

GREEN AUDIT REPORT

For

SJC INSTITUTE OF TECHNOLOGY



Chikkaballapur - Karnataka

By



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ACKNOWLEDGEMENT

Conserve Consultants Private Limited wishes to thank all the staff, Management & Technical Team of **SJC INSTITUTE OF TECHNOLOGY – CHIKKABALLAPUR** for the kind co-operation and assistance extended to our Auditor during the course of the Green audit.

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1. EXECUTIVE SUMMARY

Green Audit of SJC Institute of Technology – Chikkaballapur was carried out by Conserve Consultants during September 2022. The approach taken in this facility included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and associated systems & equipment, The study covered the following areas to summarize the present status of environment management in the campus:

- **Water System**
- **Waste Management**
- **Green Area Management**

The report compiles a list of possible actions to conserve and efficiently access the available scarce resources and their saving potential has also been identified. On an overall note, there is no Waste record in the site to monitor the daily Solid Waste Generation, it is recommended to monitor all type of Wastes like Solid Wastes, Bio medical wastes, E-Wastes, Paper Wastes and Food Wastes etc. on daily/weekly basis.

In SJCIT campus, all the bio-degradable waste (food) is being composted and used for Biogas production. Garden wastes are composted in-situ. On an overall, **paper waste, steel waste, iron wastes are collected by third party vendors through contract agreement made with the Management.**

On water side, **2690 KL/annum** savings have been identified with an average payback of **1 month.**

In SJCIT campus, **overall Landscape cover is really good.** Presently **Bappan grass and Mexican grass** are used in the turf areas. These types are non-native species and they consume more water, it is requested to replace turf to '**native species**' like **Durva grass, Beema Bamboo**, etc. as they act as less water consuming and a rich producer of oxygen/absorber of carbon dioxide. **Beema Bamboo** can produce **62 tons of oxygen and absorbs 88 tonnes** of carbon dioxide per acre per year.

For continuous improvement, every identified Performance Improvement Measure, a detailed M&V Plan shall be established for continuous monitoring & evaluation of the effect of the system over which PIM will be implemented. **And it is recommended to install water meters for various types of areas to identify the water usage.**

2. PERFORMANCE IMPROVEMENT MEASURE

S No.	Water Conservation Measures Description	Annual Water savings, kL	Annual savings, Rs. Lakhs.	Cost of Measure, Lakhs.	Payback Months
1	Water savings through low flow aerators	27.9	5.5	1	<1
2	Replacement of sprinkler irrigation to drip irrigation	2250	44	2	<1
Total		2690	49.5	3	<1

3. PROJECT BACKGROUND

S J C Institute of Technology (SJCIT), or in its full name Sri Jagadguru Chandrashekaranaatha Swamiji Institute of Technology, is an Engineering college located in the city of Chikballapur, Chikballapur district, Karnataka, India, about 20 Kilometers from Bangalore International Airport. It was established in 1986 by the Sri Adichunchanagiri Shikshana Trust under Sri Balagangadharanatha Swamiji and is operated by that trust, which also operates various sister colleges across Karnataka. The college is affiliated to Visvesvaraya Technological University. The total area of the college campus is 53 acres (210,000 m²) with an instructional area of 23000 sq.m.it is one of the affiliated to VTU with 3000+ students, 204 +faculty members, 210+ non-teaching staff.



4. GREEN AUDIT

The main objective of the green audit is to promote the Environment Management and Conservation in the SJCIT Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To introduce and aware students to real concerns of environment and its sustainability
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.

Green Audit also includes the preliminary analysis and more detailed calculations-financial analysis of proposed Performance Improvement Measures (PIM). The financial analysis provides the facility team the understanding of the financial benefits in implementing specific Performance Improvement Measures. A detailed financial analysis is performed for each measure based on implementation cost estimates; site-specific operating cost savings, and the customer's investment criteria. Sufficient detail is provided to justify project implementation.

5. WATER

Drinking Water Source for the entire SJCIT Campus is from Bore well. For RO plant-drinking water, flushing, cleaning & irrigation purposes, water is sourced from the bore wells. Bore well water is pumped to the raw water sump and then to the OHTs at terrace levels. There are totally 8 nos. of bore wells present in the campus.

