

Best Practices layout water management in Bangalore

The below Best practices are for layout in Bangalore. They are especially relevant in the context where the water sourcing, supply and management is in the hands of the layout and there is no connection to the BWSSB. Principles of these best practices are applicable also in any group housing context of Bangalore.

Inventory of Sources

- Make an inventory of all sources of water being used.
- Try and understand the sustainability issues of the sources of water how long will they last ?
- Ask the question is the infrastructure designed to handle different sources and qualities of water and manage them ? For example is easy for the tankers to come and deliver water where it is required at the households or to the community storage.
- Understand the relative contributions of the various sources of water to the overall water demand.

Infrastructure maintenance and documentation

- Ensure both the water and sanitation infrastructure is documented for any future reference. Keep updating the documentation as infrastructure modifications, if any take place.
- Ensure all valves, pipes and pipe joints are not leaking. Is there a leak detection system ?
- Ensure all electrical equipment like motors, pumps etc are well maintained and are operating at high efficiency.
- Try and establish documentation for borewells are the depths of borewells, the depths at which the pump is hanging known? Are borewell logs available?
- Is there hydro geological data available for the region ? Can a hydrogeologist help establish this?
- Ensure your centralized water treatment system, if any, is designed is appropriate in capacity and for the input quality of water. Ensure there is no over treatment of water in terms of quality *or* in terms of volume.

Data, Metrics and pricing of water

- Ensure that all households are consumption metered. Maintain this data well and regularly.
- Ensure that all borewells are source metered for both electricity and water pumped out.
- Ensure any bulk water supply to the layout is also metered.
- Keep track of tankers bought at the community level and ensure the total volume of water imported through tankers is tracked.
- Keep track of all expenses towards water salaries to operating people, pumping charges, maintenance charges, waste water treatment charges etc.



- Calculate the true production cost of water based on the above and plan for investments in water sustainability (eg: rainwater harvesting and waste water reuse). Reflect these planned investments in the cost of water.
- Based on the production cost of water, design a tariff scheme that charges people on how much they consume and fosters frugal consumption of water. At the same time the tariff scheme should ensure the layout's water supply function should be financially sustainable.
- Do regular water balance exercises i.e. compare source meter readings with consumption meter readings this will help detect leaks and ensure water accounting.

Communication and Engagement

- Engage with the larger community of the layout and constantly communicate with them on water issues and advocate frugal use of water.
- Provide information on various water issues to the layout the situation of the city, issues of water quality, different treatment devices and when they need to be used and when not etc.
- Drive a campaign for household rainwater harvesting.
- Create layout level policies so that household level best practices (Refer best practices at a household level) are encouraged, fostered and when necessary imposed.

Rainwater harvesting at a community level

Plan for rainwater harvesting at a community level -

- This could be through recharge by integrating recharge structures in storm water drains
- Through rooftop capture of rainwater to store and use in public spaces like club houses.
- Design the community rainwater harvesting to move towards a zero discharge layout.
- Have signage where appropriate for the community harvesting structures so residents and visitors notice and observe the structures.
- Let the water bill / tariff design incentivize and foster rainwater harvesting at the household level.

Landscape and Catchment management

- Ensure good solid waste management practices and keep the storm drains clean.
- During construction of houses ensure debris do not block storm water drains.
- For areas such as parks and play spaces ensure there is no use of chemical fertilizers and pesticides.
- Drive an "edible landscape" concept avoid water intensive landscapes like lawns.



Borewell maintenance and management

- Try and get the borewell log sheet, soil strata, depth of borewell, depth of the pump and the static water level of the borewell.
- Ensure pump selection of the borewell is appropriate source the right expertise for this. An oversized pump is bad for the borewell.
- Signal actuated starting and stopping borewell pump will ensure no wasteful pumping.
- Conduct regular water quality tests for the borewell.
- Particularly keep an eye on TDS levels, micro-biological contamination, nitrate levels. Keep the borewell free from contamination by ensuring no water logging near the borewell and no sewage water leakage into it.
- Plan and invest in a good ground water recharge system for the borewells. Ensure the ground water recharge system does not contaminate the borewell aquifer.
- When there are multiple borewells, collect all source meter readings and understand relative contribution of different borewells to the total consumption in the layout.
- Maintain clear documentation on the pumping and resting schedules of the borewell.
- Consider practices of borewell camera inspection and borewell hydrofracturing to create both documentation and keep a borewell as live asset for a long time.
- Get a hydrogeologist to conduct yield tests on a borewell and try and adopt of regime of doing this regularly.

Waste Water Treatment

- Conduct regular tests of input water quality and output water quality and check if the waste water treatment system is indeed functioning.
- If you have outsourced your STP (Sewage Treatment Plant) operations ensure your contract has key performance indicators tied to the output water quality.
- Conduct independent testing of treated waste water and do not leave it in the hands of the outsourced operator.
- Plan for improvements in the waste water treatment system and ensure it is designed to take the load as the layout occupancy grows.
- Plan for reuse of waste water and necessary investments for the same.
- Returning water to nature at the quality at which it was extracted is true ecological stewardship plan for this and look for solutions for the same. If you can achieve this, this water can be recharged back to the ground !!!

HR and training

And finally to ensure these best practices are not just adopted but sustained, you need a good team to implement it.

- Think of the critical issues in your estate management team
- Provide training informal if not formal.
- Document operations and procedures in a very easily understandable way may be even with photos and pictures for those who cannot read.
- Ensure when people in the team change there is a "transition training"