

Providing Clean Drinking Water to the People of Mallur Panchayat

Introduction

Access to safe and reliable drinking water remains a major challenge in many rural communities, where groundwater is often the primary source of supply but may be affected by chemical and microbiological contamination. AquaMAP: Centre for Water Management and Policy at IIT Madras, with support from the Lien Environmental Fellowship administered by through Nanyang Technological University, is implementing a project to improve access to safe drinking water in Ankathatti, Kachahalli villages and Mallur villages of Mallur Gram Panchayat, Karnataka. The project commenced in 2026 and is scheduled for completion by March 2027.

Mallur Gram Panchayat comprises four villages—Mallur, Muthur, Kachahalli and Ankathatti—and currently depends predominantly on deep borewells for drinking-water supply. Baseline investigations undertaken by the AquaMAP team identified significant organic, nutrient and bacteriological contamination in drinking-water sources and household samples. With approximately 5,000 people expected to benefit, the project aims to provide a reliable, safe and technology-enabled drinking-water supply system.

Panchayat Background

Mallur Gram Panchayat is a Rural Local Body in Sidlaghatta Panchayat Samiti part of Chikballapur Zilla Parishad of Karnataka State, India and is located around 55 km from Bengaluru city central railway station. Four villages come under Mallur Gram Panchayat jurisdiction viz., Mallur, Muthur, Kachahalli and Ankathatti. Sidlaghatta town is 9 km away and is the nearest center for economic activities. All four villages are supplied an average of 17 LPCD by the Panchayat from borewells of around 1200 ft deep. Household tap connections have been sanctioned recently under Jal Jeevan Mission of Government of India. Figures 1 & 2 show the location of Mallur Panchayat and the four villages of this panchayat.

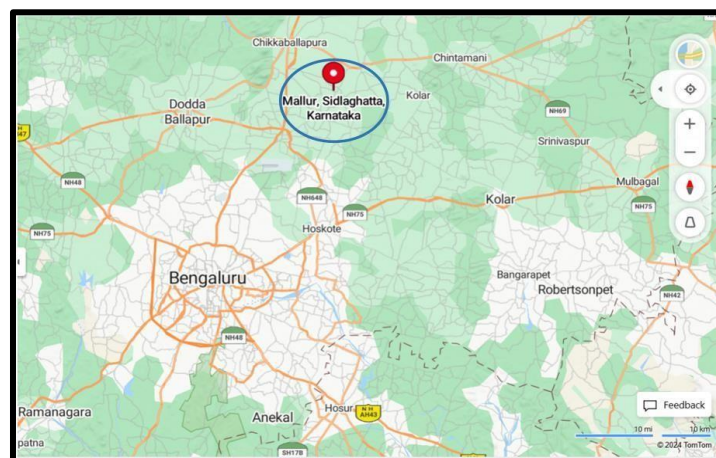


Figure 1: Location Map of Mallur from Bengaluru



Figure 2: Location of all 4 villages of Mallur Panchayat

SCOPE

- Provide automatic chlorinators in both the villages at overhead tanks.
- Provide sensors for the monitoring of water quality (pH, Turbidity, TDS, Residual chlorine) in the overhead tanks.
- Provide flow meters and level sensors for IOT application, which ensures reliable water supply with respect to quality and quantity.
- Provide necessary software/Apps to communicate the information regarding quality, quantity, and time of supply through mobile phones.
- Provide water treatment unit (Microfilter, carbon adsorption, ultra-filtration, and UV disinfection) system in both the villages near the Over Head Tanks, with a capacity of 2000 L/h with quality and quantity sensors. (around 50) (Fig 3)

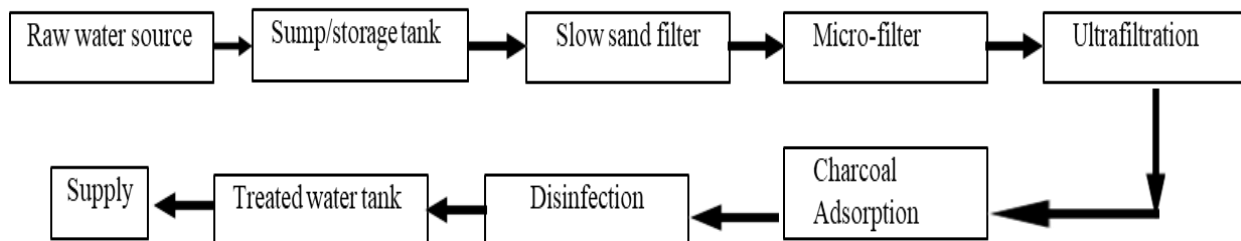


Figure 3: Schematic diagram of the water treatment set up proposed in the villages

- Provided one water treatment unit (Microfilter, carbon adsorption, ultra-filtration, and UV disinfection) of 2000 L/h capacity in Ankathatti near the main road to provide drinking water to the

houses (around 60). This unit also will have quality and quantity sensors.