5.1 PERFORMANCE ANALYSIS OF WATER FAUCETS

Water flow is measured in faucets at campus various blocks toilets and wash basins

SI No.	Description	NBC baseline (LPM)	Actual (LPM)
Academic Block			
1	GF Men's toilet tap - 1	3	9.8
2	GF Men's toilet tap - 2	3	10.1
3	FF Men's toilet tap - 1	3	13.2
4	FF Men's toilet tap - 2	3	14.2
5	SF Men's toilet tap - 1	3	10.2
6	SF Men's toilet tap - 2	3	9.8
Administrative Block			
7	GF Men's toilet tap - 1	3	10.2
8	GF Men's toilet tap - 2	3	14.3
9	FF Men's toilet tap - 1	3	14.3
10	FF Men's toilet tap - 2	3	12.9
11	SF Men's toilet tap - 1	3	13.2
12	SF Men's toilet tap - 2	3	13.1
IT Block			
13	GF Men's toilet tap - 1	3	13.2
14	GF Men's toilet tap - 2	3	14.2
15	FF Men's toilet tap - 1	3	10.2
16	FF Men's toilet tap - 2	3	10.2
17	SF Men's toilet tap - 1	3	14.3
18	SF Men's toilet tap - 2	3	14.3
19	TF Men's toilet tap - 1	3	12.9
20	FF Men's toilet tap - 1	3	14.3
21	FF Men's toilet tap - 2	3	12.9
Mechanical Block			
22	GF Men's toilet tap - 1	3	10.2
23	GF Men's toilet tap - 2	3	14.3
24	FF Men's toilet tap - 1	3	14.3
25	FF Men's toilet tap - 2	3	12.9
Boy's hostel			
26	Mess tap - 1	3	12.9
27	Mess tap - 2	3	14.3

Comments: Water flow in the faucets and tap are higher compared to the NBC standard. The baseline standard is the NBC 2016 part no: 9 section 1 table – 2.

5.2 WATER NEUTRALITY

Presently fresh water source i.e., bore wells are being used for the entire campus.

Strategies for Water Neutrality:-

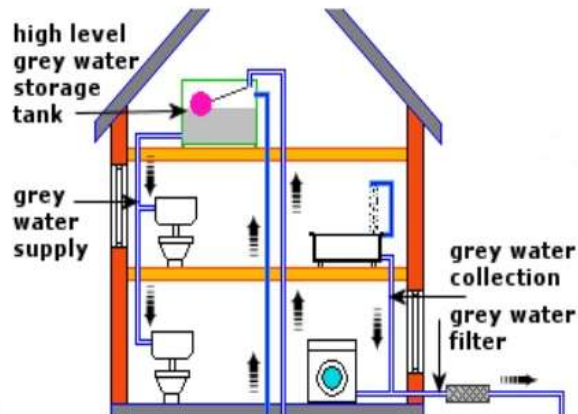
a. Low flow aerators.

To reduce the fresh water consumption by installing the aerators for faucets in all guest rooms, common area restrooms, kitchen etc., this reduces the 40% of water consumption from the baseline of LEED.



b. Dual Plumbing System.

To reduce the freshwater consumption by installing the dual flush system at a minimum in both the hostels. This reduces the water footprint of the campus.



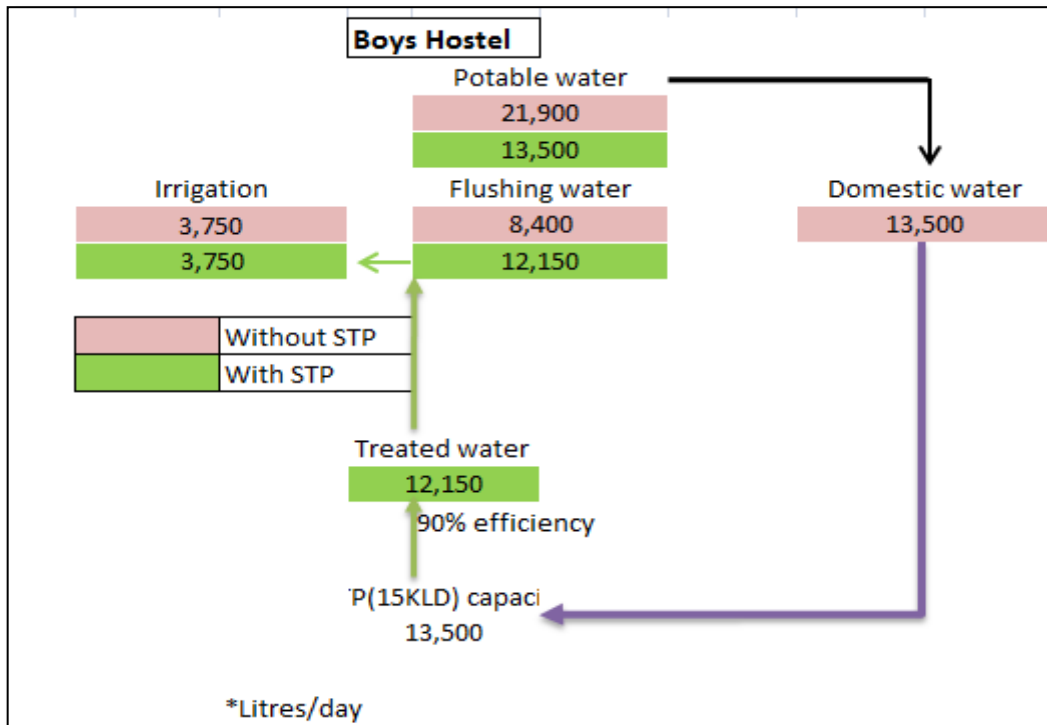
c. Native Plant Species.

