

# **Request for proposal for Setting up of Water ATM for Safe Drinking Water including Designing, Constructing / Installation, Operating and Maintenance of Water ATMs for Period of Five Years**

## **Volume II: SCOPE OF WORK AND SPECIFICATIONS**



## 1) BACKGROUND

To meet the safe drinking water requirements at public places in Guwahati, potable water is proposed to be supplied to the consumer through his/her drinking bottle/ container or through paper cups (in selected public locations). This proposal will be essential for betterment of the urban environment as the usage of consumer's own bottle/ container would result in minimizing the high usage of plastic/ bottles for drinking water purposes. The water ATMs would also enable citizens/ visitors to access safe drinking water at various locations within Guwahati.

GSCL hereby wishes to invite reputed firms (Applicants) to develop and install water ATMs for providing access to safe drinking water at public places including Operation and Maintenance of the ATMs for Five years.

Locations of public places in GSCL area as per **Annexure I**.

## 2) SCOPE OF WORK FOR BIDDER

The bidders will be responsible for:

- 2.1. **Designing, constructing / installing, operating and maintaining of Water ATMs at Public Places** along with water storage tanks of Stainless Steel (minimum Grade 304) and submitting weekly test report of output water to the Engineer-in-Charge. The operation of the plant shall be with the Contractor for 5 years.
- 2.2. Making Power connection at Water ATMs and all electrical fittings up to the power meter; power connection & external electrification charges will be borne by the Contractor.
- 2.3. Quality control and monitoring systems to be incorporated at each ATM location as per the following:

### EMBEDDED DEVICE FOR AUTOMATION FOR FOLLOWING PURPOSES

- 1) Quantitative Monitoring
  - i. Number of Glasses of water dispensed in a day
  - ii. Number of Bottles of water dispensed in a day
  - iii. Water level in the tank
- 2) Water Quality Monitoring
  - i. TDS level of water
  - ii. Temperature of water
  - iii. Hardness
  - iv. pH values of water

3) Backend Wireless Communication

- i. GPRS Module for communication with backend web server
- ii. GPS module for Kiosk Location information

4) Data Logger

- i. Flash Memory bank for logging Sensor / dispensing data
- ii. Relay Logged info to Server using communication channel

5) Multi-Processor Integrated Control System with Interface cables/connectors for integration to provide for the following features:

- i. GPRS based TCP/IP connectivity with web based Server system
- ii. GPS location system
- iii. Flash based transaction data Logging
- iv. Relay Unit for controlling water dispensing nozzles as per the location requirements
- v. Interface for connecting coin-acceptors
- vi. Interface for Card Reader
- vii. Interface for Temperature Monitoring
- viii. Interface for TDS Monitoring
- ix. Interface for pH Monitoring
- x. Interface for Ultra-Sonic Water Level Monitoring
- xi. Controller for displaying water purity parameters on LCD/LED display monitor
- xii. Media Controller For HDMI based 32" display Monitor of 14" screen (diagonal)
- xiii. Built in power supply to connect with 48 v battery

6) Sensors for the purpose of:

- i. Temperature Monitoring
- ii. TDS Monitoring
- iii. pH Monitoring
- iv. Ultra-Sonic Water Level Monitoring
- v. Water Dispensing from Three Nozzles through Coin Acceptor
- vi. Support of 2 rupee and 5 rupee coins
- vii. Water Dispensing using NFC cards
- viii. Cards to work for Rs. 2 and Rs.5
- ix. Support for Card 'Balance' Rechargeable
- x. Sensors support for Monitoring Water Temperature, TDS, PH and Water Level in the tank
- xi. Display of Water purity parameters on LCD Display of 14" size

- xii. Ability to backup data for 48 hours in-case of server/connectivity outage
- xiii. LED display on controller panel box to indicate System Status.
- xiv. Uploading of Transactions and Water parameters data to Server over TCP/IP using GPRS.
- xv. Fall back to SMS in case GPRS connectivity to server is lost temporarily for reliability purpose, these sensors may be tested by GSCL through an institution of repute like IIT.

