

4. WATER AUDIT

4.1. Facility description

The water audit study involved carrying out various observations and analysis, to realistically assess usage of water and potential for water conservation.

Borewell is the only source of water available, for facilitating the water supply requirement of the entire campus. Two number of borewells are available. The location and name of the borewells are given in table 4-1.

S. No.	Location	Name
1	Near Entrance	Borewell 1
2	Near STP area	Borewell 2

Table 4-1: Details of Borewell

The image of borewell is shown in figure 4-1.



Figure 4-1: Borewell

The water from borewell supply is received in sumps. The details of sump location, name, capacity and source of water is given in table 4-2.

S. No.	Location	Capacity, kL	Source of water
1	Beside Hostel	100	Borwell
2	Beside Hostel	100	Borewell

Table 4-2: Details of sumps



Figure 4-2: Sumps in Campus

From the sumps the water is pumped to overhead tanks using electrical motor pump.

The details of list of tanks installed in various blocks with capacity, type of tank and installed location are given in table 4.3.

S. No.	Location	Tank
2	College block	PVC – OHT – 5 kL – 1 No.
3	Girls hostel	PVC – OHT – 5 kL – 1 No.
4	Girls hostel	PVC – OHT – 5 kL – 1 No.
5	Girls hostel	PVC – OHT – 3 kL – 1 No.
6	Boys hostel	PVC – OHT – 5 kL – 1 No.
7	Boys hostel	PVC – OHT – 3 kL – 2 No.

Table 4-3: Details of tanks

The image of the overhead tanks is shown in figure 4-3.



Figure 4-3: PVC Overhead tanks installed at the terrace

Water level controller is installed to control water pumping from sump to overhead tanks. The image of the water level controller is shown in figure 4-4.



Figure 4-4: Water level controller for Basement to overhead tank water pumping

Based on the source, usage, type and recycling, water is classified as following types in the college campus that include:

- Raw Water
- Drinking Water
- Hot Water
- Sewage Water

Details of the various types of water usages are discussed in detail, in the following sections.

4.1.1. Raw Water System

The raw water is consumed in the following areas:

- Kitchen
- Hostel
- Washrooms
- Cleaning
- Laboratories
- Garden

4.1.2. Drinking Water System

The raw water from the over-head tank in terrace is received to the water purifiers installed in each floor. From these water purifier, the drinking water is supplied.

Water purifier and dispensers are available in all floors to provide drinking water. The drinking water dispenser available in college for drinking purposes is shown in figure 4-5.



Figure 4-5: Drinking water dispenser available in floors

4.1.3. Hot Water System

The hot water is mainly consumed in hostels for bathing purposes. The hot water requirement for bathing is met by solar water heater system and heat pump installed in the hostel terrace.

The pictures of heat pump and solar water heater installed in the hostel are given in figure 4-6.



Figure 4-6: Heat pump and solar water heater installed in the college

4.2. Institutional Initiatives for Water Conservation

4.2.1. Installation of water flow meters

Water is pumped from the borewells and distributed through overhead tanks available in terrace. With the presence of flow meters, it is possible to measure quantity of water used per day. Water flow meter installed in borewell to quantify overall water consumption. The picture of water flow meter installed in the college is shown in figure 4.7.



Figure 4-7: Water flow meter

4.2.2. Sewage Treatment Plant

The procedure for removing contaminants from the wastewater basically from the household sewage is called sewage treatment. It has to undergo the chemical, physical and biological procedure to remove these contaminants and give out an environmentally safe treated effluent. A semi-solid slurry called the sewage sludge is the by-product of the sewage treatment. This sludge is further processed before it is suitable for land application.

The institution has installed STP. The STP is shown in figure 4-8.



Figure 4-8: STP Area

4.2.3. Ground Water Recharge

Rainwater harvesting is the simple process or technology used to conserve rainwater by collecting, conveying, purifying, storing and utilizing. The process of recharging the ground water by utilizing rain water harvested, is practiced by ground water recharge pits.

The picture of ground water recharge pit is shown in figure 4-9.