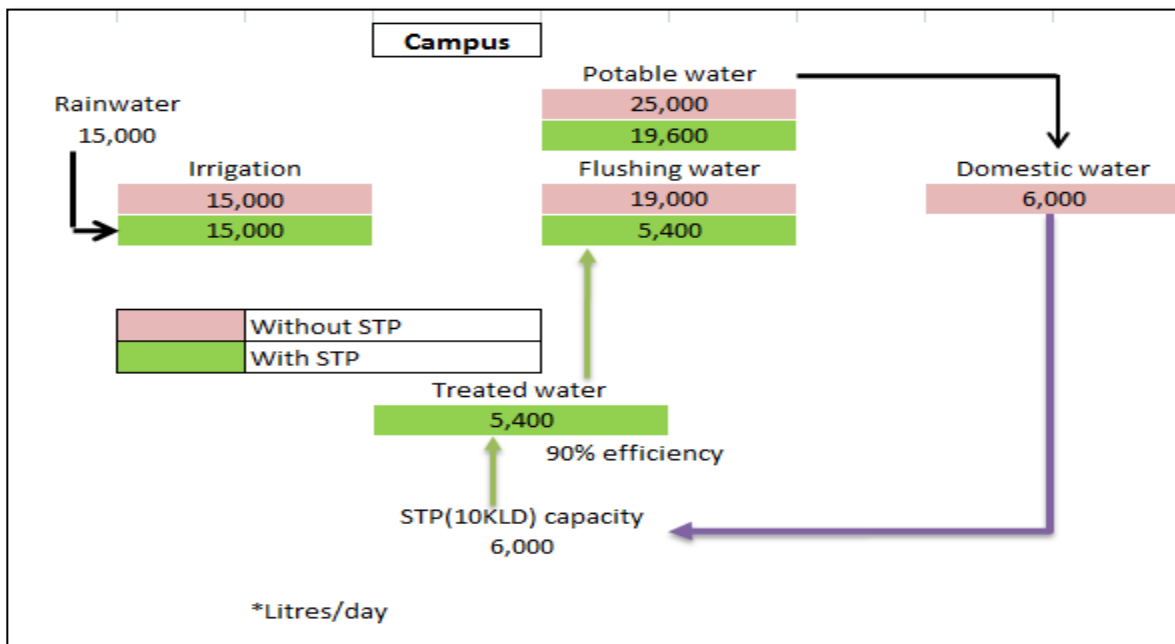
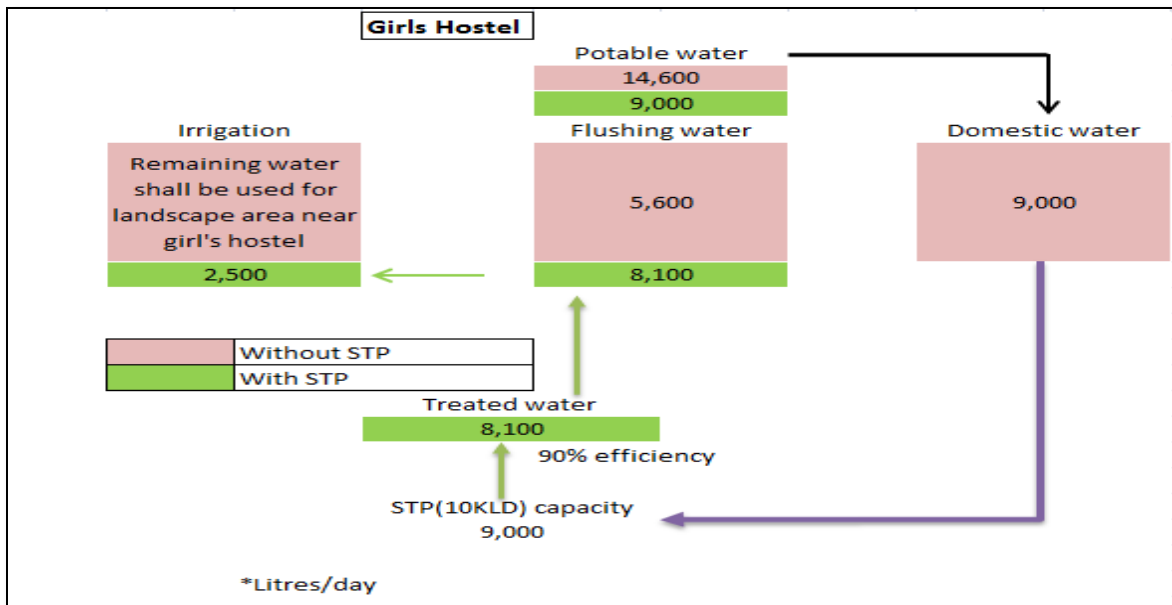
For landscape bore well water is used for irrigation. In landscape so many non-native species like Mexican grass, which consumes more water. To reduce the water consumption, replace the non-native species to drought tolerant/xeriscape species.