- vii. Provide water treatment units for the Anganwadi (play school) and primary schools of both the villages (a total of 4 units). For Anganwadi, a unit of 50 L/h will be provided, whereas for the primary schools, we will provide a unit of 100 L/h.
- viii. Distribution of water quality Test kits (developed inhouse by our team) to village level workers and train them on the usage and preparation of refills. This will help them to cross check the performance of the sensors and identify any contamination at household level.

Project Status

A. On-site water treatment units

- GLPS (School) Kachahalli ----- 100 LPH
- Anganwadi, Ankathatti ----- 50 LPH
- Gram Panchayat Office, Mallur ----- 100 LPH
- Anganwadi, Mallur ----- 50 LPH

B. Water Treatment Plants

Three water treatment plants; two in Ankathatti and one in Mallur village were constructed for the benefit of Mallur Panchayat people.

Site 1: Ankathatti Dairy Farm

- **Civil Works Status:** The civil works were successfully completed (Fig. 4).



Fig.4. WTP at Ankathatti Dairy Farm

- **System Installation:** The water Treatment system was successfully installed.
- **Utilities & Finishing:** Arrangements were made for the electricity connection required to operate the system. The pipe laying works for the drinking water system were successfully completed, and the system is functioning properly without any leakage.

Site 2: Ankathatti Main Road (Near Old Bus Stop)

- **Civil Works:** Civil works were successfully completed in this location.
- **Sump Construction:** The construction of the underground sump/storage tank was completed.
- **System Installation:** The water Treatment system has been successfully installed (Figure 5).

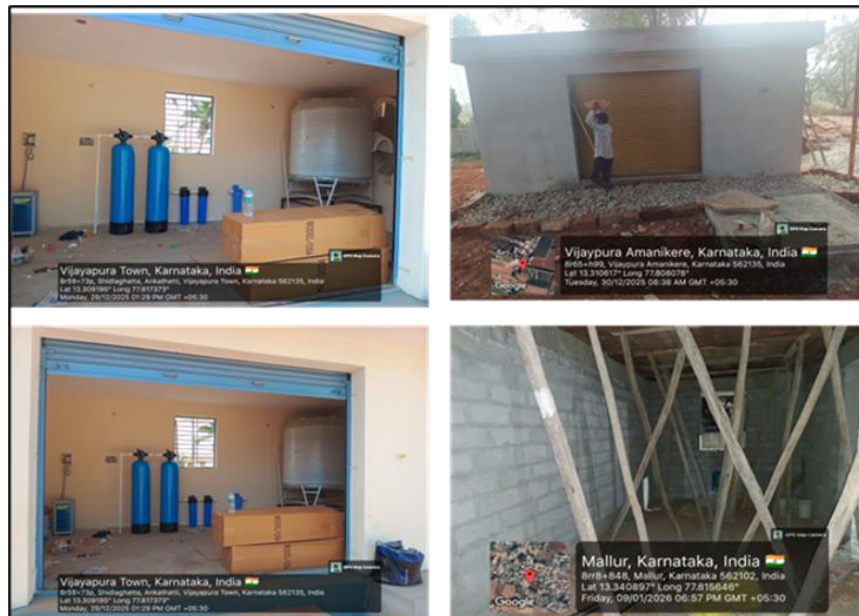


Fig. 5. WTP at Ankathatti Main Road

- **Utilities & Finishing:** Arrangements were made for the electricity connection required to operate the system. The pipe laying works for the drinking water system was successfully completed, and the system is functioning properly without any leakage.

Site 3: Mallur Village (Near Anganwadi)

- **Civil Works:** Civil work is completed and it is operational.
- There are some issues with water supply from the source; the yield of the well has reduced during summer. Local NGO Gramaantara is working with the Panchayat Officials to rectify the situation.

To facilitate sustainable operation and maintenance of the systems after handover, a smart card-based water dispensing mechanism was installed in all three WTPs under Mallur Panchayat. User smart cards were distributed among the public, enabling convenient access to treated drinking water.

3.4. Water Quality Sensors.

Sensors and real time monitoring IoT platforms have been installed by M/s **Real Tech Systems Ltd** at the treatment plant outlets to monitor both raw and treated water quality.

- GLPS (School) Kachahalli
- Anganwadi, Ankathatti
- Gram Panchayat Office, Mallur
- Anganwadi, Mallur

The installation of all sensors, including pH, Turbidity, TDS, and Temperature monitors, was completed on **07/12/2025 (Fig. 6)**. The sensors have been successfully installed, and the system has been integrated with real-time monitoring (Fig. 6) and Installation of Electrochlorinator (Fig. 7).