## 7) OTHER FEATURES

- i. System operation can be enabled/disabled from server
- ii. Dispense quantities re-configurable from server
- iii. Operator Log-in, log-out feature
- iv. System to operate after successful operator login only.
- v. All card Recharge transactions to be uploaded to server
- vi. All water dispensing transactions to be uploaded to server
- vii. All Water refill transactions to be uploaded to server
- viii. Each dispensing unit shall be independently manageable from the server for coin or card operation of any value

2.4. Disposal of waste water to GSCL sewerage system.

2.5. Making own arrangement during non availability of piped water. GSCL is not liable to supply water to ATMs during such period, and nothing is payable by GSCL to the Contractor during such periods. It is in the obligation of the Contractor to arrange raw water to ATM's, during Non availability of water and the source and quality of raw water shall be approved by GSCL.

2.6. The water before being dispensed to the public shall be treated with suitable filtration process to meet BIS 14543 standard at all times.

2.7. Any other related works/activities as may be necessary for its successful operation.

2.8. Users may carry water up to 20 litres capacity jerry can. The Contractor may have suitable vending place in ATM for filling a container of 20 litre capacity.

2.9. ATM will be constructed as per the layout approved by the GSCL.

- 2.10. Water ATM should be equipped with provision for chilled water (water with temperature around 15 degrees Celsius during summers). Water ATM shall serve both Chilled as well as non chilled water
- 2.11. The Bidder shall use Reverse Osmosis (RO) technology with UV Treatment system to treat water in order to provide potable water at each ATM location. The treatment shall be completely in accordance with BIS 14543 Annexure -3.  
Depending upon level of Contamination in water, alternate superior technology can be adopted only after approval from GSCL
- 2.12. The successful bidder shall provide in-built litter spaces in each water ATM.
- 2.13. Advertising space shall be provided on Panels of ATW Machine. Provision for LED screen Advertisement to be made.
- 2.14. LED signage showing Authority's and Water ATM of appropriate size shall be installed at every Water ATM unit.
- 2.15. Specifications:
- i. Each ATM should be equipped to dispense water of 250 ml (eco-friendly biodegradable cups/glass of minimum 170 GSM paper to be provided by the Contractor at the ATM in the cost of water). 1 litre, 5 litre and 20 litre water will be taken by customers in their own containers.
  - ii. Filling Speed: about 10-12 litre/minute
  - iii. Operational Time – 6 AM to 10 PM every day, which may be amended in consultation with GSCL.
  - iv. ATM Unit Dimension: Cubical/cylindrical in shape with base area up to 20 sq. Feet or as approved by GSCL
  - v. The ATM shall have the provisions for Float valve for overflow control

### 3. GENERAL REQUIREMENTS

- 3.1. The Contractor is advised to analyse the potable water of requisite sample size on their own before quoting their rates in **Financial Bid, Volume III**. No extra claim will be entertained after the allotment of the work on this account.
- 3.2. The output water quality characteristics are given in **Annexure-II**.

- 3.3. The Contractor has to design supply, install, commission, and maintain the Water ATMs for Five years. The Contractor will maintain a safe, clean and hygienic environment in and around the Water ATM.
- 3.4. The Contractor should have their own testing facilities for water testing process. The Contractor should analyse the water sample for all parameters as per BIS 14543 norms in a daily, weekly manner or as and when required by the Authority, from the Lab as approved by Authority. Frequency of Water testing shall be as mentioned in BIS 14543. Contractor shall maintain proper record in this regard. The Attendant of Contractor shall be available at the Water ATM during the operation time. A LED/ LCD digital screen of at least 14 inch diagonal showing 4 key parameters of BIS 14543 standards namely pH, hardness, TDS & temperature on a real time basis in an interval of 2-5 minutes.
- 3.5. The maintenance of pipelines etc. from point of connection onwards to the Water ATMs shall be responsibility of Contractor during the Contract Period
- 3.6. Making connection for raw water:-  
The Contractor shall be responsible for executing works for making connection for Water ATMs from the source provided by the GSCL including cost of all material and labour etc. The cost of filtration process at each ATM, to ensure quality of water as per BIS 14543 standard shall be the responsibility of the Contractor.
- 3.7. Disposal of waste generated at each Water ATM:-  
The disposal of waste generated at each ATM shall be disposed by the contractor at his own cost to the nearest GSCL system. In case of performance severe penalties would be levied on the Contractor by GSCL as applicable under existing laws related to littering in public areas.
- 3.8. The Contractor shall install the required equipment and maintain the same for a period of five years from the date of commissioning of water ATMs, as per the conditions prescribed in this document, and in the time frame prescribed at his own cost.
- 3.9. After completion of Contract period the water ATMs will become the property of the GSCL. The Contractor shall handover the Water ATM in Good working conditions complete to the satisfaction of Authority
- 3.10. The Contractor shall perform all routine maintenance to ensure that all water ATMs shall remain in working condition.