5.1 WATER BALANCE CHART

Estimated as per Green Standards Guidelines





Presently the potable water consumption is around (approx..) **30, 15 & 25 KL/day** for boys hostel, girl's hostel & college campus respectively. By installing STP with the capacity of **15 & 10 KLD**, the potable water consumption shall be reduced to **15, 10 & 20 KL/day**. Around **30%** of the water can be recycled and it will lead to the reduction of potable water usage.

5.2 WATER QUALITY ANALYSIS

Drinking water is supplied from bore well after treating it in the RO Plant. For Bore wells and RO plants outlet, the total dissolved solid (TDS) level is as given below.

Location	Water TDS level	Temperature in ° C
Academic block RO plant	44	29
Administrative block RO plant	46	29
IT block RO plant	52	28
Mechanical block RO plant	51	28.1
Aeronautical block RO plant	49	29.3
Boy's hostel RO plant	54	29.9
Bore well – 1	232	31
Bore well – 2	243	31.5
Bore well – 3	276	32
Bore well – 4	243	31

Comments:

As per the WHO recommended drinking water TDS level is < 300. In the campus drinking water TDS level is within the limit.

7 RAINWATER HARVESTING SYSTEM

In the SJCIT campus, rainwater is collected and recharged into the ground with the help of a rainwater harvesting pond (RWH) and the pond is located within Campus. Rainwater trenches are built according to the slope of the surface level and it connects the roof and non-roof rainwater to either the rainwater harvesting pits or the pond. Rainwater harvesting pits are located in both boy's & girl's hostel. The capacity of rainwater harvesting pond is nearly 25 lakh liters.



8 WASTE MANAGEMENT SYSTEM

Waste Audit Procedure:

- Waste auditing was carried out by sorting and measuring the building's waste over a given time period, i.e. 24 hours' time. And Audit team selected a time period of last week of Sept 2022.
- The Audit Team was equipped with all necessary safety and personal protective devices including safety glasses, respirator masks, coveralls and gloves.
- The Audit team has taken the waste audit form and marked the following types:
 - Papers
 - Carton boxes
 - Tissue paper
 - Pet bottles
 - Plastic covers
 - Printed hard paper
 - Food waste

- Each waste type was separated and measured for the weight through a weighing scale. The values were entered in the waste audit form.

Sl. No	year	Waste Materials	Quantity of waste generate in kg
1	2019-20	Paper	150
		Plastic	350
		Grass	50
		Metals	250
2	2020-21	Paper	150
		Plastic	350
		Grass	50
		Metals	250
3	2021-22	Paper	300
		Plastic	500
		Grass	100
		Metals	500
S.No	Type of waste		Quantity
College campus (Kg/day) (Audit Results)			
1	Plastic waste		40
2	Paper waste		5
3	e-waste		5
4	Boy's hostel food waste		100
5	Girl's hostel food waste		25
Boy's hostel (Kg/annum) (Data Received)			
6	Sanitary soil pipe		850
7	Scrap sheet		300
8	Oil tin		250
9	Old papers		450
10	Color paper		150
11	Cotton box		75
12	Plastic waste		150
13	Old steel		1150
Girl's hostel (Kg/annum) (Data Received)			
14	Old papers		2200
15	Old iron		650
16	Old plastic waste		150
17	Good tin		250
18	Old tin		150

Solid Waste from the campus are collected and segregated. Certain paper waste materials are being burnt in the campus. Other materials are given to the vendors. Incineration shall be completed avoided in the future. And 100% waste diversion from both the Landfill and the Incineration shall be adopted in future.



