Green Aura

Built Environment Sustainability & Transformation

GREEN & ENVIRONMENT AUDIT

REPORT | 2023

K. S. INSTITUTE OF TECHNOLOGY

Green Aura

Built Environment Sustainability & Transformation

692F,12TH A CROSS BEL LAYOUT, BENGALURU- 560091

(ISO/IEC 17020:2012, ISO 9001:2015, ISO 1400:2015 Certified Organisation &
Ministry of MSME registered organisation)

Certificate of Green Audit - 2023

THIS CERTIFICATE IS PRESENTED TO

K. S. INSTITUTE OF TECHNOLOGY

This is to certify that K. S. INSTITUTE OF TECHNOLOGY has successfully undergone 'Green Audit' on 06th May, 2024 and assessed the Green and Sustainability measures, policies and standards in the campus were found to be excellent.

This certificate is valid till 31st December, 2024

Ref. No: GA / GREEN AUDIT / 01 / 05/ 24

DR NISCHAY N GOWDA

Founder & Director - Green Aura

CERTIFIED ISO EMS-LA, IGBC - AP,
US GREEN BUILDING COUNCIL - GREEN ASSOCIATE
GLOBAL DOCTORATE, SWITZERLAND.

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692F,12TH A CROSS BEL LAYOUT, BENGALURU- 560091

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Certificate of Environmental Audit - 2023

THIS CERTIFICATE IS PRESENTED TO

K. S. INSTITUTE OF TECHNOLOGY

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This certificate is valid till 31st December, 2024

Ref. No: GA / ENVIRONMENTAL AUDIT / 03 / 05 / 24

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Founder & Director - Green Aura

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US GREEN BUILDING COUNCIL - GREEN ASSOCIATE
GLOBAL DOCTORATE, SWITZERLAND.

Green Audit Certificate

This certificate is awarded to **K. S. INSTITUTE OF TECHNOLOGY, No.14, Raghuvanahalli, Kanakapura Road, Bengaluru – 560109** in recognition of their commitment and efforts towards environmental sustainability.

As a result of the Green Audit conducted on **27th March 2024**, it has been determined that **K. S. INSTITUTE OF TECHNOLOGY** has implemented a range of effective environmental sustainability practices in line with National Building Code 2016 –Part-11.

This certificate is valid for following scope of activities:

Green Audit
Energy Audit
Environment Audit

Audit Date	:	27th March 2024
Certificate No.	:	1B05323B20000176
Issuance Date	:	09th April 2024

Signature
Maneet Dewan
Director

PQMS Quality Services Private Limited
SCO-21, 4th Floor, Feroze Gandhi Market, Ludhiana-141001 (Punjab)
Email: info@qualityindia.in website: www.qualityindia.in

Acknowledgement

The Audit Assessment team expresses genuine appreciation to the management of K. S. Institute of Technology for granting us the privilege of conducting the Green Audit and Environment Audit. This endeavor is a testament to your commitment to environmental responsibility and sustainability.

We would like to extend our special thanks to the management and staff of K. S. Institute of Technology, The collaboration and active participation of the Institute's management and staff were indispensable. Their openness to the audit, provision of necessary data, and willingness to implement suggested improvements have made a significant impact on the overall success of the assessment.

The audit, conducted over multiple visits spanning from **December 2023 to March 2024**, aimed to assess and enhance the environmental practices and sustainability measures at K. S. Institute of Technology. Once again, we express our sincere gratitude to K. S. Institute of Technology for their trust, cooperation, and commitment to fostering a greener and more sustainable future. We look forward to continued collaboration and the implementation of the recommendations outlined in the Green Audit report.

The study team consisted of senior technical executives from Green Aura

- **Dr. Nischay N Gowda**, Founder & Director Green Aura, Bengaluru. Lead Assessor PQMS Quality Services Pvt Ltd. (IGBC-AP and LEED-Green Associate).
- **Mr. Sachin Kumawat**, Certified Energy Manager (EM-300475/23).
- **Mr. Akash Kumar**, Engineer.

Submitted to:
Principal,
No.14,Raghuvanahalli,
Kanakapura Road,
Bengaluru – 560109.

Audited by:
Green Aura,
692F,12th A cross Bel layout,
Bengaluru- 560091.

Disclaimer

The Audit team has prepared this report for K. S. Institute of Technology using the input data provided by the college representatives. Our findings are complemented by the expert judgment of our team members. While we have exercised reasonable care in its preparation, the details contained in this report have been compiled in good faith based on the information available.

It is important to note that the calculations are based on our best estimates, and we do not make any representation, warranty, or undertaking, either express or implied. The Audit team does not accept responsibility for any direct or consequential losses that may arise from the use of the information, statements, or forecasts in this report.

The information and analysis presented in this report are valid as of the date of our visit and the period of study at the site. Our work represents our best efforts and judgments based on the information available at the time this report was prepared. Green Aura does not guarantee the accuracy of this information or any conclusions drawn from it. The observations made in this report serve as an indication of the facility's performance based on our assessment and should not be construed as a definitive comment on the functioning of the facility. These observations are solely based on the data recorded at the time of our assessment.

Green Aura bears no responsibility for the reader's use of or reliance upon this report, nor for any decisions made based on its contents. Readers are advised that they assume all liabilities incurred by themselves or third parties as a result of their reliance on this report, including the data, information, findings, and opinions contained within it.

Executive Summary

Colleges wield a significant influence on their surroundings, contributing both positively and negatively to the world at large. The progress of a nation often commences within its educational institutions, where ecological considerations play a pivotal role in overall development. The activities undertaken by a College can result in a diverse range of environmental impacts. A clean and healthy environment not only facilitates effective learning but also fosters a conducive atmosphere for education. K. S. Institute of Technology places great importance on environmental factors and is actively incorporating eco-friendly concepts into its operations.

K. S. Institute of Technology is firmly committed to sustainability and has taken numerous proactive measures to minimize its environmental footprint. However, there are still several areas where significant improvements can be realized. This report aims to showcase the achievements of K. S. Institute of Technology while offering recommendations for enhancing its environmental sustainability. The College conducted a **Green Audit and Environment audit** for the year **2023** and remains dedicated to maintaining a sustainable campus environment.

The primary goal of this report is to identify areas for improvement and propose practical, economically viable solutions to optimize energy and water usage on the campus. Just as individual self-reflection is a natural and integral part of a quality education, institutional self-evaluation is equally essential for a quality educational institution. Consequently, it is imperative for the College to assess its own contributions toward a sustainable future.

K. S. Institute of Technology has undertaken various initiatives to promote an eco-friendly campus environment, including:

Energy Conservation, Water Conservation, Efforts for Carbon Neutrality, Hazardous and E-waste Management, Health and Well-Being, Plantation.

The college actively engage in activities through organizations like the N.S.S. (National Service Scheme) and other initiatives to raise eco-friendly awareness among students. Special programs featuring prominent personalities are organized to educate and train the public, and students are encouraged to participate in eco-friendly endeavors.

In conclusion, K. S. Institute of Technology is committed to its mission of sustainability and continuously strives to create a more environmentally responsible campus for the benefit of its students and the wider community.

Table of Contents

Green Auditing

The term "Green" signifies practices that are environmentally friendly and do not harm the natural environment. This concept can be encapsulated by the acronym "Global Readiness in Ensuring Ecological Neutrality" (GREEN). A "Green Audit" can be defined as the systematic process of identifying, quantifying, recording, reporting, and analyzing elements of ecological diversity, and expressing these findings in financial or social terms.

To effectively implement a Green Audit, it is essential to understand various key aspects, including the objectives, drivers, future potential, benefits, and advantages of such an assessment. The practical application of Green Auditing involves various measures such as energy conservation, the utilization of renewable energy sources, rainwater harvesting, efforts towards achieving carbon neutrality, and extensive plantation initiatives.

The concept of Green Auditing has gained significance in educational institutions and organizations alike, as it serves as a valuable management tool for evaluating and improving environmental standards. By embracing Green Auditing, institutions can contribute to sustainable development and enhance their overall environmental performance. Moreover, the reckless experimentation with nature, often disregarding natural laws and regulations, is a significant driver behind the growing importance of Green Auditing.

K. S. Institute of Technology – Campus

Approach & Methodology

A comprehensive study was conducted to thoroughly examine every aspect of K. S. Institute of Technology . This audit encompassed an array of measurements and analyses, with a specific focus on key areas of energy consumption, water usage, resource utilization, waste management, and sustainable practices. The objective was to assess real losses and potential savings, with a broader aim of enhancing the college environmental performance.

In pursuit of this goal, a straightforward and locally developed monitoring system was devised. This system involves a set of periodic questions that individuals can voluntarily respond to. It is designed to be user-friendly and accessible, emphasizing ease of use for all participants. The ultimate purpose of this auditing report is to inspire the College to set a positive environmental example for the community and to educate its students about sustainability principles.

The primary areas under investigation during the audit were categorized as follows:

1. **Site Selection:** Examining the appropriateness of the Institute's location.
2. **Built Environment:** Assessing the infrastructure and facilities on campus.
3. **Water Audit:** Analyzing water consumption and management.
4. **Energy Audit:** Evaluating energy consumption and efficiency.
5. **Good Health and Well-Being:** Promoting a healthy living environment.
6. **Waste Management:** Studying waste disposal practices and their impact.
7. **Green Education:** Integrating sustainability into the educational curriculum.
8. **Transportation:** Assessing transportation-related sustainability measures.

Throughout the audit process, there was a continuous dialogue involving College officials, faculty members, and students. This collaborative approach ensured that the suggestions and recommendations put forth were not only meaningful but also practical and feasible for concurrent implementation.

K. S. Institute of Technology - Campus

I. About
K. S. Institute of Technology

The Kammavari Sangham, a multi-activity non-profit oriented voluntary service organization, was established in the year 1952 with the sole objective of providing charitable service to community and society.

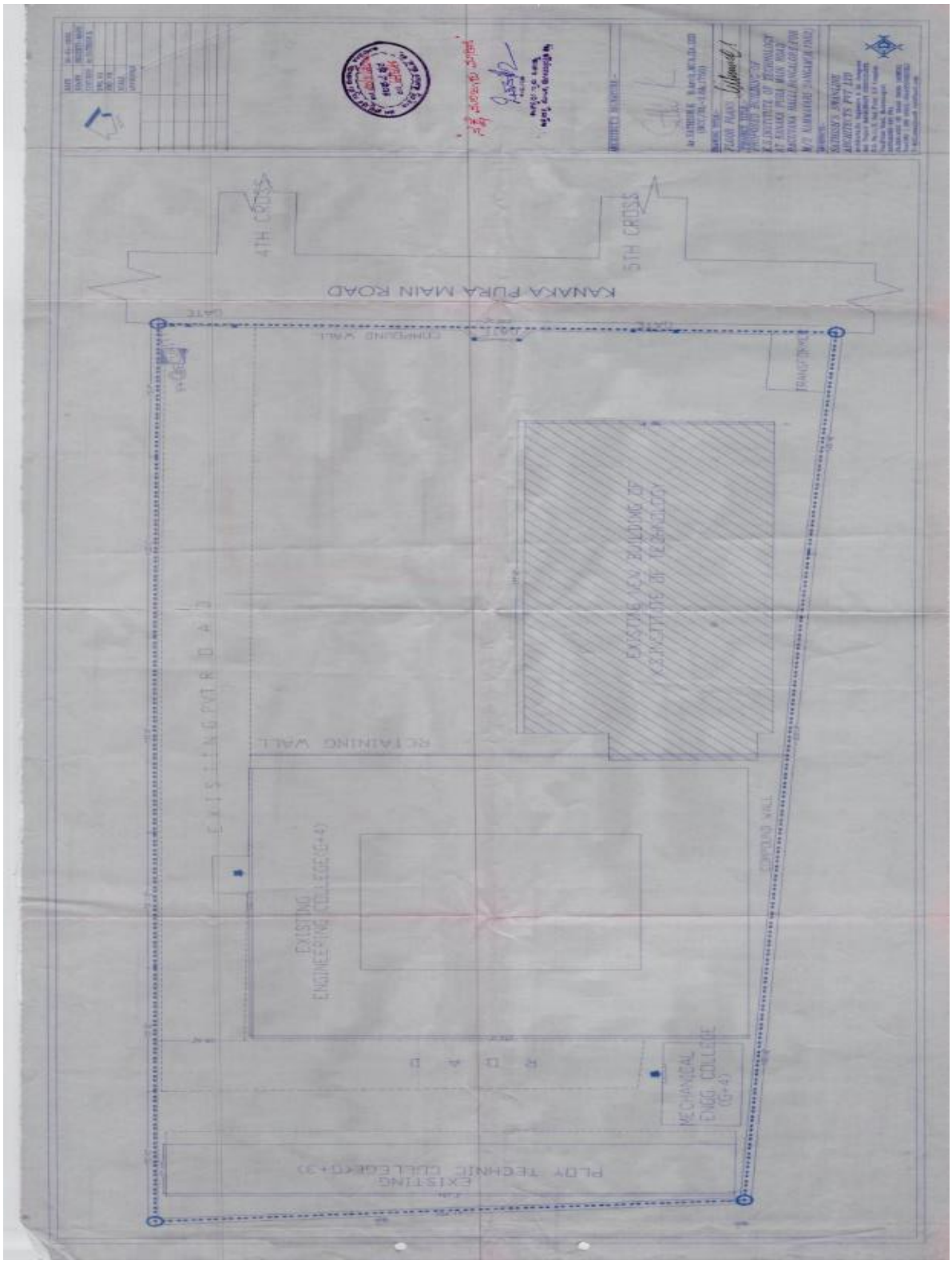
The Sangham has diversified its activities since its establishment over five decades ago. With a firm belief that quality and meaningful education only can lay the strong foundation for bringing about economic and social changes to the lives of thousand, the Sangham went about establishing educational institutions, starting with K.S. Polytechnic in 1992.

Enthused with this success of its foray into technical education, the Sangham moved forward by starting the K.S Institute of Technology (KSIT). Its Engineering College in the year 1999. In the following years both these institutions have carved for themselves an enviable niche through academic excellence achieved in a very short span of time. By providing FREE hostel accommodation and scholarship to the deserving students in the community, it has furthered its Commitment to education.