- 3.11. The Contractor will depute duly trained Operators at each water ATM. The Contractor shall ensure routine inspection of the equipment by the equipment supplier.
- 3.12. The output water shall be distributed daily between 6:00 am to 10:00 pm on all days from water ATMs. However, GSCL may increase or decrease the working hours, if so desired, in order to provide adequate water to the public. The Contractor shall have to provide all the services during the extended hours.
- 3.13. The Contractor will be responsible for maintaining the service levels standards otherwise penalty will be levied as per penalty clause.
- 3.14. The Contractor shall provide trained manpower to maintain the water ATMs to ensure the provision of quality services.
- 3.15. The Contractor shall provide and maintain the electrical and plumbing fittings of all types at the Water ATM in good working condition.
- 3.16. The Contractor shall provide LED boards for display of BIS 14543 water quality parameters including:
1. pH
  2. Hardness
  3. Temperature
  4. Water Level
  5. TDS
- 3.17. Contractor should ensure that all the Water ATM (in a pocket) are working all the time and annual repair/maintenance etc. shall be carried out periodically at his own cost.
- 3.18. All expenses shall be borne by the Contractor.
- 3.19. To maintain premises clean, safe hygienic and risk free in and around the Water ATM (approx. Two meter radii) is the responsibility of Contractor. The Attendant of the Contractor shall ensure that all the eco-friendly biodegradable paper glass shall be disposed off by the user within litterbin kept at each ATM.
- 3.20. Water & Electric supplied through connection by the GSCL (if any), will be charged from Contractor on Commercial rates applicable from time to time.
- 3.21. Online information of daily report to GSCL.

- 3.22. GSCL has reserve the right to inspect any ATM at any time during the
- 3.23. GSCL has right to take sample of water at any time.
- 3.24. During the non-availability of piped water from GSCL, Contractor shall make his own arrangement for Raw Water at his cost.
- 3.25. The water storage capacity at each ATM should be as approved by GSCL which can be increased as per the requirement.
- 3.26. Physical Security of Water ATM shall be responsibility of the Contractor. Insurance of Appropriate Amount as required by GSCL shall be taken by the Contractor for each water ATM. Insurance shall be in the name of GSCL, required premium for same shall be paid by the Contractor
- 3.27. The Contractor shall ensure that safe, clean and hygienic environment is maintained in and around ATM
- 3.28. The Contractor shall indemnify, defend and hold harmless the GSCL and its officers, employees, and affiliates against any and all claims of loss, damage and expense of whatever kind and nature, including all related costs and expenses incurred in connection with
- a) Sickness or ill health caused to user after drinking water from ATW. All the liabilities arising out shall be born by the Contractor.
  - b) Shortfalls in Standard norms laid down by Food Safety and Standard Authority of India (FSSAI). Contractor shall be responsible for Complying to such standard norms laid down by FSSAI
- 3.29. The disposal of used biodegradable paper glass shall be responsibility of the Contractor.
- 3.30. Payment of water by the user shall be by smart card. Provision of same shall be done by the Contractor. The Contractor shall keep all the data of water dispensed through data logger system or as per system approved GSCL. GSCL shall have all the rights to cross check the data at any time. GSCL's shall issue the Smart card to the user, which has facility of credit (i.e balance in account) and can be recharged. Provision of dispensing of water by inserting Coins of Rupees Two, Rupees Five ..etc should also be made . GSCL shall collect the Cash from the ATW machine either daily or on weekly basis.



