SUSTAINABLE DEVELOPMENT GOALS

6. CLEAN WATER AND SANITATION

6.3 Water usage and care

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6.3 Water usage and care

6.3.1 Waste Water Treatment

Process Involved in the Institution:

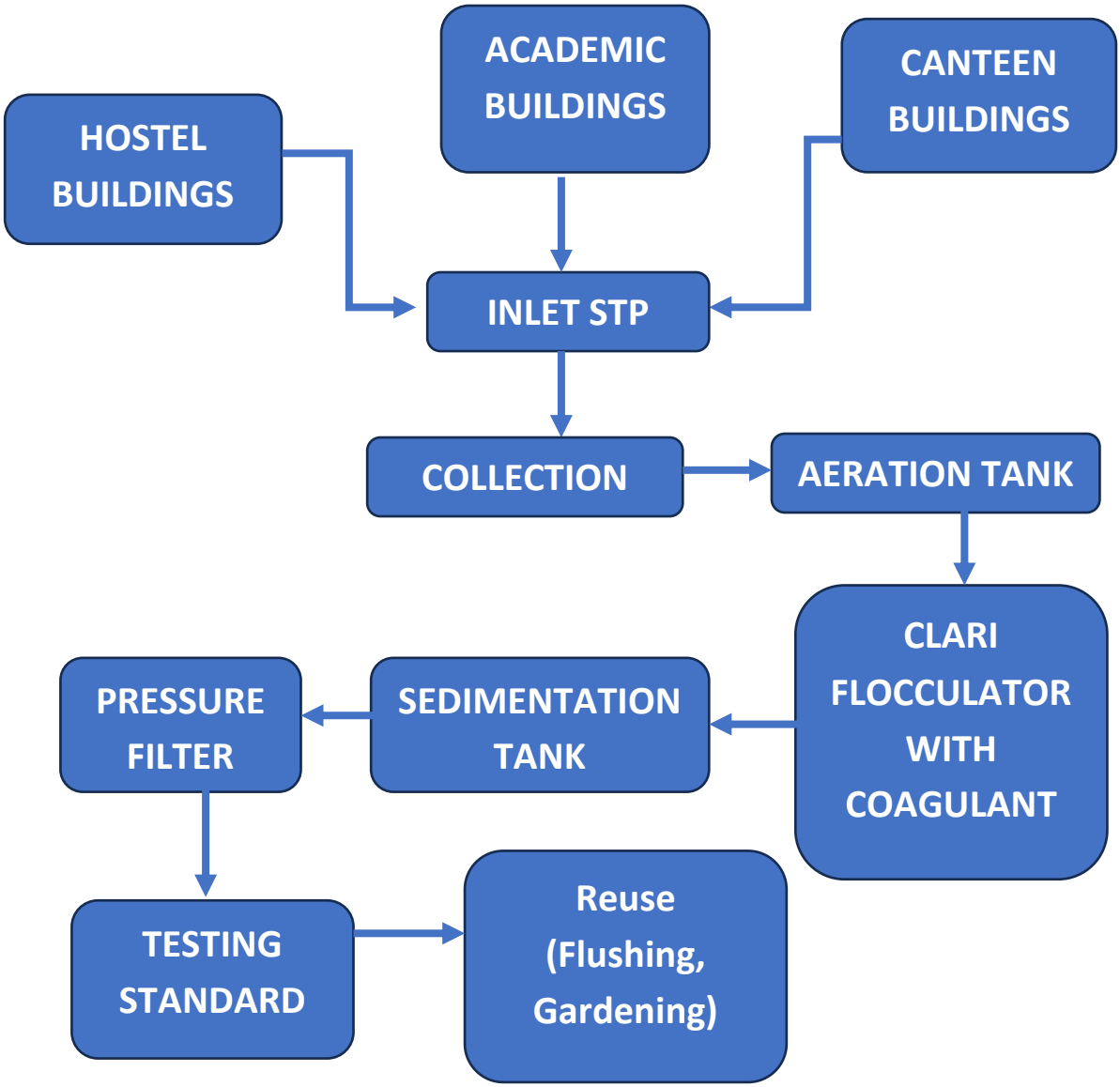
The Chennai Institute of Technology is mindful of the need to conserve society and water for the safety of the environment. The plant comprises 1 unit of capacity 1,25000litres and 2 units of 75,000litres. Initially, the excess water is stored in the storage tank and aired in the aeration tank. After the aeration process, the coagulant is flocculated and sent to the sedimentation tank. And then the water is filtered by pressure and sent to the distribution tank. Water is used for gardening and irrigation of plants.