K. S. Institute of Technology - Campus

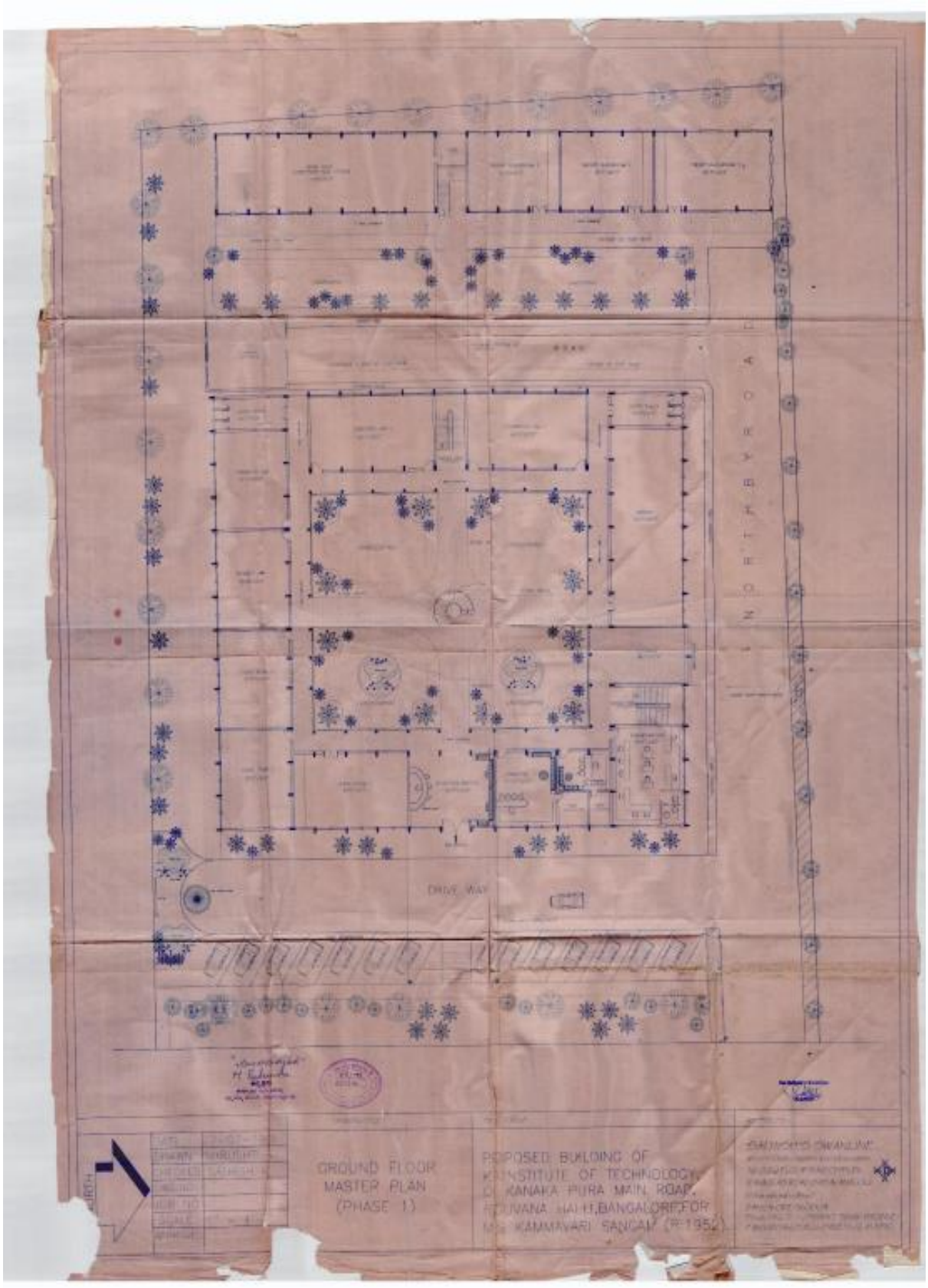
II. Built Environment

i. Site plan

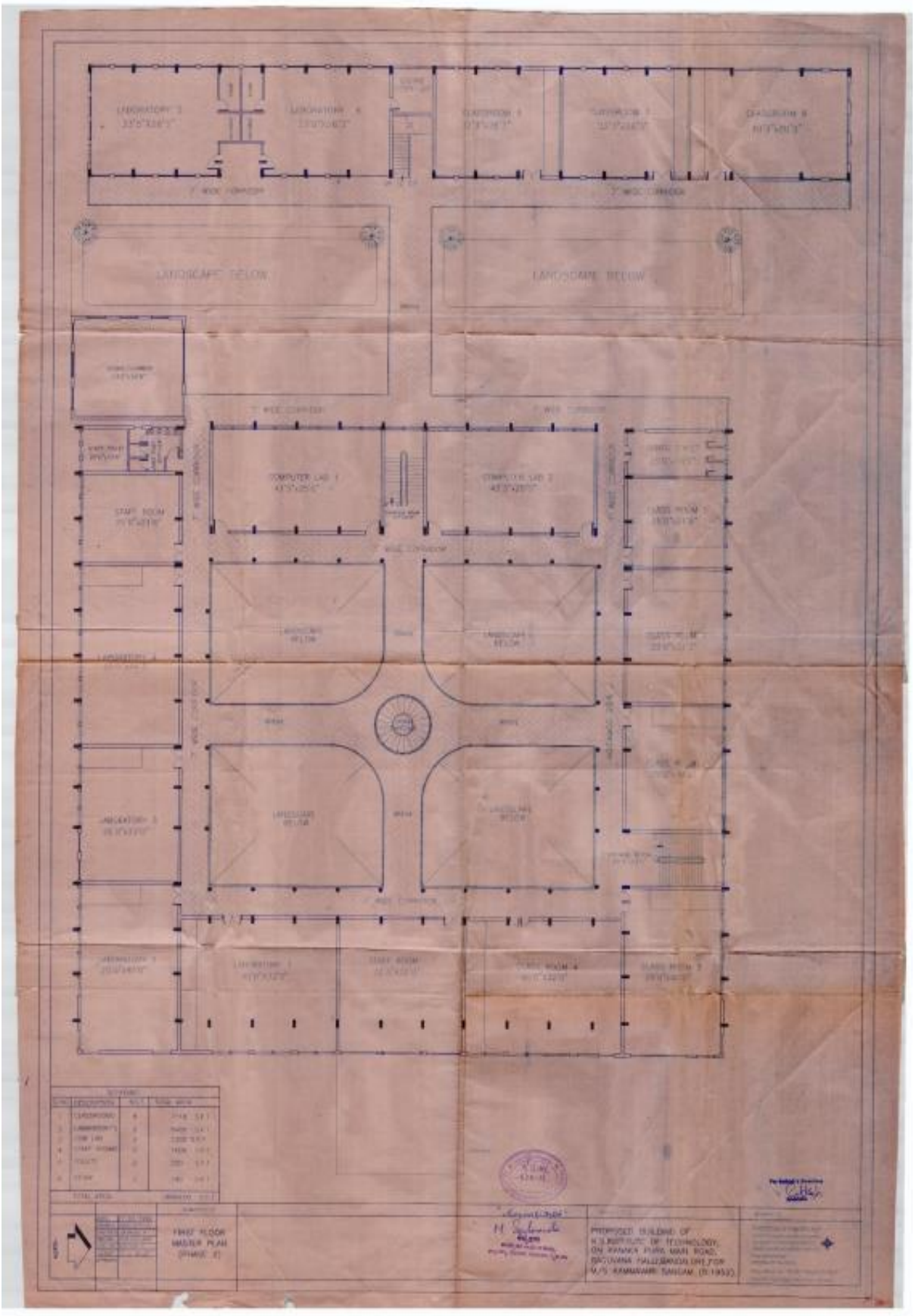


K. S. Institute of Technology - Site plan

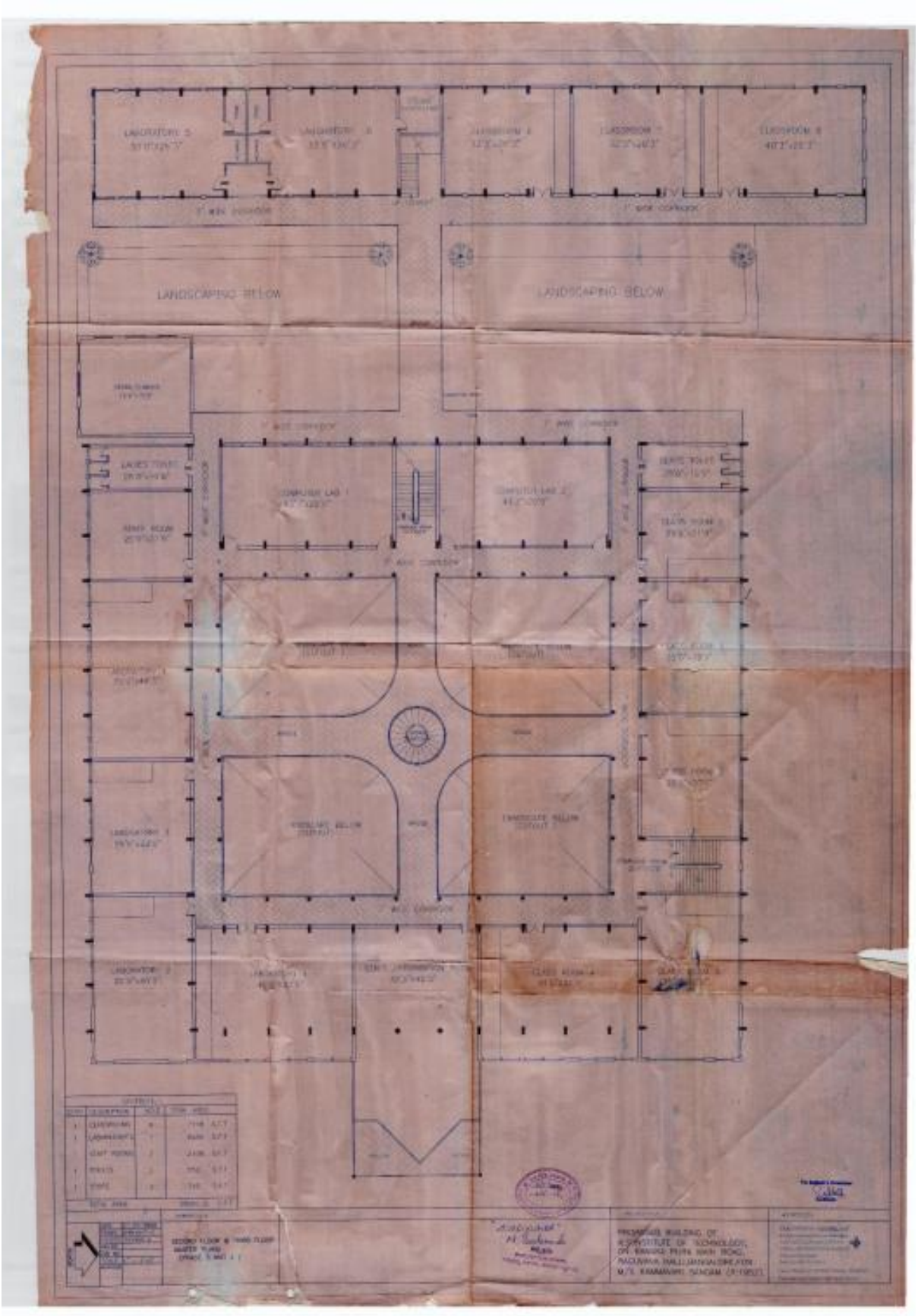
ii. Floor plans



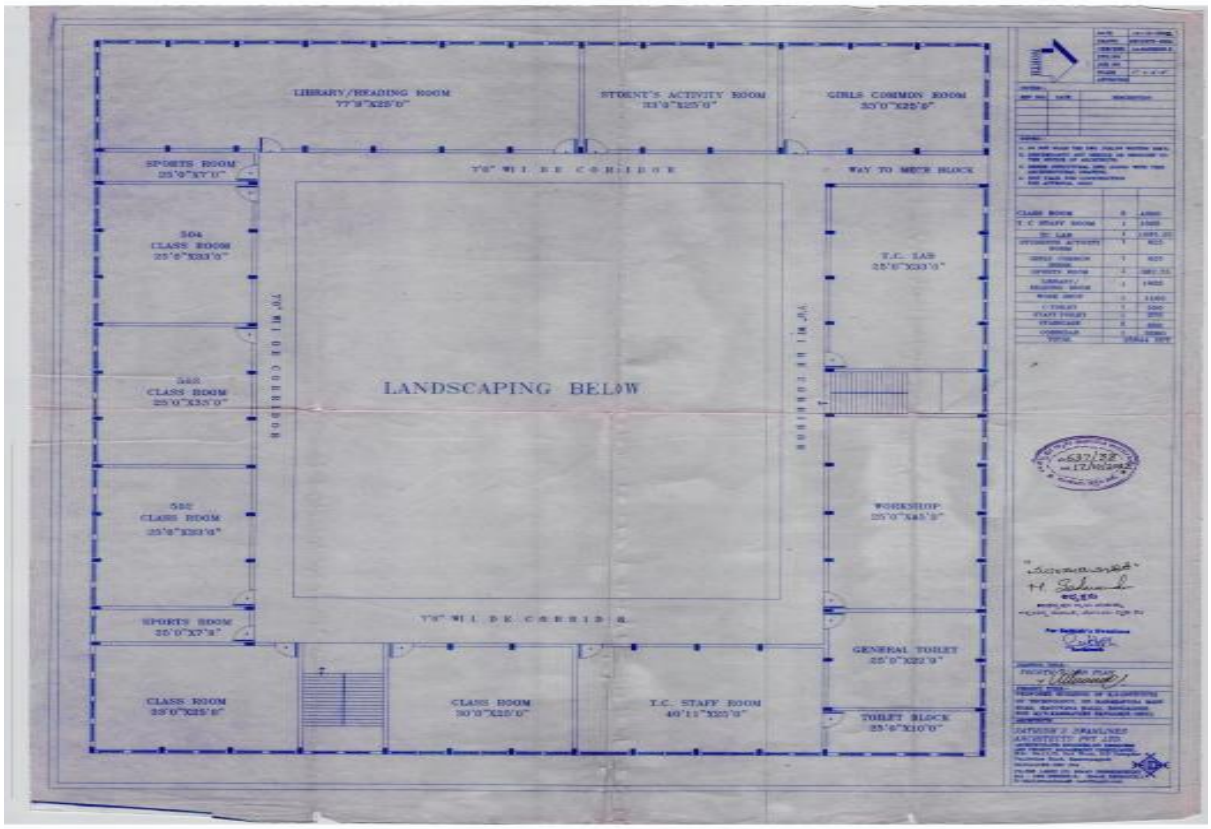
Ground Floor plan

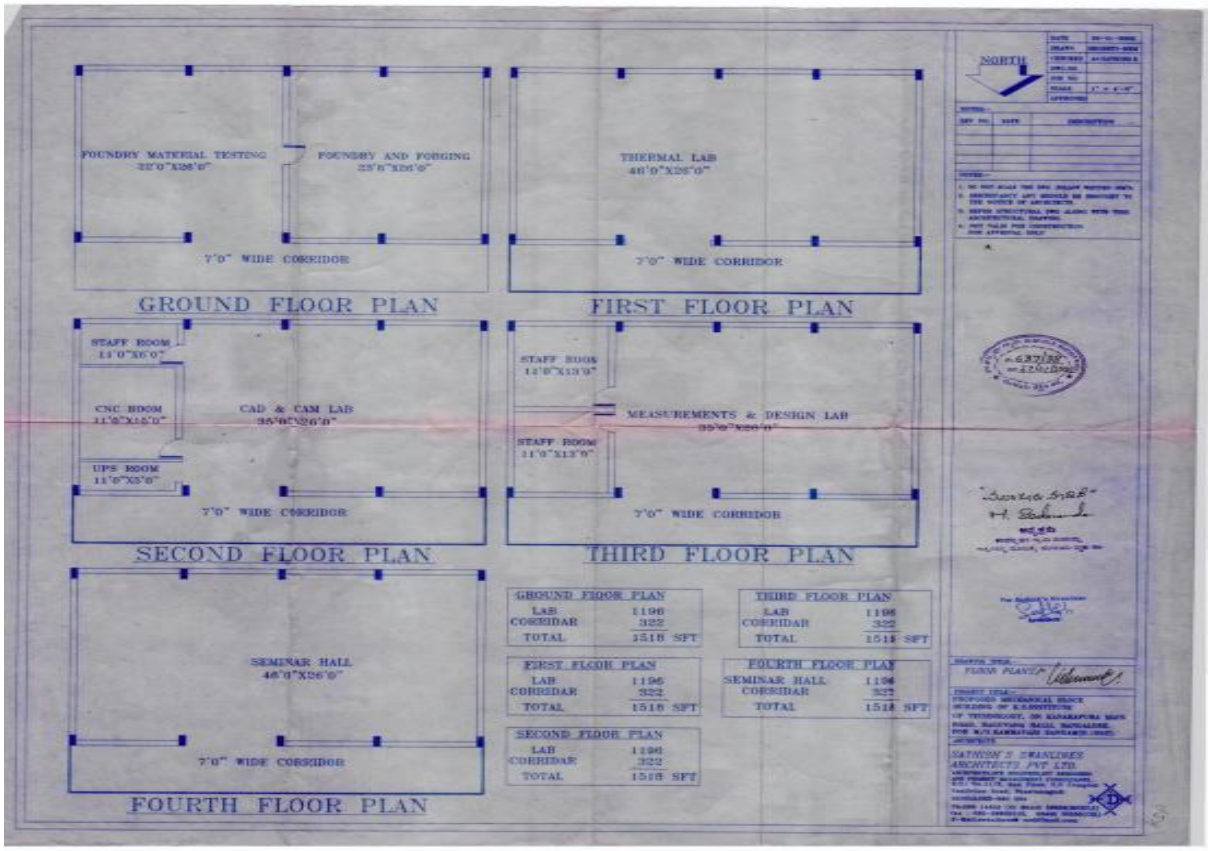


First Floor plan



Second Floor and Third floor plan





Block 2 Floor plan

iii. Total built-up area of the College

Building Name	Build Up Area (In Sq.m)	Carpet Area-Instructional (In Sq.m)	Carpet Area-Administrative (In Sq.m)	Carpet Area-Amenities (In Sq.m)	Building Plan Approving Authority	Building Plan Approval Date
KSIT EXISTING BLOCK I	8189	4319	1001	937	SECRETARY, THALAGHATTAPURA GRAMPANCHAYATH, OFFICE	06-08-1998
KSIT SILVER JUBILEE BLOCK II	14490	5120	976	4227	SECRETARY, THALAGHATTAPURA GRAMPANCHAYATH, OFFICE	02-11-2012
TOTAL AREA	22679	9439	1977	5164		

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109

iv. Development Footprint and Green Cover

At K. S. Institute of Technology , the preservation of site features, particularly greenery within its campus, stands as a cornerstone of its development ethos. Embracing a conscientious approach, the campus prioritizes the retention of natural elements—trees, plants, and green spaces during its construction endeavors. This deliberate strategy serves to curtail site damage and reduce the associated negative environmental impacts.

