa or better	
		Resolution	0.1 hPa	
		Response time	10 Sec. or better	
		Operating Temperatures	10°C to + 60°C	
5	Relative Humidity	Sensor Range	0 to 100% RH	
		Accuracy	±3% or better	
		Resolution	1%	
		Response Time	10 sec. or better	
		Settling Time	Max 500 ms	







		Temperature Dependence	max $\pm 0.05\%$ RH/ $^{\circ}\text{C}$	
6	Rainfall sensor	Range	0 to 1023 mm/hr	
		Accuracy	$\pm 5\%$ or better	
		Resolution	0.5 mm	
7	Global Radiation	Sensor Range	0 to 1500 W/m <sup>2</sup>	
		Accuracy	$\pm 5\%$ or better	
		Resolution	5 W/m <sup>2</sup>	
8	Wind chill	Range	-79 to 54 $^{\circ}\text{C}$	
		Accuracy	$\pm 1^{\circ}\text{C}$	



## 4. Technical Specifications of Data Logger

Feature	Value	Bidder's Compliance Yes/No/Deviation if any
<b>Site conditions</b>		
Ambient temperature	from -20 to +50 degree C	
Humidity	5 to 100 %	
Altitude	0 to 5000 meter	
<b>Sensor Interface</b>		
Analogue Inputs	8 Analogue Input Channels	
Analogue Inputs	<b>4 to 20 mA; 100% over-range withstand</b>	
SDI Port	<b>one SDI-12 Interface Port</b>	
Digital Inputs	6 Digital Channels, Bidirectional	
Pulse Input	2 Input for Rain Gauge Impulse	
<b>Input - Output Interfaces</b>		
Data Transfer	USB stick option for data transfer	
Port for Configuration	One Serial Port (RS232) for communication with Laptop for programming	
Port for Telemetry	2 Ports for Communication with Telemetry Device (GSM/VSAT/INSAT) (see Note 1 below)	
Display Port	Optional port for connecting external display screen for Data in running text (see Note 2 below)	
<b>Analog to Digital Converter</b>		
Resolution	16 bit or better	
Conversion accuracy	+/- 1 LSB	
Sample Interval	1 sec. to 24 hr. in 1 second increments (user selectable)	
<b>Computer Software</b>		
Operating System	Windows software for system configuration / communication	



Feature	Value	Bidder's Compliance Yes/No/Deviation if any
Version	English language version	
Licenses	All required licenses included	
<b>General Feature</b>		
Flash Memory	Non-volatile flash memory that can store one year of data and expandable to a minimum of 1GB.	
Resolution	A/D Resolution $\geq 16$ bit	
Recording Interval	Individual recording intervals for each sensor/parameter	
Firmware Operating System	Multi-tasking operating system - must log data and transmit at same time	
Display	Inbuilt Digital display for viewing current data and setting values	
Power Supply	Power supply 12V DC, low current drain (quiescent $\leq 10.0$ mA) with battery and solar charger	
Battery Voltage	Monitoring of battery voltage level	
Internal Battery	Internal battery backup for clock, Lithium Battery, storage : 2 years	
Charge Controller	Internal or External	
User Permissions	Different user levels, system of user rights / passwords, access restricted to authorized personnel	
Internal Clock	Internal clock with drift less than 2 seconds per year or using GPS	
Keypad	Keypad for displaying or transferring data to memory stick, configuration of data logger and sensors	
Real-Time Clock	GPS Synchronized	
System Integrity	System integrity check procedures	
Enclosure	For wall-mounting in a shelter / enclosure with IP65 (NEMA 4) protection or better	
Accessories	Serial cable + adaptor (if required) for	





Feature	Value	Bidder's Compliance Yes/No/Deviation if any
	notebook connection. All accessories (fixing units, etc.) as required	
Tools	Complete tool kit for installation and routine maintenance giving full detail (number of pieces and type)	
Manuals	Full documentation and maintenance instructions in English (1 copy per station).	

**Bidder's Signature**

