Water Reuse Measurement at SRM University - AP

SRM University–AP measures the water it reuses. Wastewater from the campus is treated in its sewage treatment plants (STPs), and the volume of treated water is recorded every month and split by where it is used. In calendar year 2025, 143,535 kilolitres (KL) of treated water were recorded, about 11,961 KL a month and 393 KL a day. This is about 33 per cent of the 431,579 KL of total water consumption recorded for the year. The treated water is measured in three uses: toilet flushing (75 per cent), cooling (20 per cent) and gardening (5 per cent).

1. Where the Reused Water Comes From

The university operates four sewage treatment plants across the campus to treat domestic wastewater. The treated water is not discharged. It is reused on campus for gardening and toilet flushing, so that it replaces water that would otherwise be taken from the supply. The treated water is sent to gardens, hostel toilets and academic block toilets through a hydro-pneumatic system.

Sewage treatment plant	Design capacity (KLD)
STP-1	253
STP-2	550
Bio STP	200
Bio STP-2	940
Combined design capacity	**1,943**

STP-1 receives hand washing and bathing water. It passes through a bar screen chamber and a fine screen chamber into a 103 KL collection tank, then through a 25 KL anoxic tank, a 30 KL primary settling tank, an MBBR (moving bed biofilm reactor), a 37 KL tube settler and a 38 KL clarifier tank. The water then goes through filters to a 110 KL final tank. From the final tank, a hydro-pneumatic system supplies water to the gardens, to hostel toilet flushing and to academic block toilet flushing.

STP-2 also receives hand washing and bathing water through bar and fine screen chambers into a 269 KL collection tank. Treatment takes place in two SBR (sequencing batch reactor) tanks of 225 KL each, followed by a 160 KL decant tank, two 7.5 HP pumps and filters, to a 150 KL final tank. The treated water is supplied through a hydro-pneumatic system to the gardens, to Ganga hostel toilet flushing and to academic block toilet flushing.