K. S. Institute of Technology, Campus development footprint and green cover

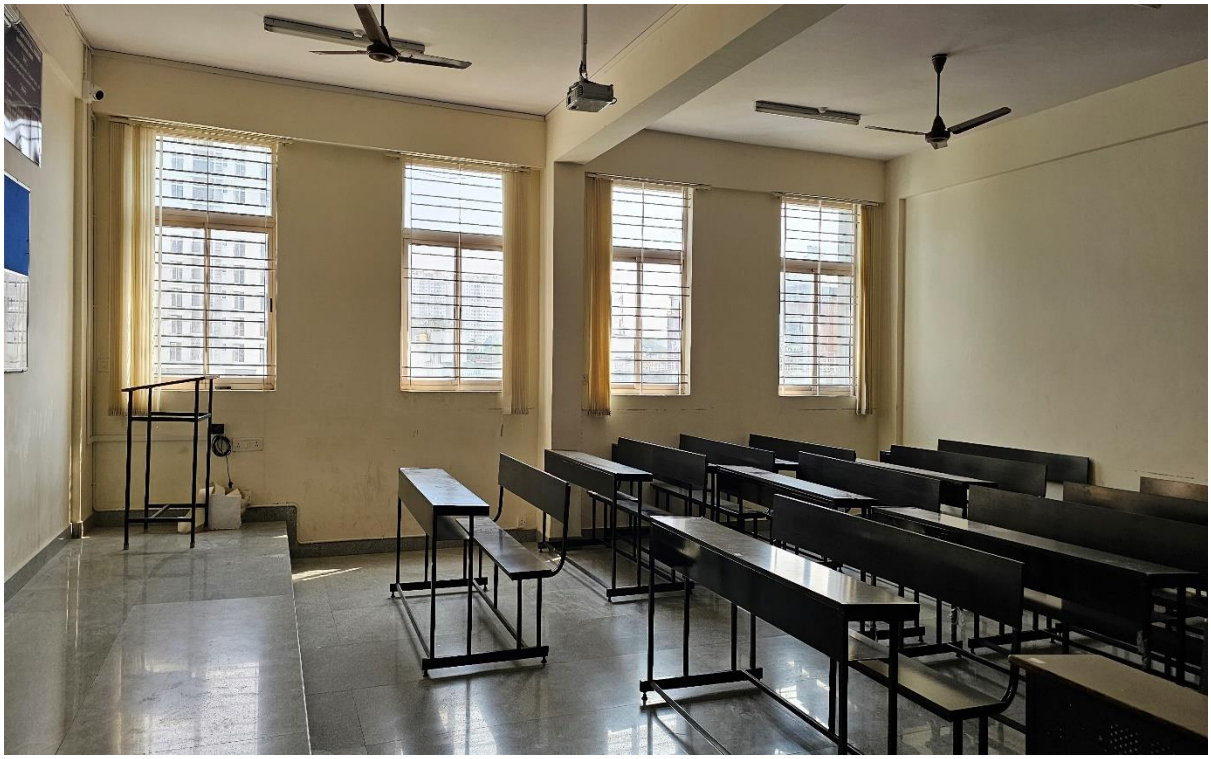
K. S. Institute of Technology, Campus development footprint and green cover

v. Day lighting

At K. S. Institute of Technology , the integration of abundant natural daylight through passive architectural methods stands as a hallmark of its design philosophy. Across various spaces, including classrooms, laboratories, computer labs, and the library, the campus showcases a deliberate and thoughtful approach to maximize the use of natural light. Through strategic placement and expansive windows, each area is meticulously designed to invite in copious amounts of daylight, creating bright, inviting, and conducive spaces for learning, research, and study. This conscious use of daylight not only enhances the aesthetic appeal of the campus but also fosters an environment that supports the well-being, focus, and productivity of students and faculty across different educational and research settings.

Feeling of space and light in the building

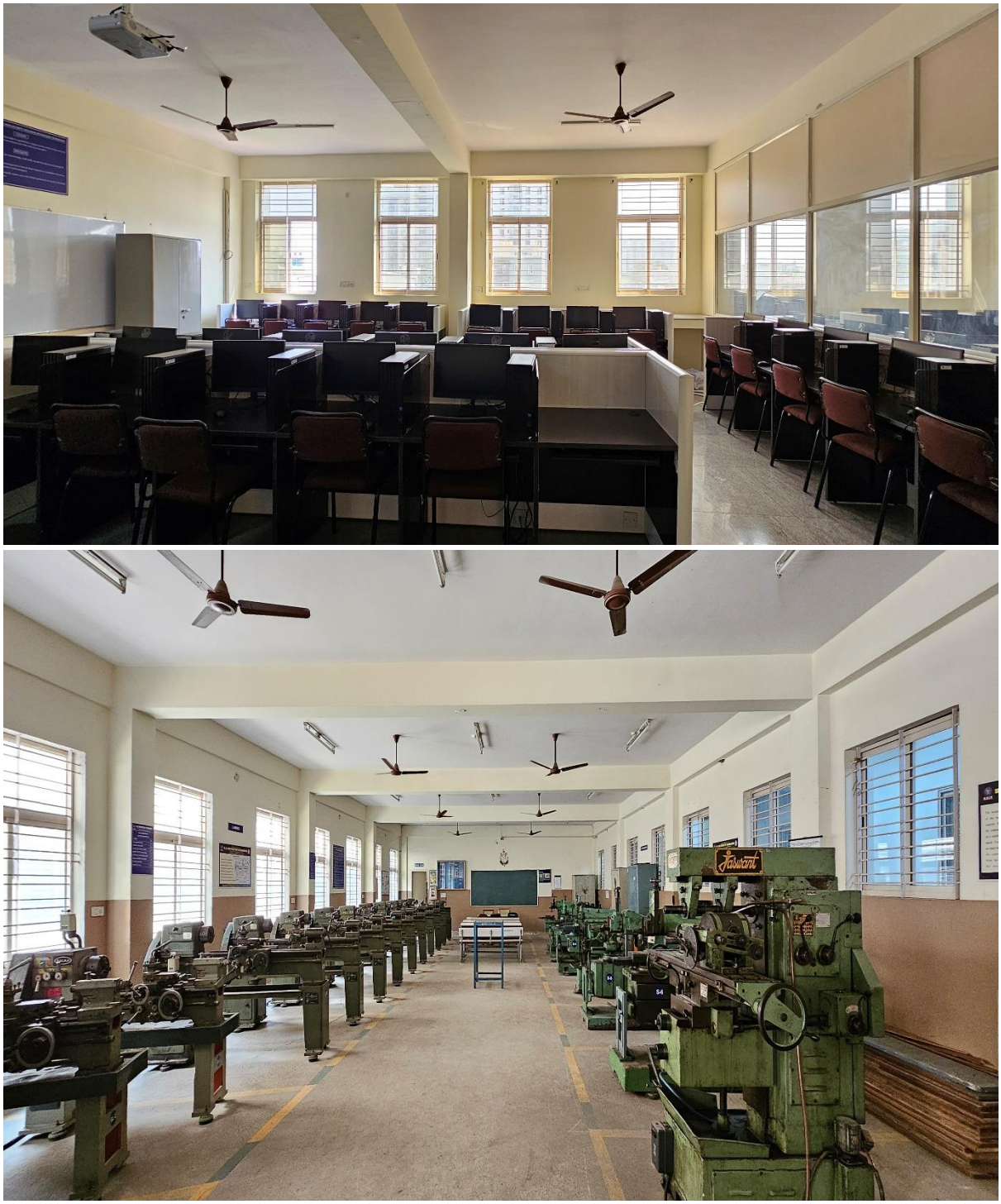
Use of Natural light for Classrooms



Use of Natural light for Classrooms

Classrooms: Classrooms are meticulously designed to harness natural daylight using passive architectural techniques. The strategic placement of large windows and the thoughtful architectural layout ensure an abundance of natural light within the learning spaces. Ample daylight not only creates a vibrant and conducive environment for academic pursuits but also contributes to the well-being and comfort of students and faculty.

Feeling of space and light in all the labs



Feeling of space and light in all the labs

Laboratories: The laboratories at College are intelligently designed with a focus on optimizing natural daylight. Employing passive architectural methods and spacious windows, these spaces are bathed in natural light, fostering an ideal setting for scientific experiments and practical work. The abundance of daylight not only enhances visibility but also creates an inspiring and comfortable environment for research and experimentation.

It is maintained that all regularly occupied spaces are daylit, thereby improving health and well-being of students & teachers.

III. Water Audit

Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water, the efforts of thecampusin water usage and management is seen through following activities it is satisfactory and no unnecessary water wastage is noticed in the campus.

During the survey, no wastages were observed. The open grounds provide means for water percolation as they are not barren due to ample greenery on campus. The campus has a functional rain water harvesting unit and the water collected is used for campus needs. All the waste water from the campus is treated by a fully functional Sewage Treatment Plant and is reused for gardening purposes in the Institution.

i. Water Supply and Usage

The primary water source for meeting the campus water demands is derived from 5 bore wells, effectively catering to the campus water needs. With a total of three bore wells strategically located across the campus, the Institution has established a robust system to harness groundwater efficiently. These bore wells, carefully situated, act as essential reservoirs, ensuring a consistent and reliable water supply throughout the year. Recognizing the importance of water conservation and replenishing groundwater resources, the Institution has undertaken a commendable effort by implementing recharge structures for all its bore wells. These recharge structures, designed and integrated systematically, play a pivotal role in replenishing the aquifers by allowing rainwater and surface runoff to percolate into the ground, thus contributing to the preservation and sustainability of the groundwater resources. This conscientious approach to utilizing bore well water as the primary source, coupled with the deployment of recharge structures, exemplifies the Institution's commitment to efficient water management and the conservation of precious water resources.

Borewell - Location No 1

Borewell - Location No 2

Borewell - Location No 3

ii. Water consumption

As a primary data collected by survey, we found

Sr. No.	Particulars	Details
1	Students	1558
2	Teaching Staff	83
3	Non-Teaching Staff	79
4	Visitors	15
	Total	1,735

Estimation of water requirement for drinking & domestic use as per (Source: NBC 2016, BIS)

Sr. No.	Particulars	Details	Water Consume limit	Total water in lit/day
1	Students at Institution	1558	45 lit/day	70,110
2	Teaching Staff	83	45 lit/day	3,735
3	Non-Teaching Staff	79	45 lit/day	3,555
4	Visitors	15	15 lit/day	225
	Total	1,735		77,625

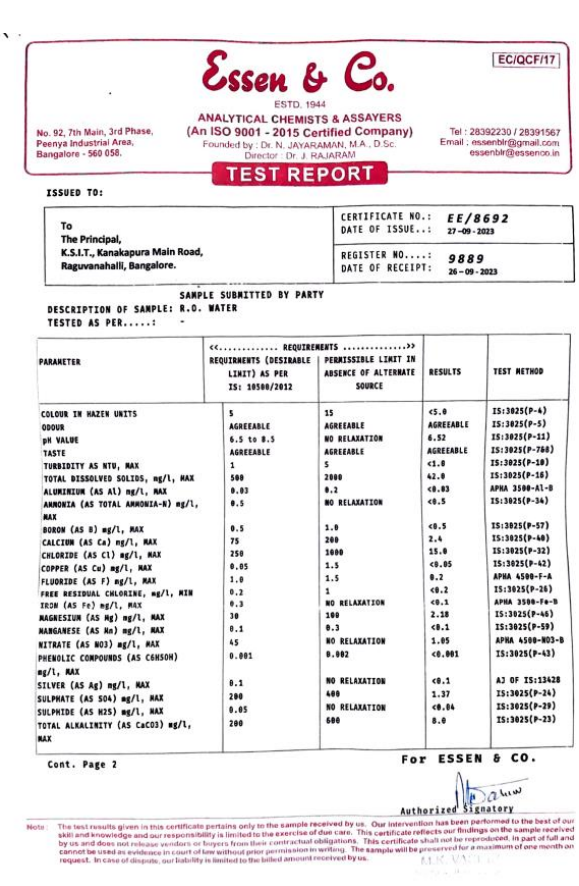
Total expected Water consumption as per NBC 2016, BIS is – 77.62 m^3/day.

iii. Water quality

The quality of the bore well water has been assessed and meets the standards for potable (drinkable) water. To ensure the continued safety and quality of the drinking water provided to staff and students, thecampushas implemented a comprehensive water treatment system. This system includes UV (Ultraviolet) and RO (Reverse Osmosis) filtration systems installed on each floor of every block. These filtration systems effectively purify the water, making it safe for consumption, and contribute to the overall well-being of the Institution community by providing access to clean and potable drinking water.

RO water filtration system

RO water dispenser



Essen & Co.

ESTD. 1944

ANALYTICAL CHEMISTS & ASSAYERS

(An ISO 9001 - 2015 Certified Company)

Founded by : Dr. N. JAYARAMAN, M.A., D.Sc.

Director : Dr. J. RAJARAM

No. 92, 7th Main, 3rd Phase, Peenya Industrial Area, Bangalore - 560 058.

Tel : 28392230 / 28391567

Email : essenblr@gmail.com / essenblr@essenco.in

EC/QCF/17

TEST REPORT

ISSUED TO:

To
The Principal,
K.S.I.T., Kanakapura Main Road,
Raguvanahalli, Bangalore.