SEGREGATION SYSTEMS

It is the segregation of solid waste and collection in separate container by using four bins i.e.,plastics, papers, organic waste, metals and glass.



9 INDOOR AIR QUALITY (IAQ)

ACADEMIC BLOCK

Area	Co2 (ppm)	Temperature	Humidity (%)	HCHO (mg/m3)	TVOC	PM 2.5	PM 10
Academic Block							
GF CADD Lab	795	26.1	82.4	0.014	0.003	41	47
GF Corridor	789	26.1	78.3	0.012	0.002	39	49
Survey Store	765	26.3	81.2	0.012	0.002	40	49
Structural Engg. Lab	798	26.4	81.3	0.021	0.003	41	48
Concrete Material Lab	756	26.1	83.1	0.012	0.001	40	48
FF Meeting Room	878	26.3	81.2	0.013	0.004	41	49
FF Class room	876	26.1	82.3	0.013	0.002	40	47
FF HOD Cabin	823	25.9	81.2	0.012	0.001	40	49
FF seminar hall	798	26.7	83.2	0.012	0.003	39	48
SF Class room	796	26.7	84.2	0.012	0.002	38	49
SF Meeting room	798	26.1	85.2	0.013	0.002	39	49
Environmental engg. Lab	790	26.2	81.2	0.014	0.003	41	48
Geo-technical engg. Lab	699	27.1	83.2	0.013	0.003	39	48
SF staff room	878	25.7	81.2	0.015	0.001	40	49
SF lab	912	25.6	85.3	0.012	0.004	41	49
HDL lab	767	26.5	84.1	0.012	0.001	40	48

Comments:

IAQ values are within the standard limits.

ADMINISTRATIVE BLOCK

Area	Co2 (ppm)	Temperature	Humidity (%)	HCHO (mg/m3)	TVOC	PM 2.5	PM 10
Administrative Block							
Principal room	756	24.8	58.5	0.012	0.002	41	48
Registrar chamber	878	25.2	90.5	0.012	0.003	40	49
Account section	876	26.1	81.2	0.012	0.001	40	47
Exam section	823	26.3	81.3	0.013	0.004	39	49
GF class room-1	798	26.1	83.1	0.014	0.002	38	48
GF class room-2	796	25.9	81.2	0.013	0.001	39	49
GF class room-3	798	26.7	82.3	0.015	0.003	41	49
FF class room-1	789	26.7	81.2	0.012	0.002	39	48
FF class room-2	765	26.1	83.2	0.012	0.002	40	48
FF class room-3	798	26.2	84.2	0.014	0.003	41	49
FF class room-4	756	27.1	85.2	0.012	0.003	39	49
SF class room-1	878	25.7	81.2	0.012	0.001	40	48
SF class room-2	876	26.1	83.2	0.021	0.003	41	49
SF class room-3	798	26.1	82.4	0.012	0.002	40	49
SF class room-4	790	26.3	78.3	0.013	0.002	41	48
GF chemistry lab	699	26.4	81.2	0.013	0.003	40	48
President room waiting room-1	878	26.1	81.3	0.012	0.001	40	49
President room waiting room-2	765	26.3	83.1	0.012	0.004	39	47
President room waiting room-3	798	26.1	81.2	0.014	0.002	38	49
President room meeting hall	756	25.9	82.3	0.013	0.001	40	48

Comments:

IAQ values are within the standard limits.