SEWAGE TREATMENT PLANT- 01

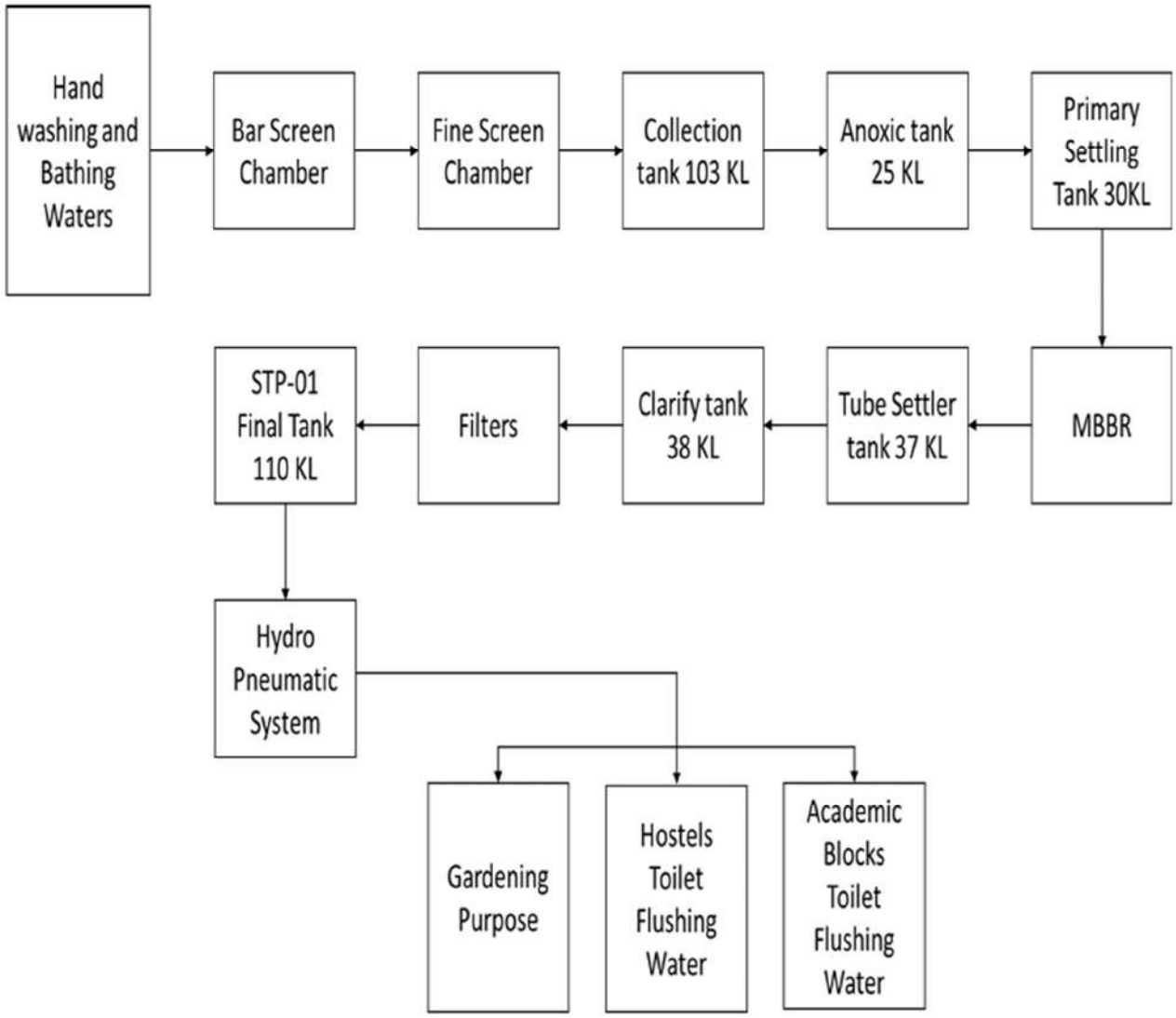


Figure 1. Process flow of Sewage Treatment Plant 01 and the uses of its treated water