CERTIFICATE NO.: EE/8692
DATE OF ISSUE..: 27-09-2023

REGISTER NO....: 9889
DATE OF RECEIPT: 26-09-2023

SAMPLE SUBMITTED BY PARTY

DESCRIPTION OF SAMPLE: R.O. WATER

TESTED AS PER.....: -

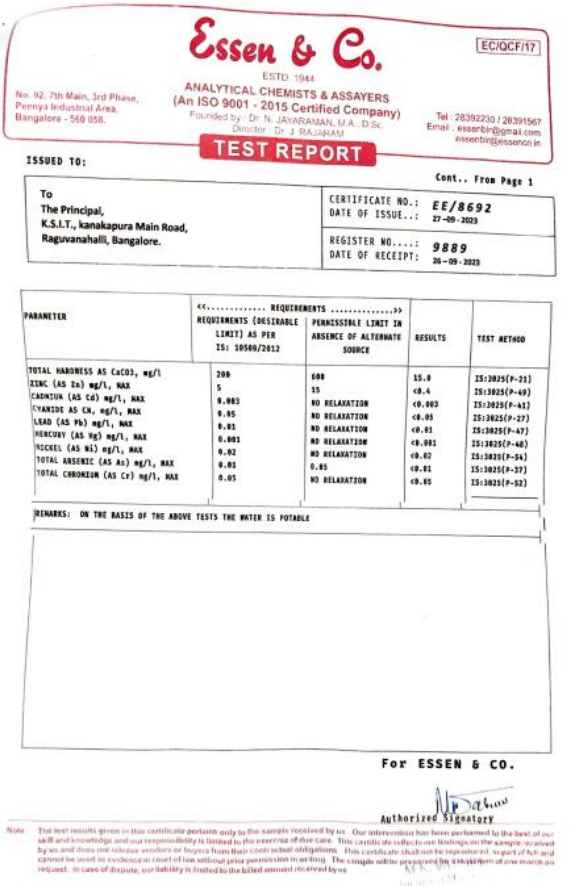
PARAMETER	REQUIREMENTS (DESIRABLE LIMIT) AS PER IS: 10500/2012	PERMISSIBLE LIMIT IN ABSENCE OF ALTERNATE SOURCE	RESULTS	TEST METHOD
COLOUR IN HAZEN UNITS	5	15	<5.0	IS:3025(P-4)
ODOUR	AGREEABLE	AGREEABLE	AGREEABLE	IS:3025(P-5)
pH VALUE	6.5 to 8.5	NO RELAXATION	6.52	IS:3025(P-11)
TASTE	AGREEABLE	AGREEABLE	AGREEABLE	IS:3025(P-708)
TURBIDITY AS NTU, MAX	1	5	<1.0	IS:3025(P-10)
TOTAL DISSOLVED SOLIDS, mg/l, MAX	500	2000	42.0	IS:3025(P-16)
ALUMINIUM (AS Al) mg/l, MAX	0.03	0.2	<0.03	APHA 3500-Al-B
AMMONIA (AS TOTAL AMMONIA-N) mg/l, MAX	0.5	NO RELAXATION	<0.5	IS:3025(P-34)
BORON (AS B) mg/l, MAX	0.5	1.0	<0.5	IS:3025(P-57)
CALCIUM (AS Ca) mg/l, MAX	75	200	2.4	IS:3025(P-40)
CHLORIDE (AS Cl) mg/l, MAX	250	1000	15.0	IS:3025(P-32)
COPPER (AS Cu) mg/l, MAX	0.05	1.5	<0.05	IS:3025(P-42)
FLUORIDE (AS F) mg/l, MAX	1.0	1.5	0.2	APHA 4500-F-A
FREE RESIDUAL CHLORINE, mg/l, MIN	0.2	1	<0.2	IS:3025(P-26)
IRON (AS Fe) mg/l, MAX	0.3	NO RELAXATION	<0.1	APHA 3500-Fe-B
MAGNESIUM (AS Mg) mg/l, MAX	30	100	2.18	IS:3025(P-46)
MANGANESE (AS Mn) mg/l, MAX	0.1	0.3	<0.1	IS:3025(P-59)
NITRATE (AS NO3) mg/l, MAX	45	NO RELAXATION	1.05	APHA 4500-NO3-B
PHENOLIC COMPOUNDS (AS C6H5OH) mg/l, MAX	0.001	0.002	<0.001	IS:3025(P-43)
SILVER (AS Ag) mg/l, MAX	0.1	NO RELAXATION	<0.1	AJ OF IS:13428
SULPHATE (AS SO4) mg/l, MAX	200	400	1.37	IS:3025(P-24)
SULPHIDE (AS H2S) mg/l, MAX	0.05	NO RELAXATION	<0.04	IS:3025(P-29)
TOTAL ALKALINITY (AS CaCO3) mg/l, MAX	200	600	8.0	IS:3025(P-23)

Cont. Page 2

For ESSEN & CO.

Authorized Signatory

Note : The test results given in this certificate pertains only to the sample received by us. Our intervention has been performed to the best of our skill and knowledge and our responsibility is limited to the exercise of due care. This certificate reflects our findings on the sample received by us and does not release vendors or buyers from their contractual obligations. This certificate shall not be reproduced, in part of full and cannot be used as evidence in court of law without prior permission in writing. The sample will be preserved for a maximum of one month on request. In case of dispute, our liability is limited to the billed amount received by us.



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PARAMETER	REQUIREMENTS (DESIRABLE LIMIT) AS PER IS: 10500/2012	PERMISSIBLE LIMIT IN ABSENCE OF ALTERNATE SOURCE	RESULTS	TEST METHOD
TOTAL HARDNESS AS CaCO3, mg/l	200	600	15.0	IS:3025(P-21)
ZINC (AS Zn) mg/l, MAX	5	15	<0.4	IS:3025(P-49)
CADMIUM (AS Cd) mg/l, MAX	0.003	NO RELAXATION	<0.003	IS:3025(P-41)
CYANIDE AS CN, mg/l, MAX	0.05	NO RELAXATION	<0.05	IS:3025(P-27)
LEAD (AS Pb) mg/l, MAX	0.01	NO RELAXATION	<0.01	IS:3025(P-47)
MERCURY (AS Hg) mg/l, MAX	0.001	NO RELAXATION	<0.001	IS:3025(P-48)
NICKEL (AS Ni) mg/l, MAX	0.02	NO RELAXATION	<0.02	IS:3025(P-54)
TOTAL ARSENIC (AS As) mg/l, MAX	0.01	0.05	<0.01	IS:3025(P-37)
TOTAL CHROMIUM (AS Cr) mg/l, MAX	0.05	NO RELAXATION	<0.05	IS:3025(P-52)

REMARKS: ON THE BASIS OF THE ABOVE TESTS THE WATER IS POTABLE

For ESSEN & CO.

Authorized Signatory

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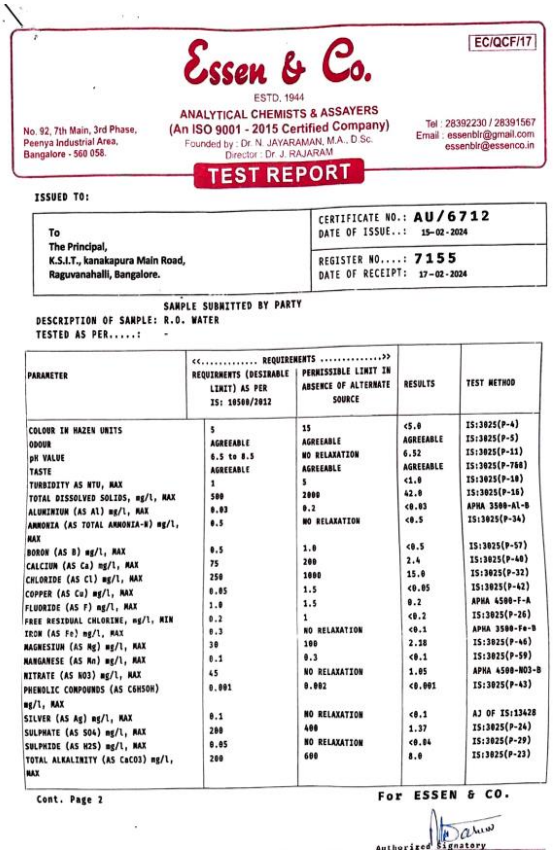

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REGISTER NO....: 7155
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SAMPLE SUBMITTED BY PARTY

DESCRIPTION OF SAMPLE: R.O. WATER

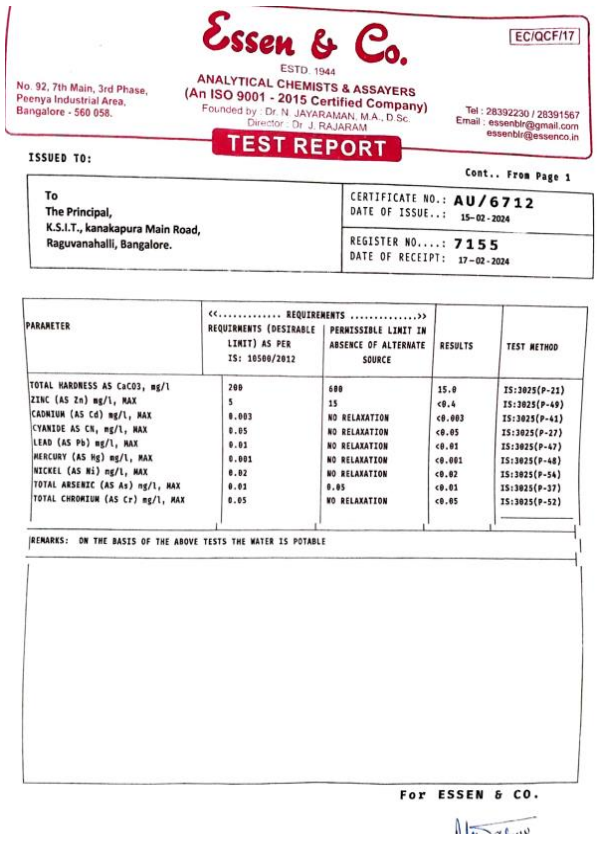
TESTED AS PER.....: -

PARAMETER	REQUIREMENTS (DESIRABLE LIMIT) AS PER IS: 10500/2012	PERMISSIBLE LIMIT IN ABSENCE OF ALTERNATE SOURCE	RESULTS	TEST METHOD
COLOUR IN HAZEN UNITS	5	15	<5.0	IS:3025(P-4)
ODOUR	AGREEABLE	AGREEABLE	AGREEABLE	IS:3025(P-5)
pH VALUE	6.5 to 8.5	NO RELAXATION	6.52	IS:3025(P-11)
TASTE	AGREEABLE	AGREEABLE	AGREEABLE	IS:3025(P-708)
TURBIDITY AS NTU, MAX	1	5	<1.0	IS:3025(P-10)
TOTAL DISSOLVED SOLIDS, mg/l, MAX	500	2000	42.0	IS:3025(P-16)
ALUMINIUM (AS Al) mg/l, MAX	0.03	0.2	<0.03	APHA 3500-Al-B
AMMONIA (AS TOTAL AMMONIA-N) mg/l, MAX	0.5	NO RELAXATION	<0.5	IS:3025(P-34)
BORON (AS B) mg/l, MAX	0.5	1.0	<0.5	IS:3025(P-57)
CALCIUM (AS Ca) mg/l, MAX	75	200	2.4	IS:3025(P-40)
CHLORIDE (AS Cl) mg/l, MAX	250	1000	15.0	IS:3025(P-32)
COPPER (AS Cu) mg/l, MAX	0.05	1.5	<0.05	IS:3025(P-42)
FLUORIDE (AS F) mg/l, MAX	1.0	1.5	0.2	APHA 4500-F-A
FREE RESIDUAL CHLORINE, mg/l, MIN	0.2	1	<0.2	IS:3025(P-26)
IRON (AS Fe) mg/l, MAX	0.3	NO RELAXATION	<0.1	APHA 3500-Fe-B
MAGNESIUM (AS Mg) mg/l, MAX	30	100	2.18	IS:3025(P-46)
MANGANESE (AS Mn) mg/l, MAX	0.1	0.3	<0.1	IS:3025(P-59)
NITRATE (AS NO3) mg/l, MAX	45	NO RELAXATION	1.05	APHA 4500-NO3-B
PHENOLIC COMPOUNDS (AS C6H5OH) mg/l, MAX	0.001	0.002	<0.001	IS:3025(P-43)
SILVER (AS Ag) mg/l, MAX	0.1	NO RELAXATION	<0.1	AJ OF IS:13428
SULPHATE (AS SO4) mg/l, MAX	200	400	1.37	IS:3025(P-24)
SULPHIDE (AS H2S) mg/l, MAX	0.05	NO RELAXATION	<0.04	IS:3025(P-29)
TOTAL ALKALINITY (AS CaCO3) mg/l, MAX	200	600	8.0	IS:3025(P-23)

Cont. Page 2

For ESSEN & CO.

Authorized Signatory



Essen & Co.

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ANALYTICAL CHEMISTS & ASSAYERS

(An ISO 9001 - 2015 Certified Company)

Founded by : Dr. N. JAYARAMAN, M.A., D.Sc.

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No. 92, 7th Main, 3rd Phase, Peenya Industrial Area, Bangalore - 560 058.

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Email : essenblr@gmail.com / essenblr@essenco.in

EC/QCF/17

TEST REPORT

ISSUED TO:

Cont.. From Page 1

To
The Principal,
K.S.I.T., kanakapura Main Road,
Raguvanahalli, Bangalore.

CERTIFICATE NO.: AU/6712
DATE OF ISSUE..: 15-02-2024

REGISTER NO....: 7155
DATE OF RECEIPT: 17-02-2024

PARAMETER	REQUIREMENTS (DESIRABLE LIMIT) AS PER IS: 10500/2012	PERMISSIBLE LIMIT IN ABSENCE OF ALTERNATE SOURCE	RESULTS	TEST METHOD
TOTAL HARDNESS AS CaCO3, mg/l	200	600	15.0	IS:3025(P-21)
ZINC (AS Zn) mg/l, MAX	5	15	<0.4	IS:3025(P-49)
CADMIUM (AS Cd) mg/l, MAX	0.003	NO RELAXATION	<0.003	IS:3025(P-41)
CYANIDE AS CN, mg/l, MAX	0.05	NO RELAXATION	<0.05	IS:3025(P-27)
LEAD (AS Pb) mg/l, MAX	0.01	NO RELAXATION	<0.01	IS:3025(P-47)
MERCURY (AS Hg) mg/l, MAX	0.001	NO RELAXATION	<0.001	IS:3025(P-48)
NICKEL (AS Ni) mg/l, MAX	0.02	NO RELAXATION	<0.02	IS:3025(P-54)
TOTAL ARSENIC (AS As) mg/l, MAX	0.01	0.05	<0.01	IS:3025(P-37)
TOTAL CHROMIUM (AS Cr) mg/l, MAX	0.05	NO RELAXATION	<0.05	IS:3025(P-52)

REMARKS: ON THE BASIS OF THE ABOVE TESTS THE WATER IS POTABLE

For ESSEN & CO.

RO Water test report

iv. Rain water harvesting

The K. S. Institute of Technology has taken a bold step towards sustainable water management by embracing a comprehensive approach to rainwater harvesting on its campus. Through innovative strategies and meticulous planning, the institute aims to optimize rainwater utilization and enhance groundwater recharge effectively. Utilizing the non-roof method, the campus has strategically implemented specific structures like recharge pits across its premises to capture and infiltrate rainwater into the ground. These efforts not only conserve water but also significantly contribute to boosting the groundwater table.