- 3.31. During installation period, payment to contractor shall be done only after testing and commissioning of individual machine complying to all output water quality parameters as per BIS 14543. Contractor shall submit payment statement to GSCL and payment shall be made within 30 (thirty) days from certification of payment certificate by Engineer-in-Charge. After completion of all works and on issuance of Completion certificate, the Contractor shall submit Final payment certificate to the GSCL and Payment shall be made not later than 60 days from date of submission of Final payment certificate
- 3.32. Contractor shall quote for yearly Operation and Maintenance Charges. The same shall be paid on Quarterly instalments year wise (i.e after every 3 months) only after satisfying Water quality output parameters as per frequency i.e Hourly, Weekly, Monthly , Three monthly....etc in accordance with BIS 14543 requirement and satisfactory carrying out other required tests on water as mentioned therein.

#### **4. OTHER REQUIREMENTS:**

All the successful Contractors will have to ensure collection of the samples from the respective sites and meeting of the design criteria.

- I. Bidders would need to submit their O&M expenditure information to the Engineer-in-Charge on a quarterly basis for the records of GSCL.
- II. Any deviation from the proposed design needs to be approved by the GSCL.

#### **5. TESTING AND INSPECTION**

I. Third Party inspection

The charges for third party inspection, if any, would initially be borne by the Contractor.

II. Site tests

After erection at site, all components, equipment as described shall be tested to prove satisfactory performance and /or fulfilment of functional requirements without showing any sign of defect as individual equipment and as well as a system.

#### **6. DELIVERY/COMMISSIONING**

The commissioning of all the water ATMs is 3 months (90 days) from the date of the confirmed Letter of intent or handing over of site whichever is later.

## 7. Penalty In case of Non-performance

In case of non-performance of more than 3 hours in a particular day between the operating hours, 1 day non-operation will be considered and penalty will be levied as per the table below.

In case the quality of water is not as per BIS 14543 standard the ATM operation of dispensing water should be stopped immediately. GSCL will impose a penalty of Rs 1000 for each such event at the Water ATM concerned.

Penalty in case of Non-operational beyond 3 hours in a day with respect to ATM shall be as follows:

- I. Up to 4 days – Rs.2000/- per day/per ATM
- II. 4-7 days – Rs.3000/- per day/per ATM
- III. Above 7 days – Rs.5000/- per day/per ATM

Failure to report any information pertaining to non-operational/not desired quality of the ATM would invite additional penalty of Rs. 1,000/- per such case per day of delayed information.

In case of non-compliance of water quality with BIS 14543 standard and / or non-operation of ATM's beyond the stipulated days as approved by GSCL, the contract is liable for termination.

## 8. SCOPE OF GSCL

- I. GSCL will provide nearest Source of water, further arrangement including required plumbing works from source to water ATMs shall be borne by the Contractor.
  - II. GSCL will charge for water required for the Water ATM on commercial rates.
  - III. Single phase or three phase power supply as required at one point further distribution including installation of Electric meters for Water ATM's shall be in scope of Contractor
- (ii) The power consumption charges shall be charged on Commercial rates basis.
- (iii) Whenever GSCL is not able to provide the source of water, it is in the obligation of the Contractor to arrange for Raw water. The source and quality of Raw water shall be approved by GSCL. The charges for Raw water and its transportation shall be in scope of Bidder.