IT BLOCK

Area	Co2 (ppm)	Temperature	Humidity (%)	HCHO (mg/m3)	TVOC	PM 2.5	PM 10
IT Block							
FF staff room	789	25.9	81.2	0.014	0.004	38	49
CSE HOD cabin	765	26.7	83.2	0.013	0.002	39	48
GF class room-1	798	26.7	84.2	0.015	0.001	41	49
GF class room-2	756	26.1	85.2	0.012	0.003	39	49
GF class room-3	878	26.2	81.2	0.012	0.002	40	48
FF class room-1	876	27.1	83.2	0.014	0.002	41	48
FF class room-2	798	25.7	82.4	0.012	0.003	39	49
FF class room-3	790	26.1	78.3	0.012	0.003	40	49
SF class room-1	699	26.1	81.2	0.021	0.001	41	48
SF class room-2	878	26.3	81.3	0.012	0.003	40	49
TF class room-1	798	26.4	83.1	0.013	0.002	41	49
TF class room-2	756	24.8	81.2	0.013	0.002	40	48
TF class room-3	878	25.2	82.3	0.012	0.003	40	48
FF class room-1	876	26.1	58.5	0.012	0.001	39	48
FF class room-2	823	26.3	90.5	0.012	0.001	38	49
FF class room-3	798	26.1	81.2	0.021	0.003	41	47
FF IT lab	796	25.9	81.3	0.012	0.002	39	49
FF library	798	26.3	83.1	0.013	0.002	40	48
SF HR department	876	26.1	81.2	0.013	0.003	41	49
HR dept. waiting room	798	25.9	82.3	0.012	0.003	40	49
Interview room-1	790	26.7	81.2	0.012	0.001	41	48
Interview room-2	699	26.7	82.4	0.012	0.003	40	49
Interview room-3	878	26.1	78.3	0.013	0.001	40	49
Interview room-4	765	26.2	81.2	0.014	0.004	39	48
Interview room-5	798	24.8	81.3	0.014	0.002	38	49
Interview room-7	756	25.2	83.1	0.012	0.001	40	49
Placement office	798	26.1	81.2	0.012	0.002	39	48
FF seminar hall	796	26.3	82.3	0.021	0.002	38	48

Comments:

IAQ values are within the standard limits.

MECHANICAL BLOCK

Area	Co2 (ppm)	Temperature	Humidity (%)	HCHO (mg/m3)	TVOC	PM 2.5	PM 10
Mechanical Block							
CADD lab	756	26.1	82.3	0.012	0.001	39	47
CAED lab	878	26.3	81.2	0.012	0.003	40	49
BGS R&D centre	876	26.4	83.2	0.021	0.002	41	48
Material testing lab	823	24.8	84.2	0.012	0.002	39	49
FF HOD room	798	25.2	85.2	0.013	0.003	40	49
FF staff room	796	26.1	81.2	0.013	0.003	41	48
FF class room-1	798	26.3	83.2	0.012	0.001	40	48
FF class room-2	790	26.1	82.4	0.012	0.003	41	49
FF seminar hall	699	25.9	78.3	0.012	0.002	40	49
SF seminar hall	878	26.3	81.2	0.021	0.002	40	48
SF staff room-1	912	26.1	81.3	0.012	0.003	39	49
SF staff room-2	767	25.9	83.1	0.013	0.001	38	49

Comments:

IAQ values are within the standard limits.

AERONAUTICAL & AEROSPACE BLOCK

Area	Co2 (ppm)	Temperature	Humidity (%)	HCHO (mg/m3)	TVOC	PM 2.5	PM 10
Aeronautical & Aerospace Block							
Propulsion lab	876	26.1	58.5	0.014	0.003	41	49
Fluid mechanics lab	823	26.2	90.5	0.013	0.001	39	48
Material testing lab	798	27.1	81.2	0.015	0.003	40	49
Aerodynamics lab	796	25.7	81.3	0.012	0.002	41	49
Hod chamber	798	26.1	83.1	0.012	0.002	40	48
Meeting room	876	26.1	81.2	0.014	0.003	41	48
Aerospace HOD chamber	798	26.3	82.3	0.012	0.001	40	48
SF class room-1	790	26.4	81.2	0.012	0.001	40	49
SF class room-2	699	26.1	82.4	0.021	0.003	39	47
SF class room-3	878	26.3	78.3	0.012	0.002	38	49
SF class room-4	765	27.1	81.2	0.013	0.002	39	48
SF class room-5	798	25.7	81.3	0.013	0.003	40	48

Comments:

IAQ values are within the standard limits.

AUDITORIUM

Area	Co2 (ppm)	Temperature	Humidity (%)	HCHO (mg/m3)	TVOC	PM 2.5	PM 10
Auditorium							
East side	796	27.1	83.2	0.013	0.002	41	48
West side	798	25.7	84.2	0.013	0.002	39	49
North side	790	26.1	85.2	0.012	0.003	40	49
South side	699	26.1	81.2	0.012	0.003	41	48
Stage	878	26.3	83.2	0.012	0.001	40	48

Comments:

IAQ values are within the standard limits.

10 PERFORMANCE IMPROVEMENT MEASURES (PIM'S)

PIM 1: Water saving through the low flow aerators in the whole campus including the Hostels

Annual Water Savings	2,79,225 KL/Year
Recurring Annual Savings Potential	5.5 Lakhs
One-time Cost of Implementation	1 Lakh
Payback period	<1 Month

Present System:

Presently average water flow in the faucets is 10 LPM it is much higher compared to the Green/Sustainable Buildings' Standards. This can lead to water wastage and higher consumption.