Moreover, the campus has incorporated an advanced system of drain channels intelligently distributed throughout its landscape. These channels are designed to collect rainwater and channel it to centralized points or low-lying areas, ensuring efficient gathering and redirection of rainwater to specific zones for absorption or collection. This holistic approach minimizes surface runoff and maximizes rainwater management, thus benefiting both groundwater replenishment and water resource conservation.

To complement these initiatives, the campus boasts 10 large tanks, each with a capacity of 10,000 liters, totaling an impressive 1,00,000 liters. These tanks serve as crucial reservoirs for recharging rainwater, further enhancing the Institute's ability to sustainably recharge ground water table. Through these integrated efforts, K. S. Institute of Technology demonstrates its commitment to environmental stewardship and sets a commendable example for sustainable practices in higher education institutions.

Rain water pipes and recharge pits

Open Rain water channels

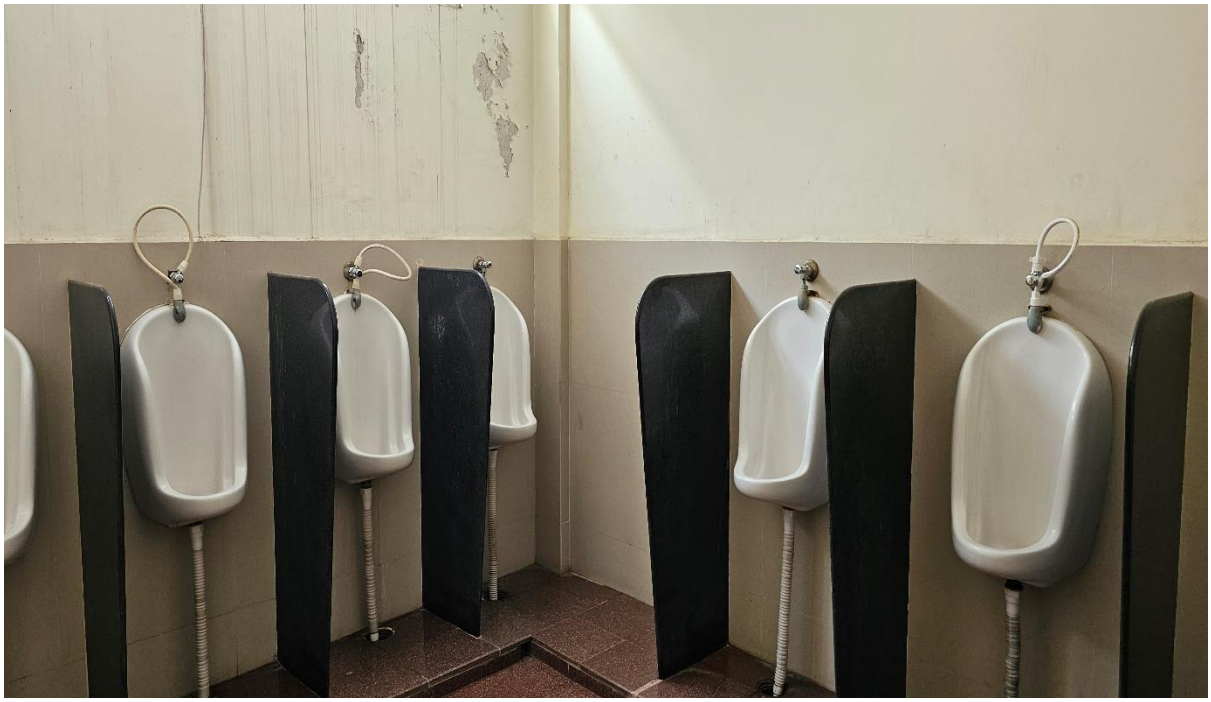
This multi-faceted strategy underscores the institution's commitment to sustainable water management. By combining the non-roof method with an intricate network of drain channels, the Institution demonstrates a dedication to eco-friendly practices and responsible water utilization, ensuring an environmentally sustainable campus for the benefit of present and future generations

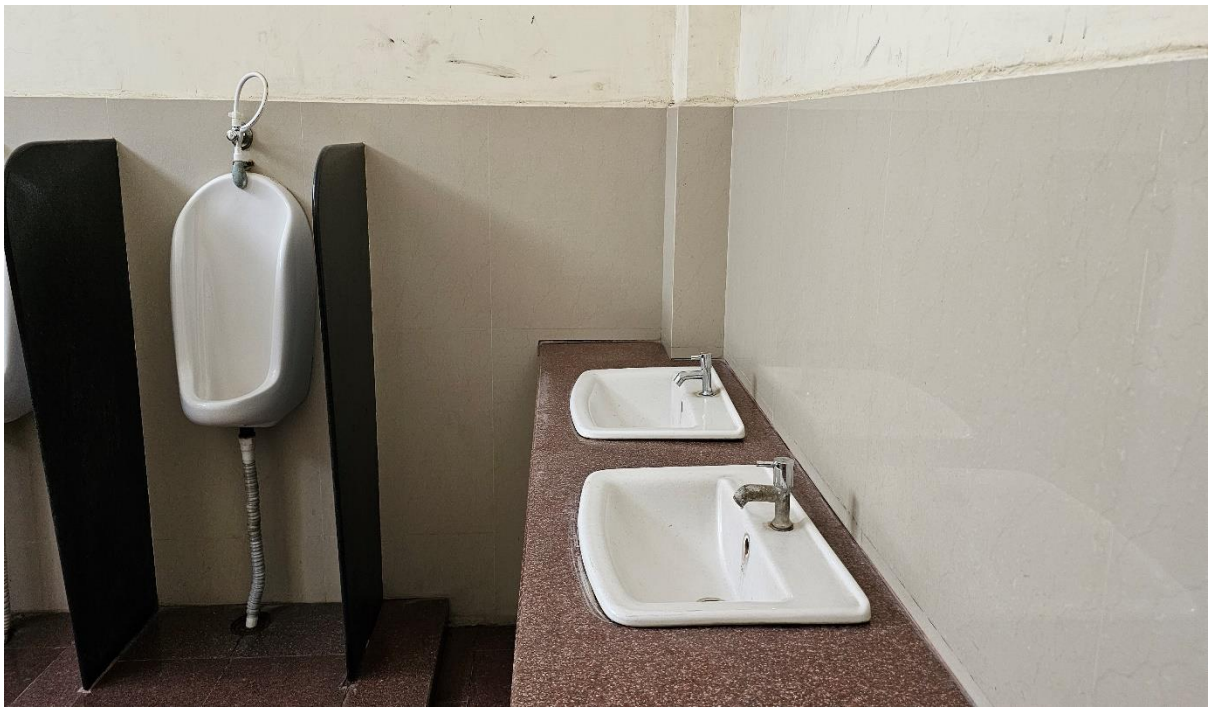
The campus has implemented rainwater recharge pits, specifically designed to improve the groundwater table and augment the vegetated area on campus. These pits, constructed with a depth of 15 feet, are strategically located within the institution's premises, primarily near the bore well.

The primary objective of these recharge pits is to facilitate the restoration of groundwater levels by enabling rainwater to permeate through the soil and recharge underground aquifers. Placing these pits in close proximity to the bore well is a carefully considered decision, accounting for crucial factors such as the catchment area, soil percolation rates, and groundwater depth. This strategic placement near the bore well maximizes water infiltration in a specific targeted area, effectively contributing to the institution's sustainable water resource management and promoting groundwater replenishment. The recharge structures are dedicated specifically to the bore well, ensuring a localized and efficient recharge process.

v. Water efficient plumbing fixtures

To further their commitment to water conservation, The Institute has incorporated water-efficient plumbing fixtures throughout their facilities. This includes the installation of sensor-based urinals and taps equipped with aerators. These fixtures help reduce water consumption, promoting water efficiency and sustainability within the institution.





Auto release flush valve

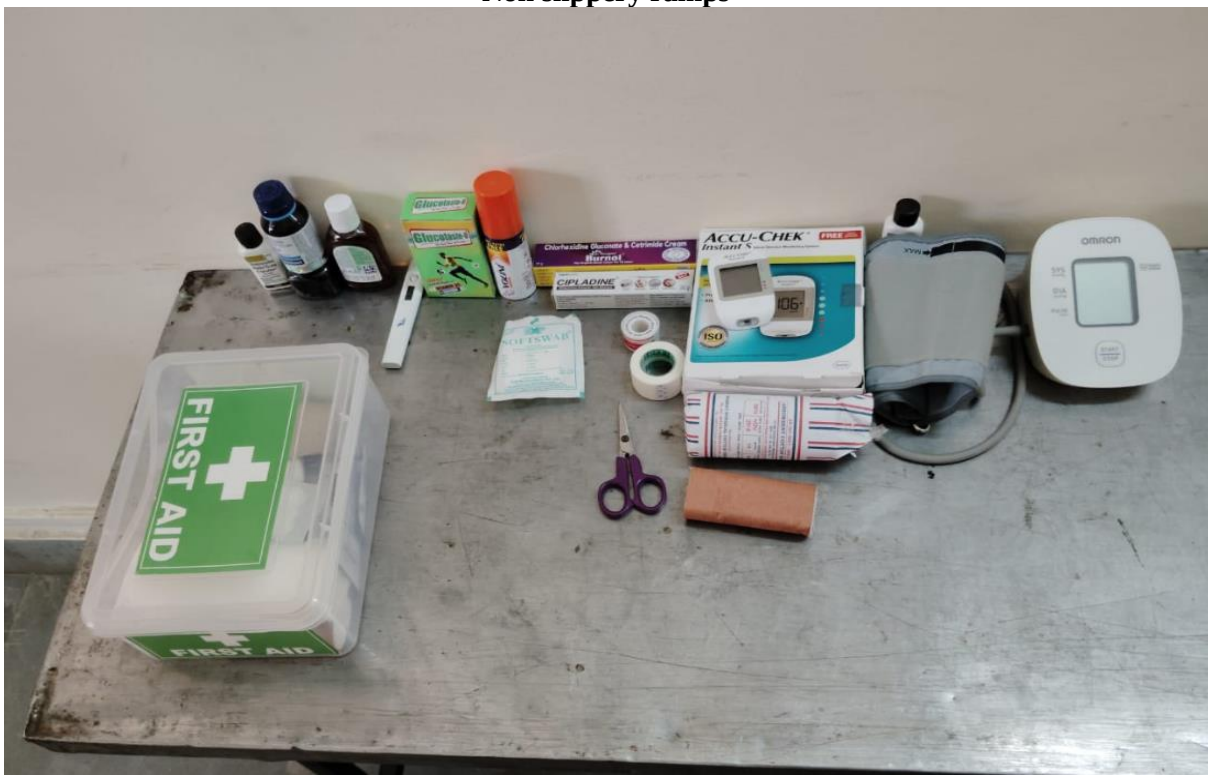
IV. Good Health and Well-being

i. Campus design caters to differently able people

The campus design places a strong emphasis on accessibility and inclusivity, catering to differently-abled individuals and senior citizens. Several measures have been implemented to ensure their comfort and ease of movement, including:

Non-Slippery Ramps: Ramps with non-slip surfaces have been installed to provide smooth access for individuals with mobility challenges, ensuring safe and secure movement.

Non slippery ramps



First Aid facility

Washroom facility for differently abled

Lifts with Braile assistance

Wheelchairs: Wheelchairs are provided to assist those who require mobility aids, facilitating their movement within the campus.

Uniformity in Floor Level: Exterior common areas have been designed with consistent floor levels to ensure unobstructed movement and accessibility for all.

Easy Access to Main Entrance: The main entrances of buildings are easily accessible, removing barriers and enabling smooth entry for everyone.

Preferred Parking for Differently-Abled: Designated parking spaces have been allocated for differently-abled individuals, allowing them convenient access to the campus facilities.

Appropriately Designed Preferred Car Park Spaces: Specifically designed preferred car park spaces are situated for easy access to the building's main entrance enhancing convenience for differently-abled and senior citizens.

Dispensary: A dispensary is a vital facility provided within the University campus to cater to the healthcare needs of students. It serves as a dedicated space where students can receive medical care, treatment, and support. The purpose and features of a University dispensary is as follows:

a. **Basic Medical Services:** The University dispensary offers essential medical services to address common health issues that students may encounter. This includes treatment for minor injuries, illnesses, and other health concerns.

b. **Qualified Medical Staff:** A qualified and experienced medical team, often consisting of doctors, nurses, and support staff, is available in the dispensary. They are responsible for diagnosing and treating students and providing healthcare advice.

c. **First Aid:** The dispensary is equipped with first-aid supplies and equipment to provide immediate care in case of accidents or emergencies. This quick response can be critical in preventing the worsening of injuries.

d. **Medication Distribution:** The dispensary typically stocks a range of common medications, allowing students to obtain prescribed or over-the-counter drugs as needed. This is especially beneficial for students with chronic medical conditions.

e. **Health Counseling:** In addition to treatment, the dispensary often offers health counseling and guidance on maintaining a healthy lifestyle. This can include advice on nutrition, stress management, and preventive measures.

f. **Vaccination and Health Programs**: Some University dispensaries may also organize health programs, vaccination campaigns, and wellness workshops to promote the overall well-being of the student population.

g. **Confidentiality:** The dispensary maintains strict patient confidentiality, ensuring that students can discuss their health concerns without fear of information being disclosed without their consent.

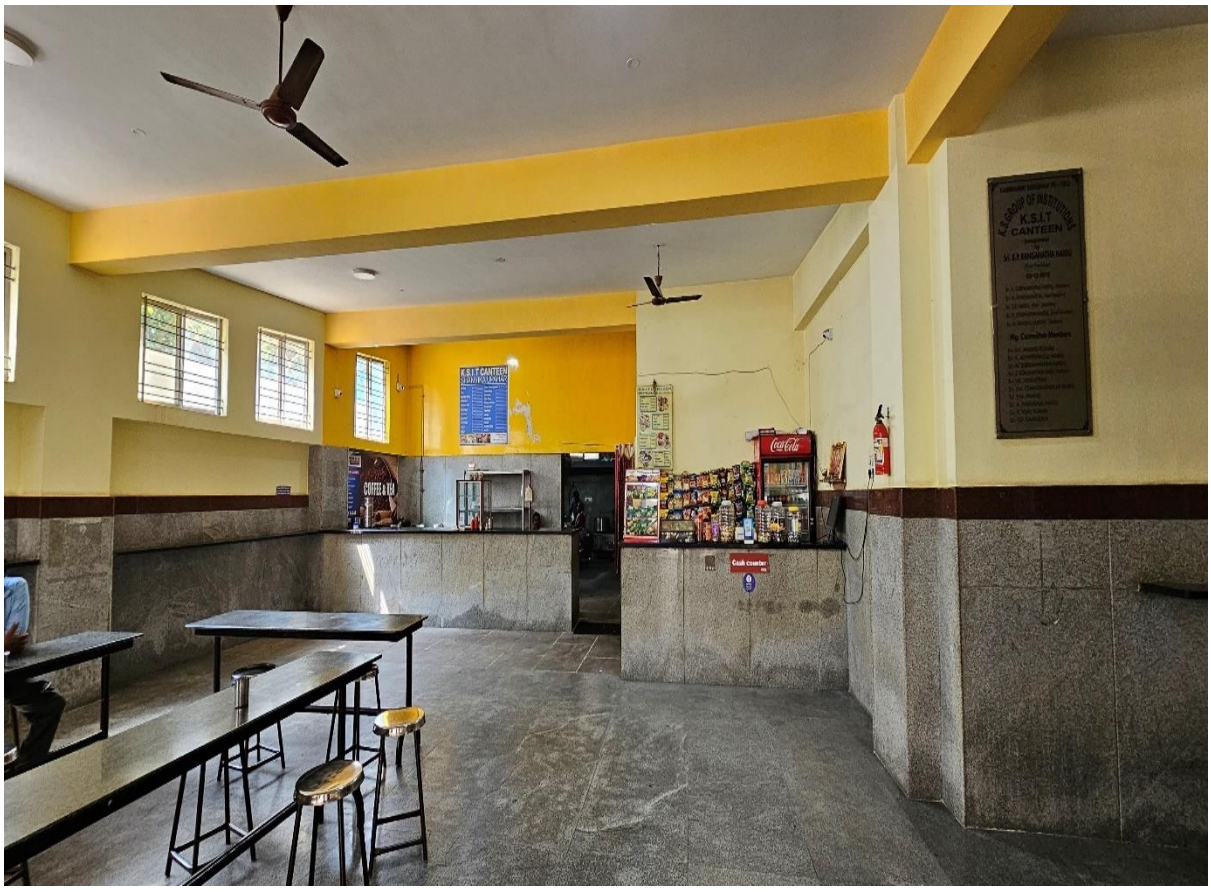
h. **Emergency Response**: In the case of a medical emergency, the dispensary can serve as a primary point of contact and coordination for arranging hospital transfers or ambulance services.

i. **Convenient Access:** Having a dispensary on campus ensures that students have easy and timely access to healthcare services. This can be particularly valuable when students are too unwell to travel off-campus.

