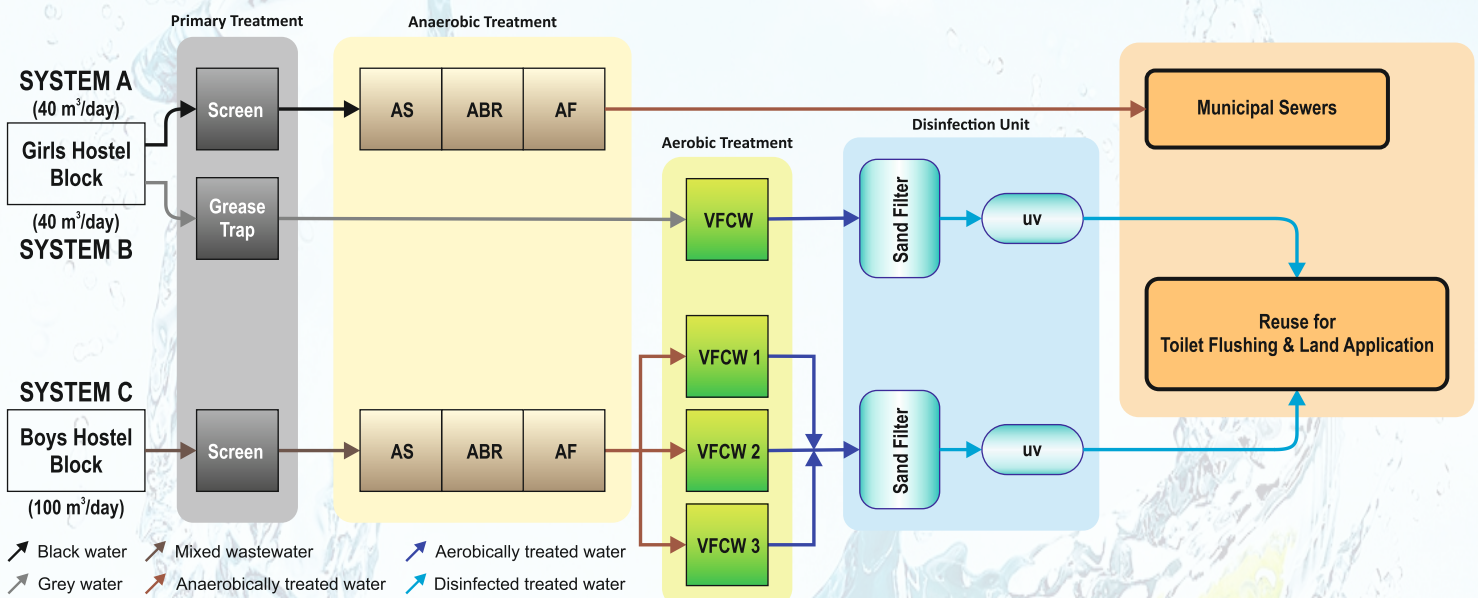


Natural Water Systems and treatment Technologies To cope with water shortages in urbanised areas in India

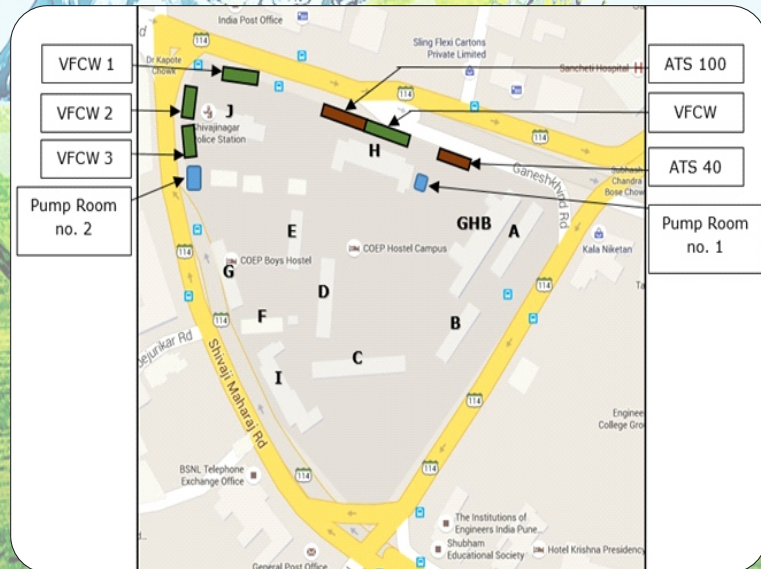
College of Engineering, Pune (Hostel campus)

About Project site

College of Engineering, Pune (CoEP) is one of the oldest engineering institutes in India and accommodates up to 2000 students and staff in its hostel campus. The institute plans to expand the campus vertically by having multi storey buildings. One of the buildings in the master plan have been constructed. Due to this there was need of an appropriate management of wastewater. NaWaTech is a project under European Commission's 7th Framework Program and is co funded by Department of Science and Technology, Government of India. CoEP hostel campus is one of the sites under NawaTech. There are 3 systems in the campus which treat three different streams (black, grey and sewage) of wastewater. Capacity = 180m³/Day. The treated and disinfected water is used for toilet flushing (75 m³/Day) and land application (30 m³/Day).



Vertical Flow Constructed Wetland (System B)



Layout of Treatment System: COEP hostel campus

Anaerobic Settler (AS)

Process: Physical.

Lowers the velocity of the wastewater, assisting the sedimentation process.

Hydraulic retention time: up to 2 hours.

Efficiency: BOD325%|COD 25%|

TSS 40-50%

Anaerobic Filter (AF)

Process: Biological.

Filter media is provided for attached growth of bacteria making it active.

Hydraulic retention time: up to 12-20 hours.

Efficiency: BOD340-60%|COD 60-70%|

TSS 30-50%

Anaerobic Baffle Reactor (ABR)

Process: Physical and biological.

Series of baffle walls assists sedimentation and creates activated sludge blanket, through which the wastewater passes.

Hydraulic retention time: up to 14-24 hours.

Efficiency: BOD340-60%|COD 40-60% |

TSS 40-60%

Vertical Flow Constructed Wetlands (VFCW)

Process: Biological, chemical and physical.

Planted (canna indica, typhacypus and phragmites) vertical flow reed bed provides biological conversion, physical filtration and chemical adsorption.

Hydraulic retention time: up to 24-36 hours.

Efficiency: BOD375-90%|COD 70-90 %|

TSS 80- 90%

Results of Analysis (Jan 2017)

Sr. No.	Parameter	Unit	System A		System B		System C	
			Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
1.	pH	—	6.6	6.7	7.2	7.7	7.1	7.4
2.	BOD ₃	mg/L	322	78	49	2	285	3
3.	COD	mg/L	504	131	148	8	480	11
4.	TSS	mg/L	298	98	53	< 5	214	< 5
5.	DO	mg/L	0	0	2	7	0	6
6.	Ammonia as NH ₄	mg/L	66	51	10	1	70	4
7.	TKN as N	mg/L	69	54	19	1	63	5
8.	Oil and Grease	mg/L	27	12	9	< 5	13	< 5
9.	E. coli	Org/ml	19800	12400	5800	Not Detected	4600	Not Detected



Vertical Flow Constructed Wetland (System C)



Anaerobic Treatment System (System A)



NaWaTech

More information on: www.nawatech.net

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