## **9. CONSTRUCTION REQUIREMENTS FOR Water ATMs.**

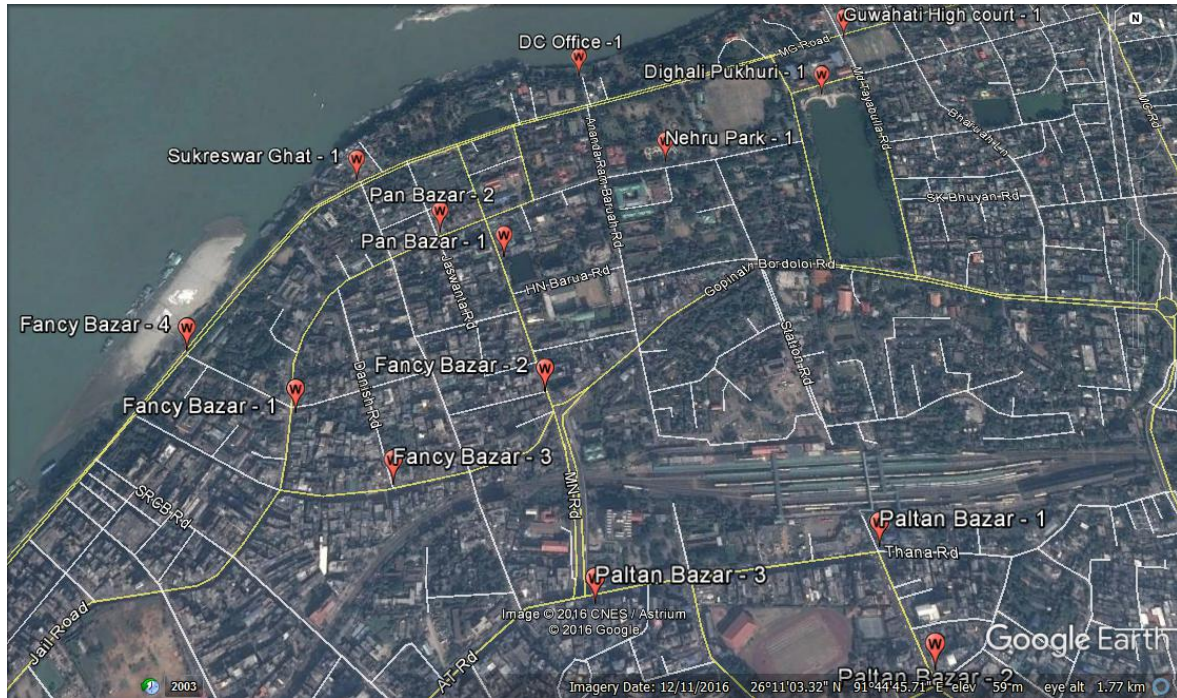
### **GENERAL**

- i. The Contractor shall design ATM's in such a way that material considered for design and construction should only be of Stainless Steel (minimum Grade 304) including storage.
- ii. The Contractor shall design ATM's in such a way that, in case quality of incoming Water is not as per required standards, then plant/ ATM should be automatically shut down. The Contractor should brought matter be to the knowledge of the Engineer-in-charge immediately and it should be sorted out within a day itself to make ATM back in operation and use.
- iii. Specifications, Shape and design of the ATM shall be provided by the
- iv. Contractor for each and every location (Please refer to Annexure III & IV for illustrative design) before start of work and only after obtaining clearance from GSCL, ATM's should be installed at respective locations.
- v. Contractor shall design ATM's in such a way that, sufficient quantity for storage of water should be made at each and every ATM but not less than the minimum quantity as specified in Financial Bid, to avoid shut down of ATM's on account of no water situation, since present water supply in GSCL area is intermittent.