Sanitary Pad vending machine

ii. Basic Amenities

Institution has Provide access to basic amenities, so as to reduce negative impacts caused from automobile use and also make it easy for students, basic amenities such as cafeteria, canteen, bus stop in front of the College and several other basic amenities, within the campus itself.



Canteen facility

V. Waste Management Audit

K. S. Institute of Technology is committed to promoting environmentally responsible practices, and one key area where this commitment is evident is in its waste management strategies. By implementing a range of initiatives, the College aims to reduce its environmental impact, minimize landfill contributions, and foster a culture of sustainability among its students and staff.

Source Segregation:

The College has established a robust source segregation system, encouraging the separation of waste at its origin. Dust bins for biodegradable and plastic waste are strategically placed across the campus, facilitating the easy disposal of waste materials by students and staff.

Specialized Handling of Hazardous Waste:

College is responsible for the collection and proper disposal of various types of hazardous waste generated within the College, ensuring adherence to safety and environmental standards.

Regular Cleaning and Municipal Service Collaboration:

Daily cleaning activities ensure the maintenance of a clean and hygienic environment.

A significant portion of non-biodegradable waste is efficiently lifted by the City Municipal service, reinforcing the Institute's commitment to responsible waste disposal.

Dedicated Collection Centers:

Specific collection centers on campus are designated for all kinds of waste generated, ensuring safe and compliant handling of these materials.

Sanitary pad Incinerator

E-waste Management:

The College recognizes the importance of responsible e-waste management. Defective items from the computer lab and other electronic waste are stored appropriately.
An approved e-waste management and disposal facility have been contacted to ensure the scientific and environmentally sound disposal of electronic waste, with a focus on potential reuse.

Promotion of 3R Principles:
Reduce:
K. S. Institute of Technology has taken significant steps to reduce paper usage. Paperless processes have been implemented for admissions, examination forms, and financial transactions. Students are encouraged to use both sides of paper for writing tests, and the adoption of paper binding for academic practical records has replaced the use of plastic. The dissemination of notices and circulars to faculty is predominantly done through email, minimizing the need for printed materials.

Reuse:
The College stores e-waste and defective items from the computer lab with the intention of facilitating their reuse wherever possible. By embracing a culture of reusing materials, K. S. Institute of Technology actively contributes to the reduction of waste generation.

Recycle: The waste management is in order with the installation of dust bins. The waste is segregated at source by providing separate dust bins for Biodegradable and Plastic waste. Students and staff members are given sufficient information regarding the effective management of the waste generated in the campus.

Conclusion:
K. S. Institute of Technology has successfully implemented a comprehensive waste management strategy that aligns with the principles of sustainability. Through source segregation, collaboration with municipal services, and dedicated handling of various waste streams, the College is setting a positive example for responsible waste management within the academic community. The commitment to the 3R principles—Reduce, Reuse, and Recycle—underscores the institution's dedication to minimizing its environmental footprint and fostering a culture of sustainability among students, staff, and the broader community.

VI. Biodiversity Audit

A comprehensive scientific survey of the campus' flora and fauna was conducted throughout the rainy, winter, and summer seasons in 2023-2024. This biodiversity audit yielded noteworthy findings, including the identification of numerous tree species and a diverse array of mammals, birds (Aves), arthropods, and annelids. These discoveries underscore the remarkable composition of flora and fauna thriving on the campus. Notably, the campus hosts a seasonal influx of various bird species, further enhancing its ecological significance. Moreover, the institution has embarked on a commendable initiative to label trees and plants with their botanical names and assign unique numerical identifiers. This concerted effort aligns with the broader goal of preserving and celebrating the campus's rich biodiversity, fostering a deeper appreciation for the natural world.

Campus Plantation Overview: In the campus, there is a dedicated effort towards creating a vibrant and green environment with a focus on a variety of plants that contribute to the beauty and ecological balance of the surroundings.

Horticulture Department Presence: In the campus, there is a dedicated Horticulture Department overseeing the management of the garden areas.

Staff Composition in the Horticulture Department:
- 01 Assistant Facility Manager
- 01 Supervisor
- 03 Gardeners

This integrated approach to horticulture not only beautifies the campus but also instills a culture of environmental stewardship and community engagement among the campus occupants.

Biodiversity Details

No.	Common Name of plant/tree	Scientific Name of plant/tree
1	Dwarf umbrella tree	Heptapleurum rboricola
2	Rose	Rosa rubiginosa
3	Tuberose (rajinigndha)	Agave amica
4	Chinese Evergreen	Aglaonema
5	Golden Evergreen	Aglaonema commutatum
6	Indian Laurel Fig	Ficus retusa
7	Song of India	Pleomele reflexa variegata
8	Pride of India	Dracaena reflexa
9	Dumb cane	Dieffenbachia seguine
10	Osage orange	Maclura pomifera
11	Indian mint	Coleus Amboinicus
12	Madagascar Periwinkle	Catharanthus roseus

13	Trailing Krameria	Krameria lanceolata
14	Patharchatta	Kalanchoe pinnata
15	Veldt Grape	Cissus quadrangularis
16	Screw pine	Pandanus veitchii
17	Red silky oak	Alloxylon flammeum
18	Tulsi	Ocimum sanctum
19	Chinensis Ixora	Ixora Chinensis
20	Border Plant	Alternanthera Loropetalum
21	Ficus microcarpa	Chinese banyan
22	Aesculus californica	California buckeye
23	Rubber Plant	Hevea brasiliensis
24	Spreading phlox	Phlox diffusa
25	Hibiscus	Hibiscus rosa-sinensis
26	Yellow Creeping Daisy	Sphagneticola trilobata
27	East-Himalayan Derris	Aganope thyrsiflora
28	Minnieroot	Ruellia tuberosa
29	Onion cedar	Owenia cepiodora
30	Mangrove fan palm	Licuala spinosa
31	Persian silk tree	Albizia Julibrissin
32	Pomegranate	Punica granatum
33	Mango tree	Mangifera indica
34	Madagascar Jasmine	Stephanotis floribunda
35	Red cedar	Juniperus virginiana
36	Copper leaf	Acalypha wilkesiana
37	Golden Champa	Magnolia champaca
38	Green sannaleaves plant	Senna alexandrina
39	Watery rose apple	Syzygium aqueum
40	Caricature plant	Graptophyllum pictum
41	Paperbark-tree	Melaleuca quinquenervia
42	Eagles ford ficus	Ficus benjamina
43	Frangipani	Pulmeria
44	Rose bay	Nerium oleander
45	Korean dendropanax	Dendropanax morbiferus
46	Jack fruit	Artocarpus heterophyllus
47	Zebra plant	Aphelandra squarrosa
48	Canna lilly	Canna indica
49	Chilian pine	Araucaria araucana
50	Neem tree	Azadirachta indica
51	Buddhist Pine	podocarpus totara
52	Crown of thorns	Euphorbia milii

53	Arrowhead vine	Syngonium podophyllum
54	Copperleaf	Acalypha wilkesiana
55	African dream herb	Niche garage
56	Chinese Evergreen	Aglaonema commutatum
57	Beach Spiderlily	Hymenocallis littoralis
58	Lemon tree	Citrus limon
59	Peace lily	Spathiphyllum wallisii
60	Alovera	Aloe barbadensis Miller
61	Pink rain lily	Zephyranthes rosea
62	Diagnosis red cordyline	Diagnosis red cordyline
63	Bush lily	Clivia miniata
64	Variegated Sedge	Carex siderosticha variegata
65	Lantana camara	Lantana aculeata L. Camara vulgaris
66	Miracle Leaf	Kalanchoe Pinnata

Medicinal Plants

Sl. No.	Plant No.	Common Name of plant/tree	Scientific Name of plant/tree	Images
1	3	Tuberose (rajinigndha)	Agave amica	
2	11	Indian mint	Coleus Amboinicus	
3	12	Madagascar Periwinkle	Catharanthus roseus	

4	15	Veldt Grape	Cissus quadrangularis	
5	18	Tulsi	Ocimum sanctum	
6	25	Hibiscus	Hibiscus rosa-sinensis	
7	38	Green sannaleaves plant	Senna alexandrina	
8	43	Frangipani	Pulmeria	

9	48	Canna lilly	Canna indica	
10	50	Neem tree	Azadirachta indica	
11	53	Arrowhead vine	Syngonium podophyllum	
12	54	Copperleaf	Acalypha wilkesiana	
13	55	African dream herb	Niche garage	

14	60	Alovera	Aloe barbadenis Miller	
15	62	Diagnosis red cordyline	Diagnosis red cordyline	
16	63	Bush lily	Clivia miniata	
17	65	Lantana camara	Lantana aculeate L. Camara vulgaris	
18	66	Miracle Leaf	Kalanchoe pinnata	

A diverse range of mammal, bird, arthropod, and annelid species were observed on campus, showcasing an unexpectedly rich composition of flora and fauna. This biodiversity is particularly remarkable given the urban location of the campus in the heart of the city, underscoring the resilience and adaptability of the local wildlife to coexist in this unique environment.

Animals and Birds most observed are as follows:

	Sr. No.	Common Name	Species
Birds	1	House Sparrow	Passer domesticus
	2	Great Egret	Ardea alba
	3	Rosy Starling	Paster roseus
	4	Large Grey Babbler	Turtoides malcolmi
	5	Alpine swift	Apus melba
	6	Common Cuckoo	Cuculus canorus
	7	Common Myna	Acridotheres tristis
	8	Pigeon	Columbidae
Reptiles	1	Indian cobra	Naja naja
	2	Graceful racer	Platyceps gracilis
	3	Indian Palm Squirrel	Funambulus palmarum
Insects	1	Sphinx moths	Sphingidae
	2	Common Gull	Cepora nerissa
	3	Common grass yellow	Eurema hecabe
	4	Lemon migrant	Catopsilia Pomona
	5	White orange tip	Ixias Marianne
	6	Common Jay	Grapium doson
	7	Peacock pancy	Junonia almanac
	8	Common crow butterfly	Euploea core
	9	Lesser grass blue	Zizina otis
	10	Forget Me Not	Catochrysops Strabo
	11	Common Mormon Swallowtail	Papilio polytes
	12	Lime Swallowtail	Papilio demoleus
	13	Lime blue	Chilades lajus
	14	Grasshopper	Poekilocerus pictus
	15	Blue Tiger	Tirumala limniace
	16	Common evening brown	Melanitis leda

Institution is Minimizing disturbances and restoring vegetation in the campus, so as to promote habitat and biodiversity.

VII. Green Policy and Education

College is actively promoting green education by engaging students and local communities to elevate awareness levels and inspire the adoption of eco-friendly practices through the National Service Scheme (NSS). NSS plays a pivotal role in educating students about the environment, environmental laws, and their responsibilities in safeguarding the environment. The institution conducts a myriad of programs and awareness initiatives dedicated to environmental protection. These activities are organized periodically and encompass various outreach and educational programs throughout the year, involving both campus residents and local communities. This collective effort aims to enhance public awareness of environmental sustainability and the green initiatives implemented on the campus.

The institution also celebrates significant environmental occasions such as Environmental Day, Earth Day, and Water Day every year. These celebrations often involve tree planting activities, serving as a means to raise awareness and expand green coverage in and around the campus. This commitment to environmental awareness and action demonstrates the institution's dedication to sustainable practices and the well-being of the environment.

K. S. Institute of Technology Celebrates World Environment Day with Tree Planting Event

Date: June 5, 2023

Location: K. S. Institute of Technology Campus

Overview:

In honor of World Environment Day, K. S. Institute of Technology proudly organized a tree planting event on June 5th, 2023. As stewards of the environment, the institute recognizes the importance of sustainable practices and aims to instill a sense of responsibility towards nature in its students and the community.

Event Highlights:

1. **Tree Planting Ceremony:** The event commenced with a solemn tree planting ceremony where faculty members, students, and staff came together to plant saplings on the institute's campus. Each sapling symbolized our commitment to environmental conservation and served as a tangible contribution towards a greener future.
2. **Educational Workshops:** Concurrently, educational workshops were conducted to raise awareness about the significance of preserving our natural resources. Experts in the field shared insights on topics such as climate change, biodiversity, and the importance of tree plantation in mitigating environmental degradation.
3. **Interactive Sessions:** Engaging discussions and interactive sessions encouraged participants to brainstorm innovative ideas for sustainable living. Students eagerly

shared their perspectives on incorporating eco-friendly practices into everyday life, fostering a sense of collective responsibility towards environmental stewardship.

4. **Community Engagement:** Beyond the confines of the institute, students and faculty extended their efforts to the local community, organizing outreach programs to promote environmental consciousness. Initiatives such as neighborhood clean-up drives and awareness campaigns further amplified the message of environmental sustainability.

Impact and Future Endeavors:

The tree planting event at K. S. Institute of Technology served as a catalyst for fostering a culture of environmental responsibility within the institution and beyond. By nurturing saplings

and nurturing minds, the institute aims to cultivate a generation of environmentally conscious individuals equipped to address the challenges of tomorrow.

As we reflect on the success of this event, we remain committed to integrating sustainable practices into every facet of our academic and operational endeavors. Through ongoing initiatives and collaborative efforts, we endeavor to create a brighter, greener future for generations to come.

Earth Day Celebration at KSIT: Transformative Action for Our Planet

Venue: KSIT Old Building, Room 007
Date & Time: 02:00 PM - 04:00 PM
Organized By: NSS Unit of KSIT in Association with Institution's Innovation Council
Incharge Faculty: Mr. Naveen V, NSS Program Officer, KSIT

Objectives:

- Calling for collective, transformative action on a global scale to celebrate, protect, and restore our planet Earth.
- Raising awareness about environmental issues and promoting concerted efforts to safeguard our planet.

History of Earth Day: World Earth Day, observed on April 22nd annually, serves as a poignant reminder to raise awareness about pressing environmental concerns such as climate change and deteriorating conditions. It prompts individuals to be more mindful and proactive in safeguarding the Earth's ecosystems.

Scope of the Program: The event aims to celebrate by planting new saplings and raise awareness through poster-making.