Fig. 6: Sensor installation

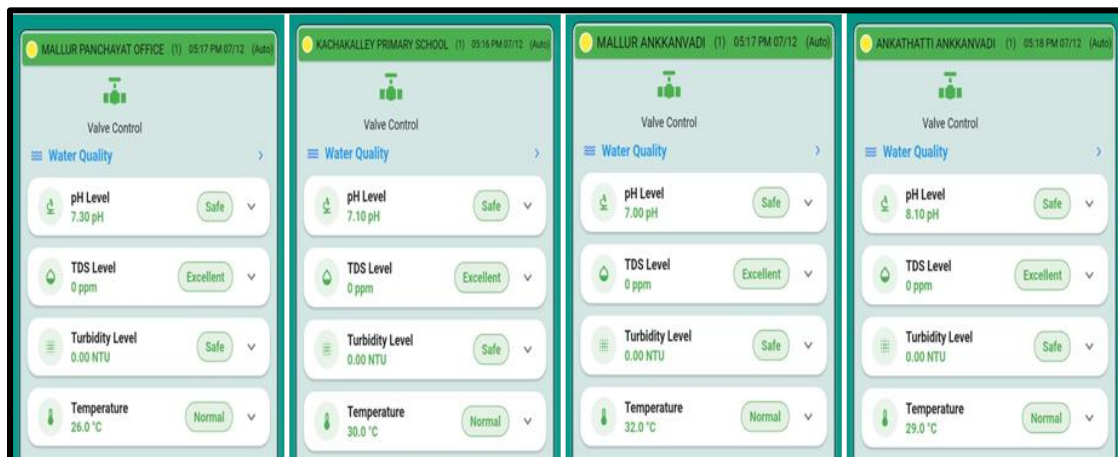
The electro-chlorinator automatically disinfects water by generating chlorine, eliminating harmful microorganisms without manual intervention, while IoT sensors continuously monitor parameters such as

pH, chlorine levels, and turbidity and transmit real-time data for remote supervision. The flow monitoring system tracks water usage and helps detect leaks or irregular supply, improving resource management. The setup is powered by solar panels, making it sustainable and suitable for rural areas with limited electricity access, and overall, it enhances water safety, operational efficiency, and reliability of the water distribution system.



Fig. 7: Electrochlorinator Installation

Operational Status: All sensors are currently operational and integrated with the IoT platform. Initial monitoring indicates that the systems are working satisfactorily and providing consistent data streams



Operation and Maintenance

Regular operation and maintenance (O&M) activities have been carried out by the Sairam Solutions team at all four treatment units and three WTPs. As part of the scheduled preventive maintenance carried out on 18 June 2026, the treatment systems were inspected to assess their operational condition and ensure continued supply of safe drinking water. The maintenance activities included replacement of filter cartridges, inspection of UV chambers, and cleaning of stainless-steel filtered-water storage tanks.

During the maintenance visit, a minor issue was identified at Kachahalli School, where a gap at the bottom of the sensor box had allowed a squirrel to build a nest, resulting in damage to one of the water tubes. The nest was removed, the damaged tube was repaired, and the treatment unit was restored to normal operation (Fig. 6).



Fig. 6: Drinking Water Treatment Systems in Mallur Panchayat

NTU Field Visit

The representatives from NTU (Funding Agency) visited (Fig. 7) the Drinking Water Treatment Facilities at Mallur Panchayat (in both Ankathatti and Kachahalli villages) on 11th February 2026. The team expressed their satisfaction with the transformation achieved, acknowledging the significant improvements and overall impact of the intervention.



Fig. 7: NTU visit to Mallur Gram Panchayat

IEC Activities

A two-day training program (Fig. 8) was conducted in Mallur Panchayat on 10th and 11th April 2026 with the objective of creating awareness and strengthening the capacity of community members, particularly women, from Ankathatti, Kachahalli, and Mallur villages. The training program focused on the importance of safe drinking water and wastewater treatment systems, personal hygiene practices, and the use of water quality testing kits for basic water quality assessment. Participants were provided with water testing kits and received hands-on training on their usage. At the conclusion of the program, training certificates were distributed to the participants. Approximately 30 women attended the training program.



Fig. 8: Training Session on Water Quality Monitoring Using Field Test Kits

Community-level awareness programmes were conducted in Ankathatti, Kachahalli, and Mallur villages by Ms. Usha Shetty from Gramaantra Trust, with support from local volunteers. The programmes focused on safe drinking-water practices and explained the benefits of UF followed by UV disinfection for producing safe drinking water as compared to RO technology

Hygiene awareness sessions were also conducted for school and Anganwadi students by Mr. Natana Sabapathy from the AquaMAP team. The sessions emphasized the importance of personal and environmental hygiene in maintaining good health and preventing waterborne diseases (Fig. 9).

The progress of the drinking water treatment systems and associated O&M activities was reported to NTU Singapore on 25 June 2026. At present, the treatment units and WTPs are being maintained through regular O&M activities, with corrective interventions undertaken as required to ensure continued and reliable access to treated drinking water.



Fig. 9: Awareness program carried out by AquaMAP in Mallur Panchayat