Proposed System:

It is recommended to install low flow aerator-based faucets to maintain max. 2 LPM as per the standards in common/lavatory rooms. This saves huge amount of water consumption.

Description	Value	Units	Formula
Average measured flow	10.3	LPM	A
Average usage per day	60	min/day	B
No of taps (Approx.)	2500	Nos.	C
Annual water consumption	563,925	kL/yr	D =(AxBxCx365)/1000
Water consumption cost	2	Rs/kL	E
Present Water Consumption cost	11.2	Lakhs	F=ExD
After installing aerators 50% water reduction	5.2	LPM	G
Annual water Savings	279,225	kL/yr	H=((A-G)xBxCx365)/1000
Annual Saving, Rs	5.5	Lakhs	I=HxE
Investment, Rs	1	Lakh	J
Payback period	<1	Month	K=J/Ix12

PIM 1: Replacement of sprinkler irrigation to drip irrigation

Annual Water Savings	2250 KL/Year
Recurring Annual Savings Potential	44 Lakhs
One-time Cost of Implementation	2 Lakhs
Payback period	1 Month

Present System:

During our survey, it is observed that sprinkler irrigation & manual irrigation has been used for all landscaping.

Proposed System:

It is recommended to replace all the sprinkler irrigation to drip irrigation. Hardly 35 – 40% water savings can be easily achieved by drip irrigation over sprinkler irrigation.

Total Landscaped Area (Approx.)	2500	Sqmtrs
*Water Required as per IGBC Guidelines	6	Liters/Sqmtrs/day
Total Water required for Irrigation	15000	Liters/day
Water Requirement per annum	3750000	Liters/year

**Theoretical water requirement for irrigation has been assumed as 6 Liters/Sq.mtrs per day as per IGBC Guidelines*

Description	Value	Units
Total water consumption in sprinkler irrigation (Approx)	15	KL/Day
Annual water consumption through sprinkler irrigation	3750	KL/Year
Total water consumption through drip irrigation	6	KL/Day
Annual water savings through proposed irrigation (Drip irrigation)	1500	KL/Year
Proposed water savings	2250	KL/Year
Annual Cost Savings @ 2Rs./kL	44	Lakh Rs
One time implementation	2	Lakh Rs
Payback	<1	Month

FLORA IN THE CAMPUS:-

The Management of the SJCIT planted many native Trees in the Campus, University's Horticulture Nursery and Plantations. These Matured Trees are yielding for more than decade. The total no. of Trees are available in the campus & boy's hostel is about 2000 nos. approximately with covered vegetation land area of 8100 Sq.mt approximately.

LIST OF MATURED TREES BEING GROWN IN THE CAMPUS:-

- ❖ Duranta Erecta
- ❖ Kasturi
- ❖ Exura
- ❖ Christmas tree
- ❖ Proton
- ❖ Dhasala
- ❖ Mahatma
- ❖ Chakothe
- ❖ Palm tree
- ❖ Saprus
- ❖ Golden plant
- ❖ Tuja tree
- ❖ Dhasella
- ❖ Star light
- ❖ Mango tree
- ❖ Jack fruit
- ❖ Teak
- ❖ Silver tree
- ❖ Jungle tree
- ❖ Swadampathi tree
- ❖ Ashoka tree
- ❖ Show tree

CO₂Reduction:-



A Matured Trees can able to absorb CO₂nearly at a rate of 48 lbs/year (ie., nearly 21.8 Kg).

Total no. of Matured Trees available in the Campus is around 2000Nos.

approximately and its contribution to CO₂ reduction is about **44 Tons/Annum.**



7 SITE OBSERVATION REPORT

Site Observation Report (SOR)			
Report No.	Cx/SOR/01	Date	28.09.2022
Location	Water taps in campus		

Observation Images



Description
Openable metal watertaps are installed without any aerators. So there is no control in the flow of water. Observed much higher water flow especially in all washrooms and hostel taps compared to the NBC or LEED Standards.
Potential Sustainability Measures
It is advised to install aerators for all the water taps, which will reduce the wastage of Water.

Site Observation Report (SOR)			
Report No.	Cx/SOR/02	Date	28.09.2022
Location	Urinals in campus		

Observation Images



Description
Manual type urinals and single flush toilets are present in the college campus & hostels.
Potential Sustainability Measures
It is advised to install sensor based urinals and dual flush toilets for all washrooms in college campus and hostels which will leads to more water savings.