Highlights of the Event:

- **Inauguration:** The Earth Day celebration commenced with a warm welcome extended to all dignitaries present in Room 007.
- **Poster Making:** NSS volunteers showcased their creativity by designing and displaying informative posters highlighting environmental issues. These posters served as tools for spreading awareness among the dignitaries and participants alike.
- **Awareness Campaign:** NSS volunteers actively engaged in explaining the significance of the posters, fostering dialogue, and encouraging proactive participation from all segments of society.
- **Prize Distribution:** To recognize and encourage active participation, prizes were distributed to the individuals who contributed significantly to the event.

The Earth Day celebration at KSIT was not merely a symbolic gesture but a call to action for collective responsibility and sustainable practices to ensure the well-being of our planet for generations to come. Through initiatives like tree planting and awareness campaigns, we strive to inspire positive change and foster a culture of environmental stewardship within our community and beyond.

VIII. Observation and Recommendation

Observations of the Green Audit and Environment Audit

Our recent Audit has yielded several noteworthy observations that reflect commitment to sustainability and environmental responsibility. These observations encompass various aspects of our operations and practices across:

1. **Well-Maintained Signages:** We are pleased to report that signages, essential for guiding and informing our campus community, have been meticulously maintained at all relevant locations across our campuses.

2. **Paper Consumption Monitoring:** Vigilant paper consumption monitoring is in place across all our buildings, reflecting our dedication to reducing paper waste and promoting eco-friendly practices.

3. **Effective Waste Management:** Waste bins and containers are strategically positioned, with separate receptacles for different types of waste. Continuous waste quantity monitoring ensures efficient waste management.

4. **Responsible E-Waste Disposal:** E-waste is responsibly handled by returning it to suppliers for proper disposal, minimizing its environmental impact.

5. **Afforestation Efforts:** Our commitment to environmental conservation is exemplified by the planting of over 100 saplings in and around our campus as part of NSS and other initiatives.

6. **Environmentally Friendly Cleaning Practices:** We prioritize the use of environmentally friendly cleaning agents for maintaining the cleanliness of our floors and toilets across all campuses.

7. **Fire Safety Measures:** Fire extinguishers are regularly refilled, and mock drills are conducted to prepare our campus community for potential fire emergencies.

8. **First Aid Availability**: To ensure that first aid kits are readily available on each floor of campus at convenient locations. Regular monitoring ensures that all items are consistently accessible.

These observations reaffirm College dedication to environmental sustainability and our resolve to create a greener, safer, and more eco-conscious environment campuses.

Recommendations for Sustainable Practices

Following the recent Green Audit, we have identified several key recommendations aimed at further enhancing our sustainability efforts and environmental responsibility:

1. **Sustainability Training:** Launch comprehensive sustainability training programs to educate our community on eco-friendly practices and environmental stewardship.
2. **Environmentally Responsible Purchasing Policy:** Adopt an Environmentally Responsible Purchasing Policy to guide procurement decisions, reducing our environmental footprint.
3. **Stakeholder Engagement:** Foster involvement from government, foundations, and industry in interdisciplinary research and education for sustainable development.
4. **Canteen Renovation:** Explore renovating our canteen's cooking system by installing solar water heaters with heat pumps to cut gas consumption and promote renewable energy.
5. **Employee Tree Ownership:** Foster a sense of ownership by assigning trees to employees, encouraging responsibility for our campus's green spaces.
6. **Butterfly Garden:** Develop a butterfly garden to celebrate and preserve biodiversity on campus, appreciating the diversity of flora and fauna.
7. **Water Meter Installation:** Install water meters at all tank outlets to monitor and control water usage accurately, promoting conservation.
8. **Low VOC Paints:** Use low VOC paints during renovation and construction to minimize air pollution and promote healthier indoor air quality.
9. **Leak Repairs:** Address leaks promptly by fixing taps and pipes to minimize water wastage and conserve resources.
10. **Automatic Faucets:** Install auto-flush systems for basins to reduce water usage and encourage efficient handwashing practices.
11. **Water-Saving Fixtures:** Install water-saving fixtures across campus facilities to reduce water consumption and promote sustainability.
12. **Biogas Unit:** Introduce a biogas unit to convert organic waste into energy, reducing reliance on fossil fuels and promoting renewable energy sources.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ENERGY AUDIT REPORT | 2023

K. S. INSTITUTE OF TECHNOLOGY

Green Aura

Built Environment Sustainability & Transformation

692F,12TH A CROSS BEL LAYOUT, BENGALURU- 560091

(ISO/IEC 17020:2012, ISO 9001:2015, ISO 1400:2015 Certified Organisation &
Ministry of MSME registered organisation)

Certificate of Energy Audit - 2023

THIS CERTIFICATE IS PRESENTED TO

K. S. INSTITUTE OF TECHNOLOGY

This is to certify that K. S. INSTITUTE OF TECHNOLOGY has successfully undergone 'Energy Audit' on on 06th May, 2024 and assessed the electrical energy conservation, energy saving measures, policies and standards in the campus were found to be excellent.

This certificate is valid till 31st December, 2024

Ref. No: GA / ENERGY AUDIT / 02 / 05 / 24

DR NISCHAY N GOWDA

Founder & Director - Green Aura

CERTIFIED ISO EMS-LA, IGBC - AP,
US GREEN BUILDING COUNCIL - GREEN ASSOCIATE
GLOBAL DOCTORATE, SWITZERLAND.

Green Audit Certificate

This certificate is awarded to **K. S. INSTITUTE OF TECHNOLOGY, No.14, Raghuvanahalli, Kanakapura Road, Bengaluru – 560109** in recognition of their commitment and efforts towards environmental sustainability.

As a result of the Green Audit conducted on **27th March 2024**, it has been determined that **K. S. INSTITUTE OF TECHNOLOGY** has implemented a range of effective environmental sustainability practices in line with National Building Code 2016 –Part-11.

This certificate is valid for following scope of activities:

Green Audit
Energy Audit
Environment Audit

Audit Date	:	27th March 2024
Certificate No.	:	1B05323B20000176
Issuance Date	:	09th April 2024

Signature
Maneet Dewan
Director

PQMS Quality Services Private Limited
SCO-21, 4th Floor, Feroze Gandhi Market, Ludhiana-141001 (Punjab)
Email: info@qualityindia.in website: www.qualityindia.in

ENERGY AUDIT REPORT 2022

CONSULTATION REPORT

K. S. INSTITUTE OF TECHNOLOGY

Bengaluru, Karnataka – 560109

Submitted to:
Principal,
No.14, Raghuvanahalli,
Kanakapura Road,
Bengaluru – 560109

Audited by:
Green Aura,
692F,12th A cross Bel layout,
Bengaluru- 560091.

CONTENT

ACKNOWLEDGEMENT

GREEN AURA, Bangalore, Karnataka takes this opportunity to appreciate & thank the management **K.S Institute of Technology** for giving us an opportunity to conduct energy audit for the Institute.

We are indeed touched by the helpful attitude and co-operation of all faculties and technical staff, who rendered their valuable assistance and co-operation the course of study.

Energy Audit Team

The study team constituted of the following senior technical executives from **Green Aura**.

- **Dr. Nischay N Gowda**, Founder & Director Green Aura, Bengaluru.
- **Mr. Sachin Kumawat**, Certified Energy Manager (EM-300475/23).
- **Mr. Akash Kumar**, Engineer.

EXECUTIVE SUMMARY

The executive summary of the energy audit report furnished in this section briefly gives the identified energy conservation measures and other recommendation during the project that can be implemented in a phased manner to conserve energy & increase productivity inside the institute.

ENERGY MANAGEMENT INITIATIVE TAKEN BY INSTITUTE

HOT WATER SYSTEM

Institute has installed solar based hot water system for hot water requirement of hot water in the institute. It will be reducing electrical consumption of the institute.

AREAS FOR IMPROVEMENT

SOLAR SYSTEM

- There is a good potential to installation of 50 KWp solar roof top grid connected system in the Institute. Expected annual solar unit generation @ 4 units per KWp is 73,000/- Unit.

LIGHTING SYSTEM

- It is observed that there is good potential for replacement of "conventional T-8 (40 Watt) tube light by 20-Watt energy efficient LED lighting
- Installation of "timer control on straight light and focus light on building" recommended for energy saving in the Institute.
- Installation of motion sensor in non-working area (wash room, Store room, corridor etc.) recommended for energy saving in the Institute.

CEILING FAN.

- It is recommended to replace "conventional ceiling fan (60 Watt)" by energy efficient star rated BLDC based i.e. energy efficient fan (28 Watt) in institute building etc. It has great potential for energy saving.

IOT BASED ENERGY MONITORING SYSTEM AT MAIN FEEDER

- Installation of "Cloud based (IOT based) energy monitoring system" on main feeder as well as energy monitoring on individual building will be good initiate for energy monitoring It will also a demo project for engineering student and management.
- Installation of energy meters between transformer and main PCC panel with IOT system will monitor line losses of the system. It will give real time measurement of power factor and line losses from the cable.

ENERGY MANAGEMENT WORKSHOP AND TRAINING

- Develop energy management policies for institute. Establish a procurement policy that is energy saving and eco-friendly.
- Conduct awareness and training programs for faculty, student and non-teaching staffs. Conduct seminars, workshops and exhibitions on energy management education.
  Involve All Stakeholders - Encourage involvement of government, founder members, and industry for supporting interdisciplinary research, education, policy formation, and information exchange in energy management system

CHAPTER-01
INTRODUCTION OF ENERGY AUDIT

1.1 About Energy Audit

An energy audit is a systematic process of evaluating and analyzing the energy consumption and efficiency of a building, facility, or organization to identify opportunities for energy savings and improved energy performance. The primary goal of an energy audit is to assess how energy is used, wasted, or potentially conserved within a given system or operation.

1. Identify Energy Consumption: - Determine how and where energy is being used within a facility or organization, including electricity, natural gas, heating oil, water, and other energy sources.

2. Quantify Energy Efficiency: - Assess the efficiency of energy-consuming systems and equipment, such as HVAC (heating, ventilation, and air conditioning) systems, lighting, appliances, and industrial processes.

3. Identify Energy Conservation Measures (ECMs):- Identify specific opportunities to reduce energy consumption and improve energy efficiency. This may involve upgrading equipment, optimizing operations, or implementing energy-efficient technologies

4. Estimate Cost Savings: - Calculate potential energy and cost savings associated with implementing recommended ECMs. This helps organizations prioritize energy-saving initiatives based on return on investment (ROI).

5. Prioritize Recommendations: - Present a list of recommendations, along with their associated costs and benefits, to help stakeholders make informed decisions about which energy-saving measures to pursue.

6. Promote Sustainability: -Energy audits can contribute to sustainability efforts by reducing greenhouse gas emissions and environmental impact, which is particularly important in the context of climate change mitigation

The GREEN AURA, Bangalore, Karnataka carried out the energy audit at the site to find loopholes in the energy consumption pattern for K.S Institute of Technology. A technical report has been prepared as per the data basis & need of the requirement of the project.

1.2 Objectives of Energy Auditing

The primary object of an energy audit is to assess and analyze the energy usage and efficiency of a building, facility, or process. Energy audits are conducted to achieve several specific goals and objectives, including

1. Identify Energy Efficiency Opportunities.
2. Fixing of energy saving potential targets for individual cost centers
3. To reduce operational costs.
4. To reduce energy consumption per unit product output.
5. Improve Energy Performance.
6. Relating energy inputs and production output
7. To find and apply effective planning for more effective use of energy throughout the industry works.
8. Identifying potential areas thermal and electrical energy efficiency.

1.3 Energy Audit Methodology

An energy audit is a systematic process of evaluating and analyzing energy usage in a facility or organization to identify opportunities for energy efficiency improvements. The goal of an energy audit is to reduce energy consumption, lower energy costs, and minimize environmental impacts. There are different levels of energy audits, ranging from a basic walkthrough audit to a comprehensive investment-grade audit.

1. Preparation and Planning

- Define the scope and objectives of the energy audit.
- Gather historical energy consumption data and utility bills.
- Assemble a team of auditors with expertise in energy systems, including HVAC, lighting, electrical, and building envelope.
- Obtain building plans, equipment manuals, and other relevant documentation.
- Schedule the audit and secure necessary permissions and access to facilities

2. Site Assessment

- Conduct a walkthrough of the facility to understand its layout, systems, and operations.
- Identify and document key energy-consuming equipment and systems.
- Collect data on operating hours, temperature settings, and occupancy patterns.
- Note any maintenance issues or equipment malfunctions that may affect energy efficiency.
- Perform basic energy benchmarking to compare the facility's energy performance with industry standards or similar facilities

3. Data Collection and Analysis

- Install energy monitoring equipment, such as data loggers, to track energy usage in real-time if necessary.
- Collect data on energy consumption for each identified system and equipment.
- Analyze energy bills to determine cost breakdown and seasonal variations.
- Calculate energy consumption and efficiency metrics (e.g., kWh, BTUs, Energy Use Intensity, etc.).

4. Data Collection and Analysis

- Develop a list of energy-saving recommendations based on the audit findings.
- Prioritize recommendations based on cost-effectiveness, payback period, and potential energy savings.
- Provide detailed specifications for implementing each recommendation, including estimated costs and potential incentives or rebates.
- Consider both low-cost/no-cost measures (behavioral changes, maintenance improvements) and capital-intensive measures (equipment upgrades, retrofits)

5. Reporting and Documentation

- Compile the audit findings, recommendations, and supporting data into a comprehensive audit report.
- Include a summary of potential energy savings, estimated costs, and return on investment (ROI) for each recommendation.
- Present the report to key stakeholders, such as management, facility operators, and decision-makers.

6. Monitoring and Verification

- After implementing energy-saving measures, monitor energy consumption to verify actual savings.
- Adjust operations and maintenance practices as needed to maintain energy efficiency.
- Periodically review and update the energy management plan to ensure continuous improvement.

7. Education and Training

- Provide training to facility staff to ensure proper operation and maintenance of energy-efficient systems.

CHAPTER-02
POWER SUPPLY SYSTEM
2.1 Transformer

The power supply for the K.S Institute of Technology taken is from BESCOM with the help of 11 kV feeders under Tariff 1HT2C2. There is one transformer with capacity of 250 KVA.

Table: 2. 1 Technical Specifications of transformers.