Figure 4-9: Ground water recharge pit

4.2.4. Low flow taps

Low flow taps perform better with less water usage when compared to regular taps. These taps compensate the water pressure and give defined water flow rate, therefore less water wastage & more savings on water bills. The advantages of low flow taps are as follows:

- Saves water with optimized flow rate
- Reduced water bill
- Different flow patterns (shower/Foam)
- Annual Savings up-to 10,000 litres/Year/tap

Features of Aerator for taps:

- The aerator is a small attachment that either fits onto the end of the tap or can be inserted inside of the existing spout. These water saving devices will control the amount of water that flows through the tap without affecting the water pressure as they mix the water with air which will save water and money.
- The aerators will separate a single flow of water into many tiny streams which introduces the air in to the water flow. Also, as there is less space for the water to flow through, the water flow is reduced, resulting in water savings.
- As the water pressure is maintained, most people don't notice a difference in the amount of water coming out of an aerated faucet yet benefit from the water efficiency
- Tap aerators are of most use to those with older taps which run on average around 15 litres of water per minute. Adding an aerator to an older tap can reduce this to as little as 6 litres of water per minute.
- The biggest water saving benefit is achieved in the bathroom / hand wash / kitchen sinks where we are often turning the taps on and off to wash our hands and for other uses.

The picture of push type tap used in the college is shown in figure 4-10.



Figure 4-10: Sample photo of push type tap in the wash rooms

4.2.5. Regular maintenance of water distribution system

In order to create awareness regarding water conservation, sign boards / posters indicating save water, conserve water were made available at appropriate locations like handwash area, drinking water tap points.

The sample bill for plumbing material purchase bill is shown in figure 4-11.

Tax Invoice (ORIGINAL FOR RECEIPT)

Nandi Marketing Corporation [BILLING] 21-22 #10, Dispensary Road, (N.C. Road) Bangalore-560001 Contact No:080-25582533/9886925929/9448135009 GSTIN/UIN: 29ABBPV6566J1ZV State Name : Karnataka, Code : 29 E-Mail : nandi_mktcorp@rediffmail.com		Invoice No. 17443/22-23 Dated 13-Jul-2022 Delivery Note Mode/Terms of Payment CREDIT Supplier's Ref. Other Reference(s)	
Buyer NVT Quality Educational Turst CAP1, EPIP, Whitefield, Near ITPL, Bangalore-560066 State Name : Karnataka, Code : 29		Buyer's Order No. PO-2022-070036 Dated 8-Jul-2022 Dispatch Document No. Delivery Note Date Despatched through Destination Terms of Delivery Delivery @ Sy. No. 88, Chembanahalli Near Dommasandra Circle, Bangalore-562126 Mr. Bhaskar-9591124747	

Sl No	Description of Goods	HSN/SAC	Quantity	Rate	per	Disc. %	Amount
1	F8060401 BOTTLE TRAP 300 MM(CM104B)	7418	5 nos	1,119.00	nos		5,595.00
2	Urinal Waste Coupling	7418	11 nos	330.00	nos		3,630.00
3	F8050101 WASTE COUPLING FULL THREAD (CM103)	7418	16 nos	315.00	nos		5,040.00
4	F9020101 PILLAR COCK PRESSMATIC (CG60)	8481	15 nos	1,461.00	nos		21,915.00
5	F2013101 Fountain Pillar Cock	8481	3 nos	980.00	nos		2,940.00
							39,120.00
<i>Transport</i>							1,000.00
<i>CGST</i>							3,610.79
<i>SGST</i>							3,610.79
<i>Round Off</i>							0.42
Total							47,342.00

4742

E & O E

Indian Rupees Forty Seven Thousand Three Hundred Forty Two Only

HSN/SAC	Taxable Value	Central Tax		State Tax		Total
		Rate	Amount	Rate	Amount	
7418	14,629.64	9%	1,316.66	9%	1,316.66	2,633.32
8481	25,490.36	9%	2,294.13	9%	2,294.13	4,588.26
Total	40,120.00		3,610.79		3,610.79	7,221.58

Tax Amount (in words) : **Indian Rupees Seven Thousand Two Hundred Twenty One and Fifty Eight paise Only**

Company's PAN : ABBPV6566J	Company's Bank Details
Declaration	Bank Name : State Bank of India
1. Goods once sold will not to be taken back or exchanged. 2. Interest @24% p.a will be charged for bill remaining unpaid above 30days. 3. Our responsibility ceases once the goods leave our stores. 4. Cheque return will attract a penalty of Rs.300/- per instrument	A/c No. : 51021160381
	Branch & IFS Code : SIVAN CHETTY GARDEN & SBIN0031826
	for Nandi Marketing Corporation [BILLING] 21-22

Authorized Signatory

This is a Computer Generated Invoice

Figure 4-11: Awareness posters on water conservation

4.2.6. Awareness posters on water conservation

In order to create awareness regarding water conservation, sign boards / posters indicating save water, conserve water were made available at appropriate locations like handwash area, drinking water tap points.

The sample images of awareness poster regarding water conservation is shown in figure 4-12.



Figure 4-12: Awareness posters on water conservation