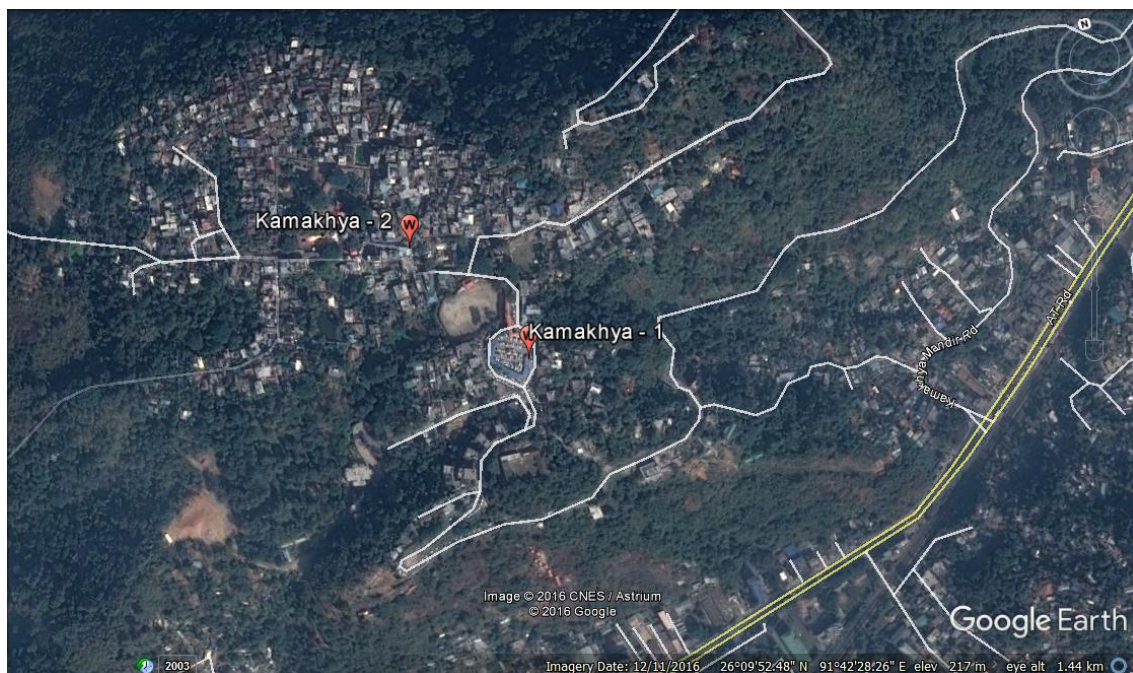
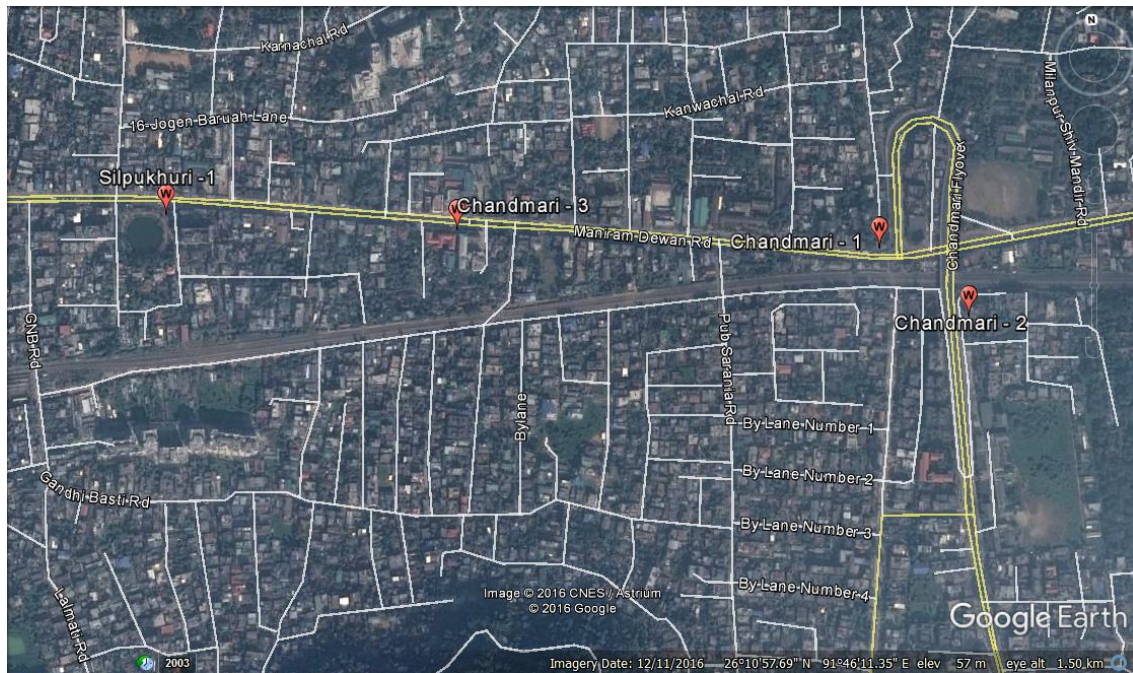
Provided that the Contractor shall ensure that the technology chosen is