The Institution is dedicated to sustainability and environmental conservation, and one of the key initiatives in this regard is our Water Recycling Program. This program is designed to reduce water consumption, minimize waste, and promote the efficient use of water resources across our campus.

Several steps are involved in wastewater treatment to eliminate impurities and enhance water quality. To stabilize wastewater flow, screening, grit removal, and flow equalization are used in preliminary treatment to remove big solids and debris.

Through sedimentation and the removal of floating material, first treatment eliminates a sizable amount of solids and organic matter; however, dissolved particles are not addressed. Secondary treatment reduces BOD by 85–95% by using biological processes like as oxidation ponds, trickling filters, and the activated sludge process to break down organic materials.

Through filtration, chemical coagulation, nutrient removal (phosphorus and nitrogen), and disinfection with chlorine, UV radiation, or ozone to get rid of any lingering pathogens, tertiary (advanced) treatment further enhances the quality of the water.



Flow Chart - Process of Collection, Treatment and Reuse

Pressure Filter Units

Aerators

Filter Feed , Clarrifier and Sludge drying Beds

Water Re-use Measurement:

Sewage treatment tank capacity	: 275,000 litres/day
Volume of water consumption	: 129,261,000 litres/year;
Per day water inlet to STP plant	: 271,748 litres;

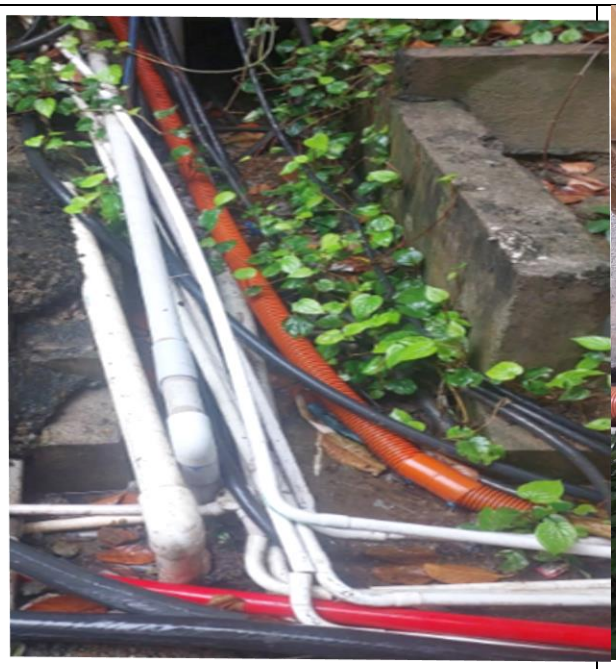
6.3.2 Preventing Water System Pollution

Preventive Actions Involved:

The Institute's plumbing system, which collects water from the respective bore-well and then transports it to the treatment unit and supply, has been carefully designed and put into place. The water is conveyed safely, and the pipes are installed at an appropriate gradient. It is also made sure there were no leaks in the water pipelines by regularly inspecting them. If there is an issue with the water pipes breaking due to an accident, they will also need to be replaced every once monitored. Similarly, different sewer pipelines carry the wastewater that is collected from the institution's numerous locations. There are enough manholes at many intersections to do pipeline inspections. The function of the valves installed in the sewer pipelines is also examined, and necessary maintenance is performed. Additionally, the treated wastewater is used for gardening and flushing while being carried securely. Water and sewer lines can be easily distinguished from one another thanks to distinct markings on the plumbing lines. By taking these steps, the Institute has been able to control the wastewater produced on the property and keep it out of the water pipelines and other water sources.