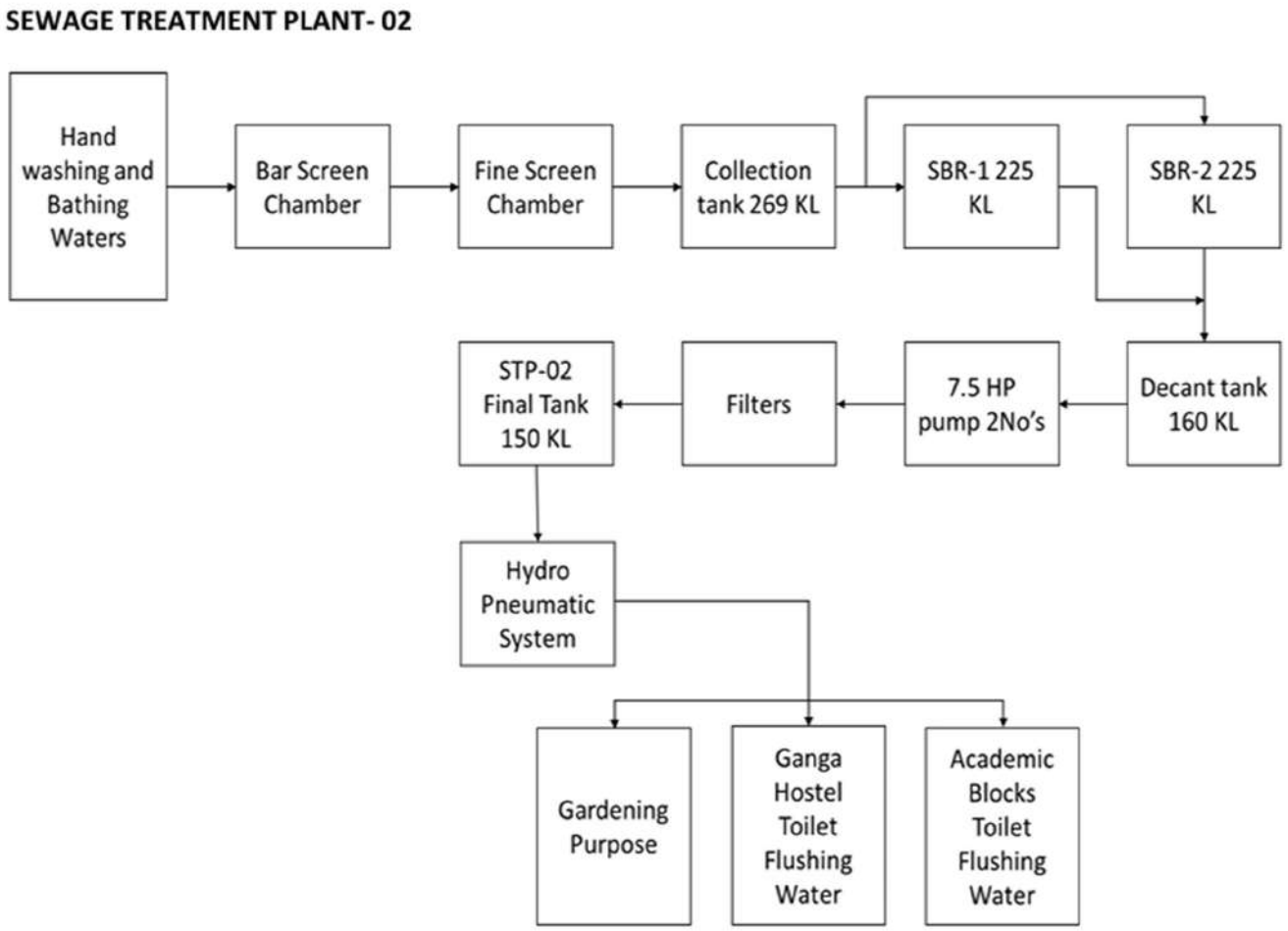


Figure 2. Process flow of Sewage Treatment Plant 02 and the uses of its treated water



Figure 3. Bio STP (200 KLD) building at the campus



Figure 4. Inside the Bio STP, showing the modular biological pipe racks



Figure 5. Softener, carbon and sand filters used for tertiary treatment at the STP

2. Measuring the Reused Water

The university keeps a month-wise record of treated water for 2025, with the volume split by use. In total, 143,535 KL of treated water was recorded.

Use of treated water	Volume (KL)	Share (%)
Toilet flushing	107,651	75
Cooling	28,707	20
Gardening	7,177	5
Total	**143,535**	**100**

The monthly volume of treated water varied through the year. It was 11,151 KL in January, 11,884 KL in February and 12,908 KL in March, and rose to 16,170 KL in April and 14,611 KL in May. It fell to 6,736 KL in June and 3,883 KL in July, the lowest month, and recovered to 13,330 KL in August. September was the highest month, at 22,504 KL, followed by 10,660 KL in October, 8,080 KL in November and 11,618 KL in December. About 73,460 KL was treated in the first half of the year and 70,075 KL in the second half.