Site Observation Report (SOR)			
Report No.	Cx/SOR/03	Date	28.09.2022
Location	Landscape & gardening areas		

Observation Images



Description
The existing Irrigation system for Gardening is Manual & sprinkler type irrigation, it consumes more Water.
Potential Sustainability Measures
It is recommended to use most Efficient Irrigation system for Gardening i.e Drip Irrigation system. Drip irrigation has minimum 35 - 40% water savings over sprinkler irrigation

Site Observation Report (SOR)			
Report No.	Cx/SOR/04	Date	28.09.2022
Location	Rainwater harvesting system		

Observation Images



Description
It is observed that rainwater harvesting pond and drains are well maintained as “Clean & Green”
Potential Sustainability Measures
Nil.

Site Observation Report (SOR)			
Report No.	Cx/SOR/05	Date	29.09.2022
Location	No smoking signage in campus & hostel		

Observation Images



Description
No smoking signages are kept inside the SJCIT campus & hostels.
Safety measure followed
Smoking and the usage of tobacco products are strictly prohibited inside the campus & hostels, which creates awareness among Students and Staff. This is very GOOD.

Site Observation Report (SOR)			
Report No.	Cx/SOR/06	Date	29.09.2022
Location	College campus		

Observation Images



Description
Garden's waste (wet grass & Dry leaves) and plant wastes are segregated and sent to Natural Manure production for Soil.
Potential sustainable measure
Nil.

Site Observation Report (SOR)			
Report No.	Cx/SOR/07	Date	29.09.2022
Location	Cleaning chemicals		

OBSERVATION IMAGES



Description
It is observed that the soap oils and some acids are used for cleaning purpose.
Potential Sustainable Measures
It is advised to use only Green Seal (USGBC) or GreenPro (IGBC) certified products for cleaning purpose.

11 GOOD PRACTICES AT SJCIT CAMPUS

During Conserve Consultant's Audit, it is observed that M/s SJCIT Campus has already adopted the following Performance Improvement Measures in its facility;

1.1 Composting

Garden Wastes are being converted to Natural Manure/Vermi compost for the soil, which is used for Gardening and Nursery. It is a good example of waste to Energy. It enriches nutrients to the fertilizer.

1.2 Food Wastes

Food wastes are sent to the third party vendor; food wastes are collected and treated for Vermi Compost.

12 SUGGESTION & RECOMMENDATION

- ❖ It is recommended to install water meters for various sources and to regularly monitor the water consumption from various types of water usage.
- ❖ SJCIT can also conduct water quality (ISO Standard) monitoring during specific intervals.
- ❖ The paper wastes shall be recycled instead of incineration/burning.
- ❖ Reuse of water (STP treated water) shall be done instead of use of fresh water for irrigation.
- ❖ Using of organic pesticides & fertilizers instead of chemical fertilizers.
- ❖ For cleaning purposes, it is recommended to use green chemicals such as Green Seal – 37 & GreenPro products.
- ❖ Drip irrigation is strongly recommended instead of manual irrigation & sprinkler irrigation to conserve water.
- ❖ Tree plantation shall be done to maintain biodiversity as well as artificial nesting shall be installed. Artificial nests and water ponds are recommended to attract different birds in their migrating and breeding season
- ❖ **Awareness among students and staff about green environment shall be done use tools like display boards.**

13 PATH FORWARD ACTION

Water Neutrality

Present annual potable water consumption in campus, boys & girls hostel is approx. **13,375 KL/Year**. It is recommended to install 3 separate STPs with the capacity of 10, 15 & 10 KLD as mentioned in the water balance diagrams. The treated water shall be used for flushing & irrigation purpose which will reduce the use of potable fresh water. By installing STP, the potable water consumption can be reduced up to 50 – 60% which is shown in water balance chart.

The campus has the rain water harvesting pond with the capacity of 2500 KL & 214 KL in the boy's hostel.

It is recommended in future to install the rain water harvesting pits in all 3 sites to match the total potable water consumption for Net Zero Water Status/Certifications. The capacity of pits needs to be designed in line with the actual potable water consumptions at that time.

Description	Value	Unit
Annual potable water consumption in campus, boys & girls hostel without STP	13375	kL/Year
Amount of treated water through STP (Campus, boys & girls hostel)	6412	kL/Year
Annual potability water consumption with STPs	6963	kL/Year
Implementation cost	35	Lakhs

14 PHOTOS TAKEN AT SITE

1. Drinking Water



2. Pictorial view of college campus



3. RO plant



4. Landscape areas



5. Indoor plantation



6. Native tree species





7. Boy's hostel