In-house Safety for RO System

RO System Unit Covered By

	Polycarbonate Housing
	
System provided with Adequate clearance	**System provided with Ease maintenance**
Safety Water System	
	
Different Colors of Pipes for Easy Maintenance	

Water sample Tested for Standard(pH)

Chennai Institute of Technology prioritizes environmental sustainability by actively monitoring water quality to control pollution within our campus. To achieve this, we utilize advanced equipment such as a digital auto-ranging conductivity meter with a magnetic stirrer and a digital pH meter with a magnetic stirrer. The digital pH meter provides precise measurements of the water's acidity or alkalinity, which is critical in assessing the overall water quality. By regularly checking these parameters, we can swiftly identify any anomalies or signs of pollution, allowing us to take preventive measures. This proactive approach helps in maintaining a healthy environment and mitigating water pollution on our campus.

Water sample tested in Laboratory

6.3.3 Free Drinking Water

The Chennai Institute of Technology is equipped with 42 CONWAY Purifiers installed across various locations on campus, providing free purified drinking water. These purifiers are strategically placed on all floors of the buildings, in the hostels, reception area, main gate, entrance, waiting hall, auditorium, cafeteria, mess hall, and other common areas. They serve a wide range of users, including students, faculty, staff, parents, and visitors, ensuring access to clean, safe drinking water throughout the institute. Some sample location access to free drinking water is attached here for evidence.

Drinking water in Ground Floor(Academic Building)

Research Building

First Floor-Academic Building

Second Floor-Academic Building

	
Waiting Hall -Gate 2	**Main Canteen**

6.3.4 Water-conscious building standards

The institution's implementation of water-efficient appliances plays a crucial role in promoting sustainability and conserving water resources. Water is continuously provided for drinking and other uses throughout the clock. This stops residents from storing water improperly in preparation for a shortage. To cut down on evaporation and water use during building construction, we use self-curing construction processes. Every building on campus and in the residence, halls has rainwater gathering capabilities. For instance, the use of washing machines designed to optimize water usage significantly reduces the amount of water needed per load compared to traditional models, which can waste substantial amounts. Similarly, dishwashers equipped with energy-efficient settings not only save water but also ensure thorough cleaning, further enhancing water conservation efforts. The installation of sensor-based water coolers minimizes water wastage by providing water only when needed, while low-flow taps reduce water flow rates without compromising performance, effectively cutting down overall water consumption in restrooms and kitchens. Additionally, dual-flush toilet tanks offer users the option to select between a lower volume flush for liquid waste and a higher volume for solid waste, thus optimizing water use for different needs. The Chennai Institute of Technology has unveiled a rainwater harvesting system with a dedication to supporting the city and the world. Rainwater can be obtained from the roofs of residential buildings and inns, and the water collected is diverted to a deep pit.

Appliance	Total number water Efficient appliances
Washing Machine	32
Dishwasher	3
Drinking water taps	252
Hand Washing Water tap	218
Toilet flush	376

