



Mahadevapura Lake

Bengaluru, Karnataka

Reimagining lake rejuvenation with natural solutions



Background

Mahadevapura Lake is a 26 acre lake located along the Outer Ring Road, adjacent to The Bagmane Tech Park, Bangalore. In 2016, an effort to rejuvenate the lake, **The Bruhat Bengaluru Mahanagara Palike (BBMP)** built necessary hydraulic structures to divert wastewater entering to the lake.

To take these efforts further, **United Way of Bangalore** brought together tech firms, to fund a wastewater treatment plant for the lake, as part of their CSR. They selected CDD Society to design and implement a solution that would treat wastewater and replenish the lake by mitigating further pollution.

Objectives

Treat 1MLD of wastewater inflow before discharge into the lake

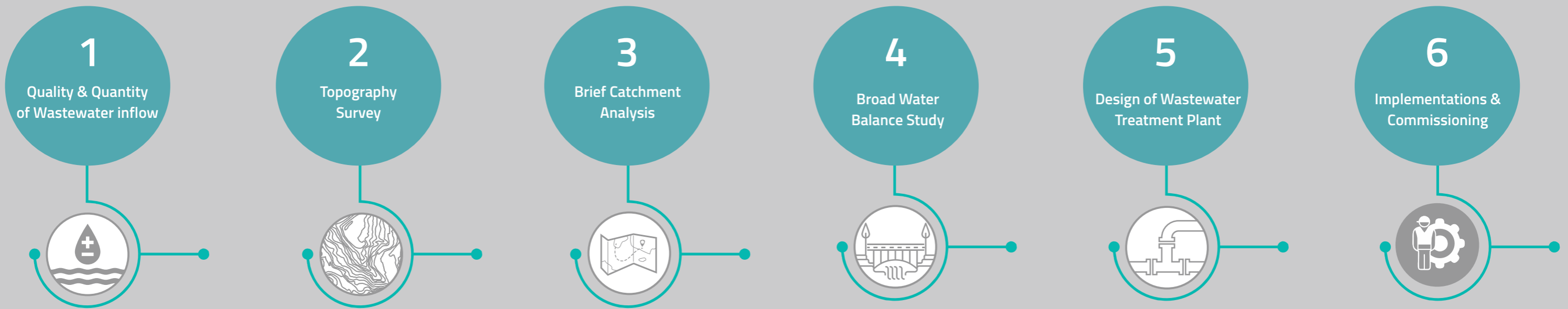
Leverage lake for water storage

Aid groundwater recharge

Enhance micro climate benefits in the area

Improve urban aesthetics

The Process



Key Interventions

Recharge and Wastewater Treatment Interventions

- ✓ Construction of an 85 m long earthen drain for channelizing water from inlet-3 into the STP
- ✓ A 1 MLD STP of DEWATS approach
- ✓ Gabions for distribution of water flow
- ✓ Floating wetlands

Biodiversity Enhancement Interventions

- ✓ Plantation of native varieties

Allied Interventions

- ✓ Creation of walking pathway
- ✓ Placement of seating structures and dustbins or disposal of solid waste

Challenges

- ✓ Working with a live drain i.e. one with continuous wastewater inflow, was difficult. This was overcome by creating a temporary diversion drain.
- ✓ Discovery of broken sewage line broken at the inlet of the lake, during implementation which needed to be retrofitted into the design.
- ✓ Heavy showers, from the early onset of monsoons, resulted in breach the earthen structures, which then needed to be rebuilt.
- ✓ Great variation in quality and quantity of influent wastewater through the year.
- ✓ Setting up such a large treatment plant (1 MLD) for an open field/uncontrolled area.

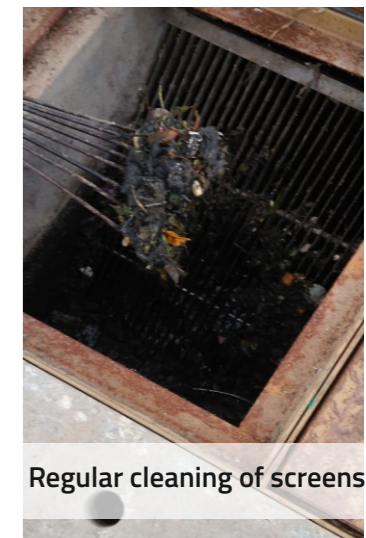
Highlights

- ✓ 1MLD of wastewater treated @ Rs.1 per KLD (Opex)
- ✓ Aided by Nature-based Solutions
- ✓ Robust intake arrangements to screen and divert wastewater from an open channel
- ✓ Demonstrated successful collaboration between CSR, Government and Citizens
- ✓ Simple system that can be managed by the community

Operation & Maintenance

We have taken up the O&M of the STP until the mid of 2021. Undertaking O&M of the plant enabled recalibration and overcoming of challenges.

The O&M of the remaining area of the lake has been taken up by United Way of Bengaluru and is part of a separate contract.



Learnings

- ✓ CSR financing allowed for dynamic implementation of the project in a Design-Build model to accommodate unforeseen site conditions
- ✓ CSR financing also enabled execution of a higher quality project - in terms of implementation, timeliness and cost overheads.
- ✓ Sustainability of operations and maintenance has been taken care of by planning for it in the design stage itself.
- ✓ We decommissioned the existing wetlands and first introduced gabions to improve the quality of the treated water. Later, a vertical filter was constructed, for further improvement. This served as effective tertiary treatment - low cost and nature-based.



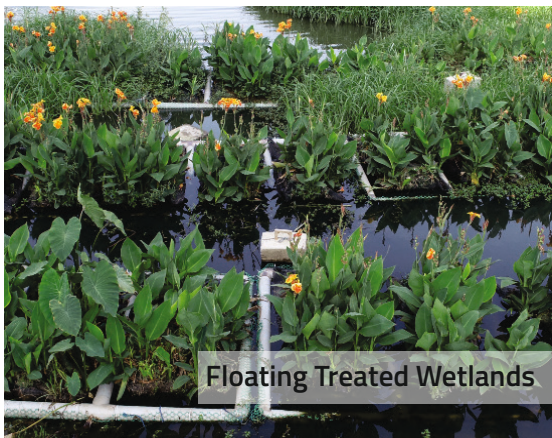
Sedimentation tank under construction



Construction of Secondary module



Upstream diversion structures including silt trap, screen and gates



Floating Treated Wetlands



View of the full lake



Intake & diversion structure



The completed plant



Vertical Filter setup



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