

Decentralised Waste Water Treatment

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Wastewater treatment at Rashtrapati Ashianaannexe, Dehradun



Last visited: February 2019 by Chhavi Sharda

Location: Dehradun, Uttarakhand

Scale: Residential Building

Implementing organisation: Prashak Techno Enterprises Ltd.

Designed Capacity: 6 KLD

Area: 60sq m

Operational since: July 2017

Capital cost: Estimated Rs. 28 lakhs

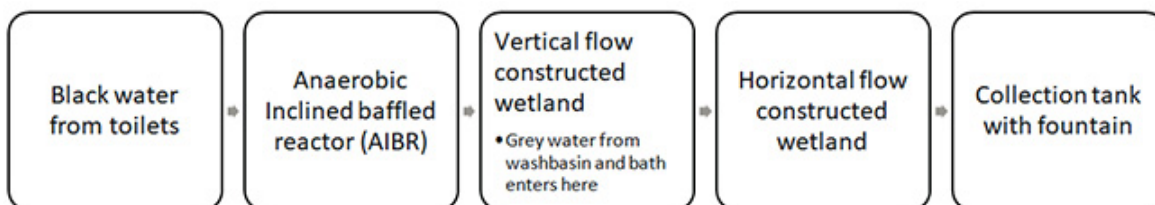
O&M: Rs. 1,80,000/ annum (estimate includes labor and energy)

Project background

There is an official president's retreat situated in Dehradun. Rashtrapatiashianaannexe is situated at the back of the president's house, the building houses 12rooms meant to cater to RashtrapatiBhawan's staff, guest and body guards and their family when they are visiting Utrkhand. The building and the associated sanitation system is innovation and designed by AIT, Thailand and Prashak Techno Enterprises Ltd.The building usesconstruction material which makes it disaster resilient and the associated sanitation system is a combination of an anaerobic treatment followed by constructed wetlands. This is first of its kind system that is implemented in India.

Treatment technology

The treatment facility at Rashtrapatiashianaannexe gets intermittent wastewater due to the pattern of the building's occupancy. The wastewater from the toilets of the building first enters an AIBR (Anaerobic Inclined Baffled Reactor). The AIBR doesn't require any energy for its operations and consists of baffles that are inclined to an angle of 60 degrees. The particular angle of the baffles enable better settlement of the solids within this system. The three chambered AIBR is designed to have 1m effective water-depth. The effluent from the AIBR then enters a vertical flow constructed wetland. The grey water from the washbasins and bath directly enters this vertical flow wetland system by-passing the AIBR. The treated wastewater from the vertical wetland system is collected at the bottom to be further treated through a horizontal flow constructed wetland system. Both the wetland systems have plantation of selected species of plants (such as Phragmitesaustralis, Typha latifolia, Scirpus lacustris and Iris pseudacorus) that supports treatment and uptake of nitrates, phosphates from the wastewater. The treated water finally gets to a collection tank that is mounted with a fountain which also looks good aesthetically. The fountain adds to the aeration of the treated water and maintains circulation. Overall, the treatment system is designed to give a shape of the lotus flower. The treated water is reused for horticulture.



Performance

The treated water meets the desired quality standards and looks as clear as fresh water and also doesn't have any odour.



Left – Treated water; Right – Fresh drinking water

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