	
Washing Machines (Laundry Unit	**Dish Washer-Mess**
	
Drinking water taps	**Gardening with Reused water**

Sensor Based Water Cooler

Dual-flush toilet tanks

Rainwater harvesting

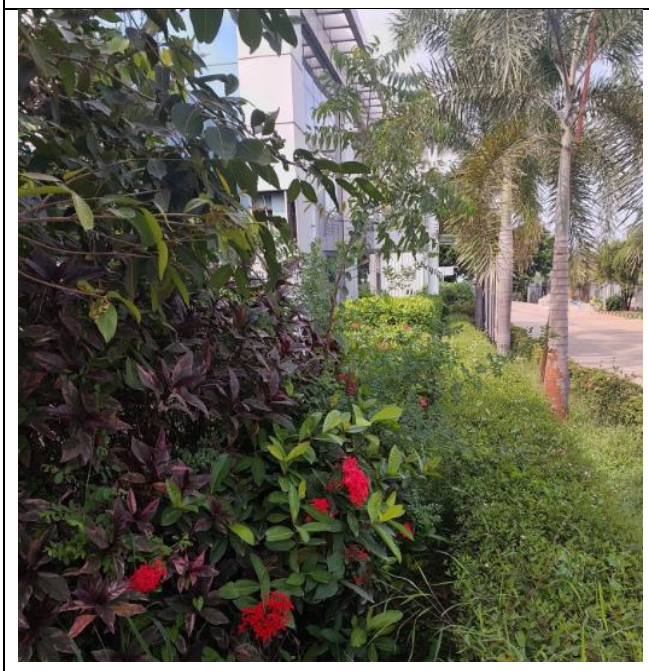
6.3.5 Water-conscious planting

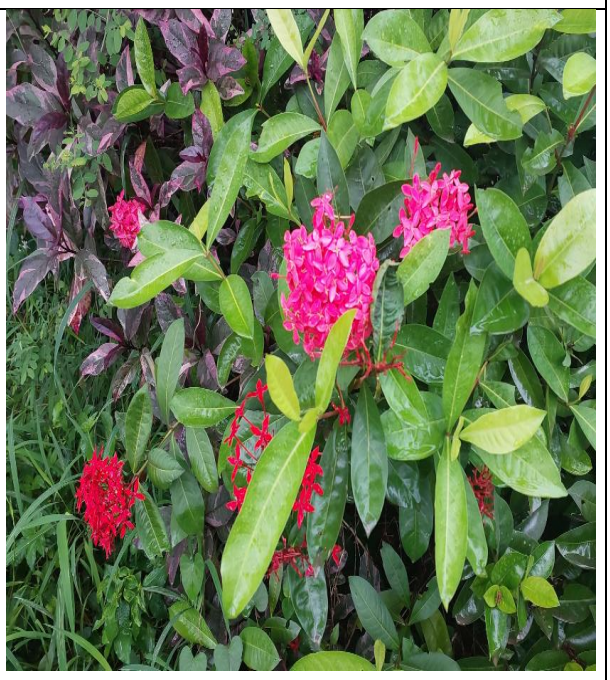
Campus has been provided with the nature of water-conscious planting like drought Tolerant plants for effective adaption to the to the local climate and soil conditions, making them more resistant to drought and requiring less water once established. Additionally, plants like Madagascar Periwinkle, Ruellia tuberosa and Adenium obesum which store water in their leaves or stems, thrive in dry, sunny conditions and are known for their drought resistance.

Grouping plants with similar water needs together. Plants that need frequent watering should be placed near each other, while drought-tolerant plants can be placed in separate zones, reducing overall water usage.

Watering during the cooler parts of the day (early morning or late evening) reduces evaporation losses. Regularly we check plants to make sure they're receiving the right amount of water. Overwatering can be as harmful.

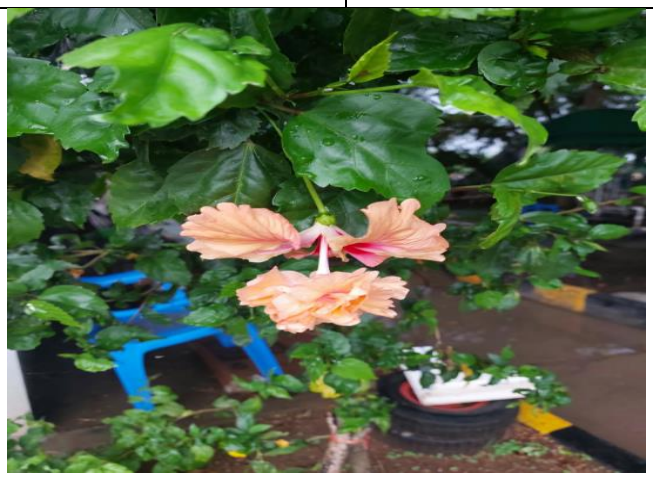
Drought-Tolerant plants





Red ixora at research campus entrance

	
Galphimia Gracilis at opposite to faculty dining hall	**Clerodendrum Macrosiphon near laundry office**



Stepped Hibiscus along the way to main building

Madagascar periwinkle – way to boys hostel

Canna at dining seats near mess hall 2

Creeping-oxeye near fountain

Portulaca grandiflora along the way through cafeteria

Bauhinia purpurea near volley ball court

Crape jasmine at security gate 3

Group plants

From gate 3 to research building along CoE building

	
From college gate 1 to fountain	**From fountain to OAT**
	
Play ground	**Offset area – fountain back side**

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