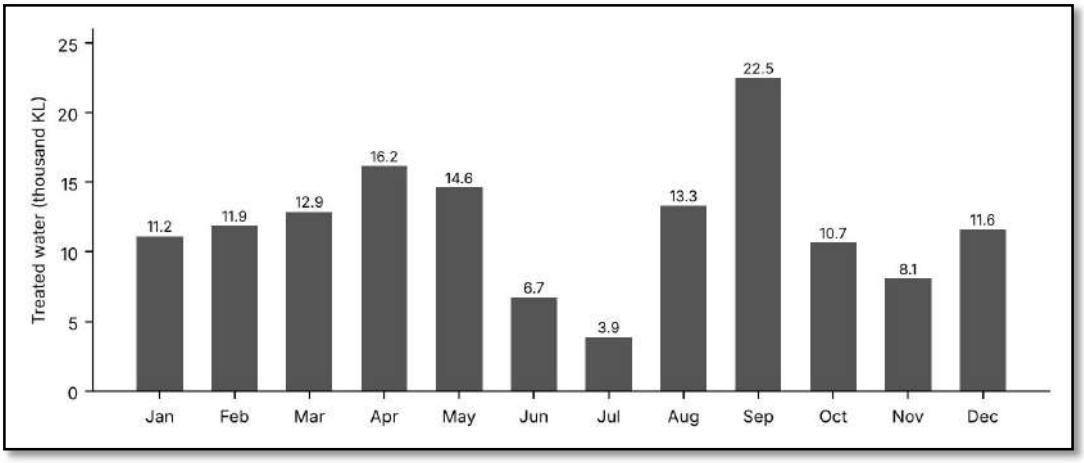


Figure 6. Treated water reused each month in 2025 (thousand KL)

3. Uses of the Reused Water

Toilet flushing

Toilet flushing is the largest use, taking 107,651 KL (75 per cent) of the treated water in 2025. The treated water reaches the hostel toilets and the academic block toilets through the hydro-pneumatic system, and the toilets are fitted with dual-flush systems that use 4 litres for a half flush and 8 litres for a full flush.



Figure 7. Dual-flush plate with separate half and full flush buttons

Cooling

Cooling takes 28,707 KL (20 per cent) of the treated water. Using treated water for cooling means the supply water that would otherwise feed the cooling system is saved for other uses.

Gardening

Gardening takes 7,177 KL (5 per cent) of the treated water. The landscape is watered by drip irrigation in the beds and around young trees, and by sprinklers in the lawns, so the treated water is applied at the plant or spread evenly over a limited grass area.



Figure 8. Sprinklers watering the lawn beside the campus walkway



Figure 9. Drip irrigation tubing laid along a shrub bed beside the walkway



Figure 10. Irrigation outlet stake at the base of a shrub

4. Share of Total Water Use

Compared with the 431,579 KL of total water consumption recorded for the year, the 143,535 KL of treated water is about 33 per cent, so roughly one litre in every three used on campus was reused water. The share was highest in September, at 52 per cent of that month's consumption, and in January and May, at about 44 per cent each. It was 39 per cent in April, 34 per cent in August, 33 per cent in March and 32 per cent in February. It was lower in the second half of the year, at 27 per cent in December, about 23 per cent in October and November, and 16 per cent in July.

Toilet flushing and cooling take 95 per cent of the treated water, so most of the reuse replaces water that does not need to be of drinking quality. Every kilolitre of treated water that goes to a flush tank or a cooling tower is a kilolitre that does not have to be drawn from the water supply.

WATER REUSE MEASUREMENT

S. No.	Month	Treated Water (in KL)	Flush (in KL)	Garden (in KL)	Cooling (in KL)
1	Jan-25	11,151	8,363.25	557.55	2,230.2
2	Feb-25	11,884	8,913	594.2	2,376.8
3	Mar-25	12,908	9,681	645.4	2,581.6
4	Apr-25	16,170	12,127.5	808.5	3,234
5	May-25	14,611	10,958.25	730.55	2,922.2
6	Jun-25	6,736	5,052	336.8	1,347.2
7	Jul-25	3,883	2,912.25	194.15	776.6
8	Aug-25	13,330	9,997.5	666.5	2,666
9	Sep-25	22,504	16,878	1,125.2	4,500.8
10	Oct-25	10,660	7,995	533	2,132
11	Nov-25	8,080	6,060	404	1,616
12	Dec-25	11,618	8,713.5	580.9	2,323.6
Total (in KL)		143,535	107,651.25	7,176.75	28,707