

**TERMS OF REFERENCE (TOR) For
REMOTE MONITORING SYSTEM OF WPP**

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TERMS OF REFERENCE AND SCOPE OF SERVICES

1. GENERAL

Water is vital for all life and the sustainability of a state depends on proper maintenance of water resources. With a growing population, the demand and supply of water keeps changing rapidly. Ground water is the major source of drinking water in Karnataka. Due to the depletion of ground water and draining of rivers, the population is now struggling to meet its drinking water needs. Dedicated towards fulfilling the drinking water needs of rural areas, the Government of Karnataka is implementing water projects like single village schemes, Multi Village schemes and installed Water purification plants across the state. The RDPR department, Government of Karnataka through RDWSD has installed over 18000 water purification plants (WPP) across the state to provide safe drinking water to its citizens. Currently these are maintained and managed by contractors & GPs. The water through these WPP's are dispensed through manual, coin or / and card based vending system. The manual dispensing and coin based dispensing is planned to be replaced with card based system in a phased manner. The department tracks the performance of these WPP's through its field personnel / PDO's at regular intervals and also uploads the information on the RDPR monitoring application "Panchatantra". However, these updates does not provide WPP wise information and often does not reflect the current status but on a certain date. This exercise is tedious and too many people have to get involved to compile & collate the data for the entire state which leads to significant expenditure of time and efforts and validation is also a challenge. The department is desirous of having a system which can provide information regarding the status of any WPP in real-time without manual intervention through technology intervention.

2. OBJECTIVE

While there are multiple Remote Monitoring Systems available and were even tried by the department in some 3000 WPPs in previous years, they became defunct over time because of multiple sensors and use of different IT platforms by different vendors. Based on that experience the department is focused on the below parameters that needs to be monitored by the Remote Monitoring system for WPPs.

- Number of plants in operation for the day
- Volume of Water dispensed per day for each plant

If the above data can be reliably captured it can be used through various analytical tools to evaluate the following which will help the department in taking informed decisions such as;

- Plant capacity utilization
- Demand forecast
- Relocation
- Additional plant requirement

3. OUTLINE OF THE TASKS TO BE CARRIED OUT

Reverse Osmosis (RO) based technology has been installed in all the WPP's. The water from the source is treated through the RO and is stored in a stainless steel (SS) tank. The water stored in SS tanks is dispensed to the citizens through a smart vending machine. The citizens purchase the smart card from the vendor which can be charged with the currency as desired by the citizen and when there is a requirement they can swipe the card and dispense water automatically.

The process of dispensing water is as follows. When the citizen swipes the smart card on the RFID card reader a signal from the processor is sent to a solenoid valve whose condition changes to open condition. The water flows through a turbine flow sensor. When the volume of water reaches 20 liters it sends the signal to the solenoid valve to close. Once the solenoid valve closes then 1 cycle is completed and the vending machine considers it as 1 count which is equivalent to 1 can which is equivalent to 20L of water dispensed. There are multiple vendors who have provided the vending machine hence the system should have the capability of capturing data from all these different sensors and processors. The outline of the task to be carried out is broadly listed as below but may not be limited to:

1. **Data collection:** The proposed RMS has to capture data when water is dispensed after swiping from Individual WPP's. The time window for the RMS to capture the water dispensed data is 24 hrs. (00:00 hrs. to 23:59 hrs.) which will be considered as 1 day. Every time the card is swiped and water is dispensed it should be able to provide 2 types of information. Firstly the first can and the last can which indicates the hours of operation and secondly the total number of cans dispense for the day. Data has to be captured from 3 different sources i.e., swiping machine, solenoid valve and turbine flow sensor so that the data captured can be used for validation.
2. **Data to be converted into Information:** The collected data from the WPP's provided by multiple vendors has to be converted into a structured usable information.
 - i. This has to be provide to the department as dashboards which clearly show the capacity utilization of each WPP
 - ii. The system should provide drill down options from overall state to individual WPP
 - iii. Number of Cans sold for the day, week and month in real time.
 - iv. The system should be capable of sending email notification and SMS notification to key personnel if water has not been dispensed for more than 48 hrs.
3. **Data Availability and validation:** Access has to be provided to the department to view the information independently. The data has to be stored in a secured way and should be handed over to the department as and when requested. All data collected are the sole ownership of RDWSD and cannot be shared or used without the consent of the department. The captured data from the dispensing machine has to be validated with either flow sensor or solenoid vale or both. If water has not been dispensed the system should provide Zero value. It is the responsibility of the vendor to inform if the data is not captured due to the lapse in the installed hardware/software. If the RMS system is not working then it has to be rectified as per the agreed service level in the agreement.

4. **Data storage:** The data from each WPP should be stored for a period of 6 months and at the end of the period the data has to be stored as archive for a period of 6 months before the data is discarded. If requested then the raw data has to be provided to the department.
5. **Connectivity:** The WPP's are installed in remote locations as well, where there are challenges with regards to availability of power 24 X 7. Required back up has to be provided by the vendor so that there is no data loss. If during the power outages the data is not transferred then once power is restored it should be able to send the data.
6. **Security:** It is the vendor's responsibility to ensure the security of both the data and the hardware provided. Every WPP has a cabin but the vendor has to ensure that the RMS is tamper proof.

4. COMPOSITION OF REVIEW COMMITTEE

The Review Committee will comprise of

- Commissioner, RDW&SD as Chairperson.
- Chief Engineer, RDW&SD
- Superintendent Engineer RDW&SD.
- Executive Engineer RDW&SD
- Chief Accounts Officer, RDW&SD
- Invitees having experience of RMS.

5. TENURE OF THE ENGAGEMENT

The tenure of the engagement will be for a period of 5 years

6. SELECTION PARAMETER

The interested service provider will have to install and commission the RMS unit at the recommended WPP. Subsequent to installation and commissioning the service provider will be responsible for operation and maintenance of the installed units. The fee payable for the entire service will be on quarterly basis which shall include CAPEX cost, OPEX cost (include licensing cost and maintenance cost) for the entire 5 year period. The lowest quarterly payment by the service provider shall be the basis for selection. The potential bidder shall propose their financial proposal as quarterly payment including all the expenses to be incurred.

7. SUBMISSION OF RESPONSE

Interested service provider who are in the field of providing RMS shall submit their response to EOI in (hard copy) to Commissioner RDWSD, 2nd Floor, KHB Complex, Cauvery Bhavan, K.G. Road, Bengaluru-560 009 on or before 22 - 01- 2021. Eligible agencies and individuals who matches the requirement of the department would be invited for presentation before the review committee.

For any clarifications, the queries can be sent to E-mail-id: wdhanaraj@safewatnetwork.org

Any submission after due date shall not be accepted.

ANNEXURE – I

Sl. No	Description	Details to be submitted.
1	Name of the Company	
2	Contact person details Phone Mobile Email	
3	Company history Type of company	
4	Financial Turn over details	
5	Experience in Remote Monitoring Systems	
6	Work Done experience and its Certificates	
7	Any other Supporting documents	

Sd/-
Commissioner,
RDW&SD, Bengaluru.