- (a) Appropriate to the site and ground situation
- (b) Has a precedent for use in a project of similar nature and size
- (c) Is supported by the technology/service provider for design, supply, implementation and ongoing maintenance
- (d) Addresses all issues of safety, including fire safety, operational safety, and environmental safety

## Proposed Location of Water ATM's







#### Annexure I:- List of public places where Water ATMs are to be installed

Proposed Location of ATW		
Sl No.	Location	Nos. of ATW to be installed
1	kamakhya Temple	2
2	Fancy Bazar	4
3	Pan Bazar	2
4	Nehru Park/Cotton College	1
5	Sukreswar Ghat	1
6	Dighli Pukhuri	1
7	Paltan Bazar	2
8	Chandmari	3
9	Silpukhuri	1
10	DC Office	1
11	Guwahati High court	1
12	Bharalu	1
Total Nos. to be installed-		20

**ANNEXURE- II: OUTPUT WATER QUALITY AS PER BIS 14543**

Sl. No	DESCRIPTION	To comply
1	COLOUR	2 Max
2	ODOUR	. Agreeable
3	TASTE	Agreeable
4	TURBIDITY	2 Max
5	pH	6.5 to 8.5
6	Total Dissolved Solid	500 ppm Max
7	BARIUM	1 ppm, Max.
8	COPPER	0.05 ppm, Max
9	IRON	0.1 ppm, Max

Sl. No	DESCRIPTION	To comply
10	MANGANESE	0.1 ppm, Max
11	NITRATE	45 ppm, Max
12	NITRITE	0.02 ppm, Max
13	ZINC	5 ppm, Max
14	ALUMINIUM	0.03 ppm, Max
15	CHLORIDES	200 ppm, Max
16	SULPHATE	200 ppm, Max
17	CALCIUM	CALCIUM
18	SULPHIDE	0.05 ppm, Max
19	ALKALINITY	200 ppm, Max
20	HENOLICCOMPOUNDS	Absent
21	MINERALOIL	Absent
22	MAGNESIUM	30 ppm, Max
23	RESIDUAL FREE CHLORIDE	0.2 ppm, Max
24	ANION.SURF.ACT.AGENTS	0.2 ppm, Max
25	ESCHERCHIACOLI	Absent
26	COLIFORMBACTERIA	Absent
27	Sulphite Reducing Bacteria	Absent
28	Pseudomonas Aeruginosa	Absent
29	Aerobic Microbial Count	20, Max at 37C &
		Max at 20-22C
30	YEAST &MOULD	Absent
31	Antimony	0.005 PPM ,Max
32	Borate	5 PPM, Max

**Annexure-3: Specifications for the ATM Unit and Development of Site****1. General requirements**

- 1.1. General requirements and specifications for ATM Unit –space requirement for accommodating system.
- 1.2. Maximum covered area of ATM Unit shall be 24 sq. Ft or as approved by the Authority
- 1.3. Indicative design for each water ATM are annexed at however the final drawing design submitted by contractor shall be as approved by the Authority.
- 1.4. It is mandatory for every bidder to submit layout plan showing the above maximum area requirement along with their bids. Bids of the bidders not complying with this are liable to be rejected.
- 1.5. Water Storage Tank shall be placed inside the ATM Structure.

**2. Units of ATMs:**

- 2.1. ATM Housing structure shall be of Stainless Steel (minimum Grade 304) with puff in between.
- 2.2. Thickness of Stainless Steel (Inner & Outer) should be minimum 0.5 mm duly filled with puff of 40 to 50 mm thickness. The outer design should aesthetically gel with the surroundings.
- 2.3. Ensure the structural stability and safety of the ATMs.



- 2.4. The structure should be appropriate to protect the whole ATM system, including its equipment and accessories in all weather conditions and it should withstand the extreme climatic variations.
- 2.5. The roof material of canopy should be PP reinforced UV stabilized Poly Vinyl/FRP covering.
- 2.6. The total floor area and canopy area of the ATM should be covered with Good quality vitrified/anti-skid tiles as approved by Authority.
- 2.7. The ATM should be provided with a LED sign board indicating the Authority's logo and water ATM as per the design approved by Authority.



**ANNEXURE- 4: Indicative Design of Water ATMs**