Sr. No.	Items	Technical details Transformer
1	Make	KPRS
2	Serial No	2000 10 F 501
4	Year	2000
5	Rating (kVA)	250
6	Voltage (HV/ LV)	11/433
7	Current (HV/LV)	13.12 /333.34
8	Total Tap Position	5

Loading of the Transformer: -

Sr. No	Month & Year	Maximum demand (KVA)	TR Loading %
1	Jan-23	75	30.0
2	Feb-23	69	27.6
3	Mar-23	86	34.4
4	Apr-23	89	35.6
5	May-23	85	34.0
6	Jun-23	98	39.2
7	Jul-23	93	37.2
8	Aug-23	86	34.4
9	Sep-23	91	36.4
10	Oct-23	89	35.6
11	Nov-23	87	34.8
12	Dec-23	98	39.2
	Average	87	34.9

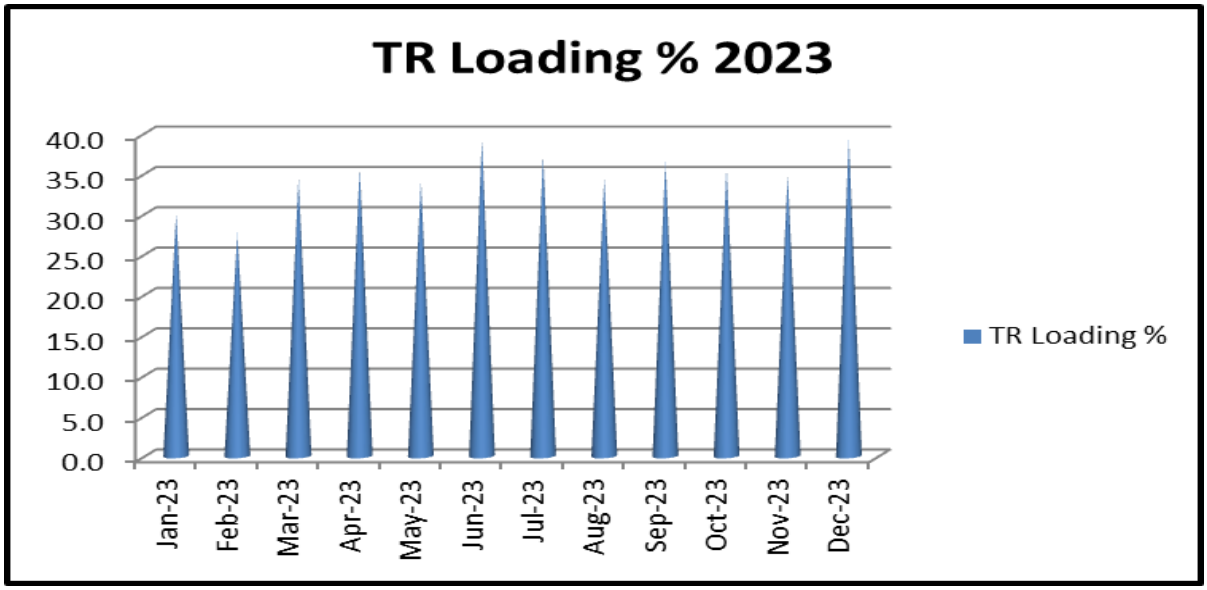


Figure: - Graphical presentation of Transformer Loading Year-2023

Observation: -

The average loading of the transformer is 34.9 % which are under loaded condition. The loading of the transformer depends of the operating load of the transformer.

2.2 DG SETS

The institute campus has 01 Nos. of DG set and the capacity is 250 KVA. It supplies emergency power during the grid power failure.

Sr. No.	Parameter	Technical Specification of DG set
1	Make	Powerica Limited
2	Capacity (KVA)	250 KVA
3	Serial No	01/12/03/6089
4	Noise Limit	< 75 dB

DG Set

Observation: -

- DG set use in case of grid power failure.
- There is no system to monitor fuel consumptions w.r.t. unit generation

CHAPTER-03
ELECTRICITY BILL ANALYSIS

3.0 Electricity Bill Analysis

Electricity bills of last 01 year were analyses. Detailed of unit consumption, annual average power factor, Demand analysis and annual per unit charges are determined as follow

3.1 Monthly electrical energy consumption -2023

The monthly electrical consumption for the institute is given in the table.

Sr. No	Month & Year	unit Consumption (kWh)	Billing Amount (Rs/-)	Overall per unit Charges (Rs/kWh)
1	Jan-23	15,934	1,70,213	10.7
2	Feb-23	15,147	1,63,088	10.8
3	Mar-23	17,626	1,84,490	10.5
4	Apr-23	18,134	1,90,132	10.5
5	May-23	19,321	2,03,142	10.5
6	Jun-23	21,935	2,82,096	12.9
7	Jul-23	20,789	2,69,528	13.0
8	Aug-23	19,232	1,97,362	10.3
9	Sep-23	18,904	2,30,812	12.2
10	Oct-23	20,071	2,27,893	11.4
11	Nov-23	21,732	2,39,993	11.0
12	Dec-23	22,292	2,45,047	11.0
	Total	**2,31,117**	**26,03,796**	**11.2**

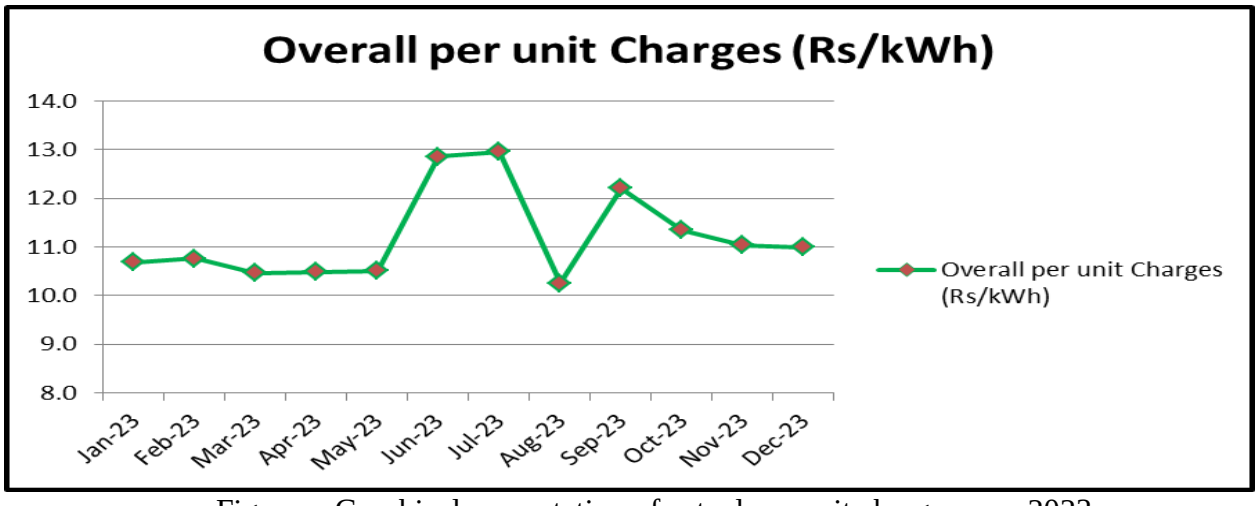


Figure: - Graphical presentation of actual per unit charges year 2023

Observation: -

It was found out that total energy consumption in last 12 month was 2,31,117/- unit. Average annual energy charges Rs 11.2 /kWh

3.2 Monthly Demand analysis-2023

The monthly demand consumption for the institute is given in the table.

Sr. No	Month & Year	Contract Demand (KVA)	Billing Demand (KVA)	Maximum demand (KVA)
1	Jan-23	115	98	75
2	Feb-23	115	98	69
3	Mar-23	115	98	86
4	Apr-23	115	98	89
5	May-23	115	98	85
6	Jun-23	115	98	98
7	Jul-23	115	98	93
8	Aug-23	115	98	86
9	Sep-23	115	98	91
10	Oct-23	115	98	89
11	Nov-23	115	98	87
12	Dec-23	115	98	98
		Minimum Demand (KVA)		69
		Maximum Demand (KVA)		98
		Average Demand (KVA)		86.6

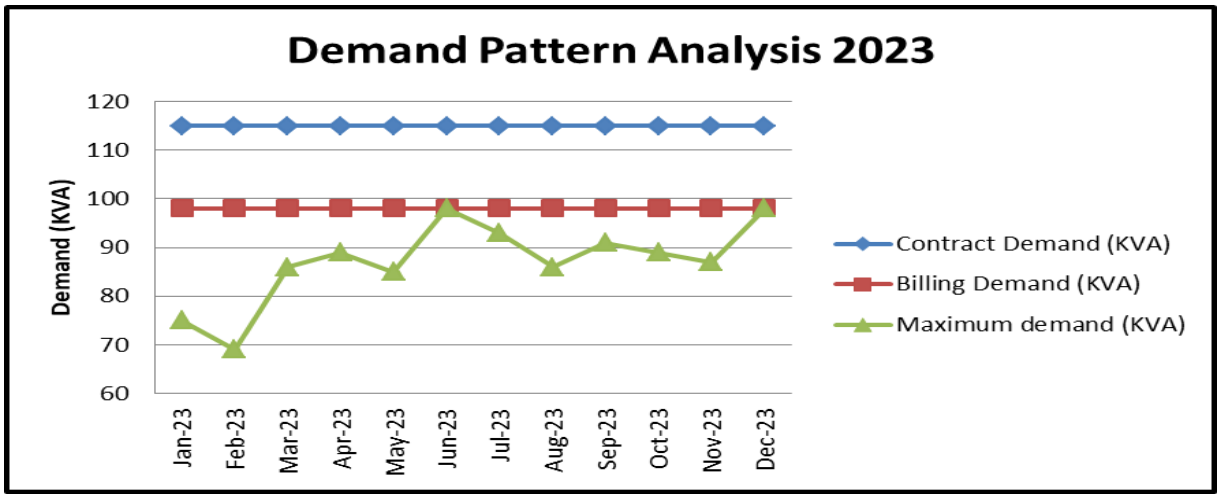


Figure - Graphical presentation of Demand analysis year 2023

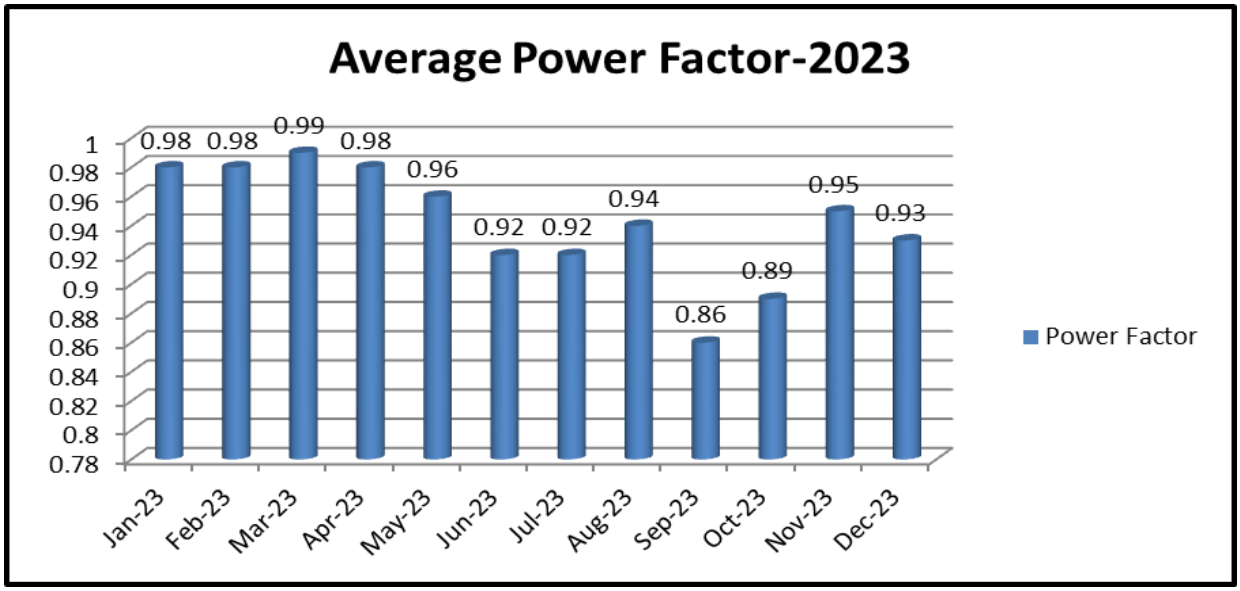
Observation: -

- It was observed that contact Demand of the Institute is 115 KVA. As per applicable Tariff Billing Demand is 85% of contract demand.
- Minimum Demand is 69 KVA in Feb-2023
- Maximum Demand is 98 KVA in Dec-2023.
- Average Demand is 86.6 of the year-2023.

3.3 Monthly Power factor analysis:

The monthly Power Factor for the institute is given in the table.

Sr. No	Month & Year	Power Factor
1	Jan-23	0.98
2	Feb-23	0.98
3	Mar-23	0.99
4	Apr-23	0.98
5	May-23	0.96
6	Jun-23	0.92
7	Jul-23	0.92
8	Aug-23	0.94
9	Sep-23	0.86
10	Oct-23	0.89
11	Nov-23	0.95
12	Dec-23	0.93
	Average	0.94



Observation:

The average power factor for the year 2023 was 0.94. It should be 0.997 or unity .

CHAPTER- 4
Connected load of the Institute

4.1 Details of the Total Connected load of the campus

SL. NO.	PARTICULARS	TOTAL
1	**Computers**	1117
2	**Fans**	450
3	**Lights**	850
4	**Projector**	64
5	**Printer**	51
6	**AC**	10

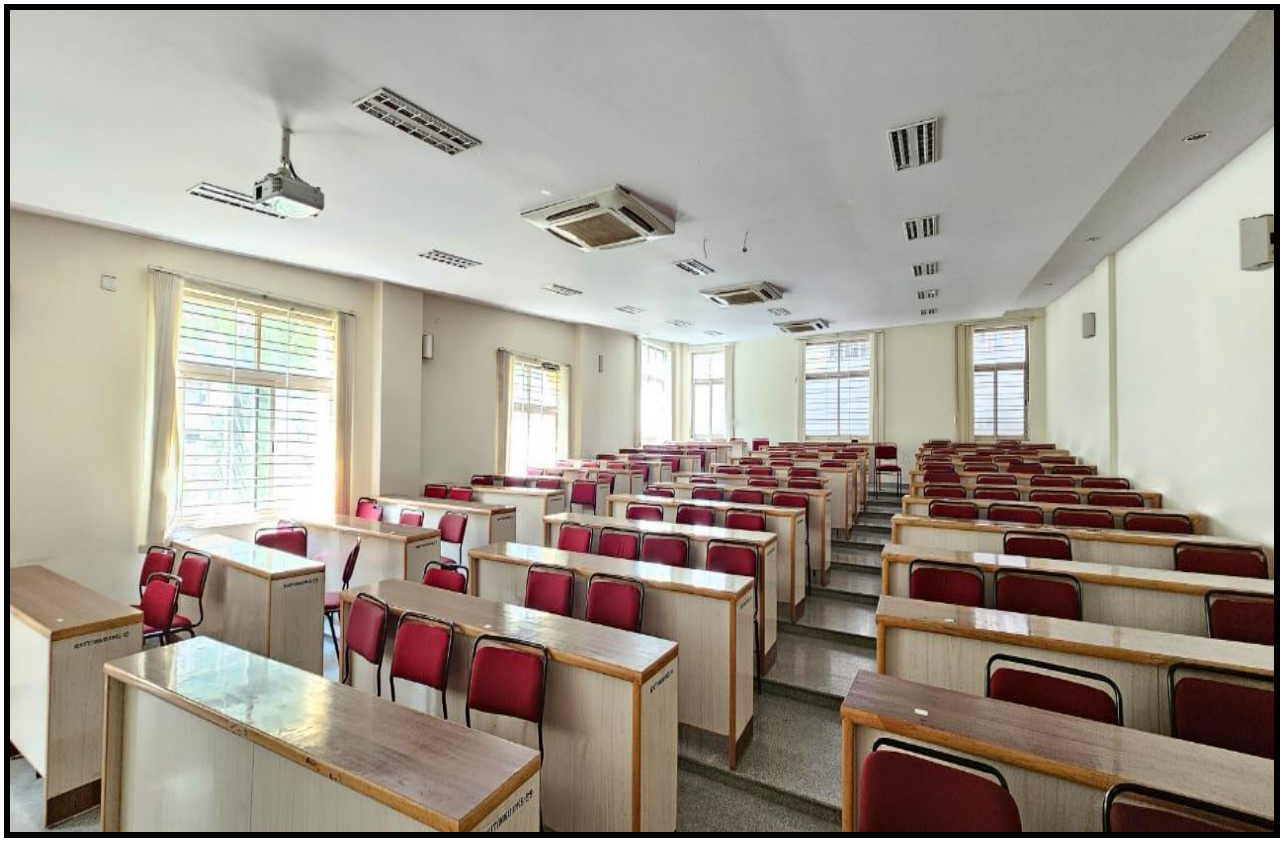
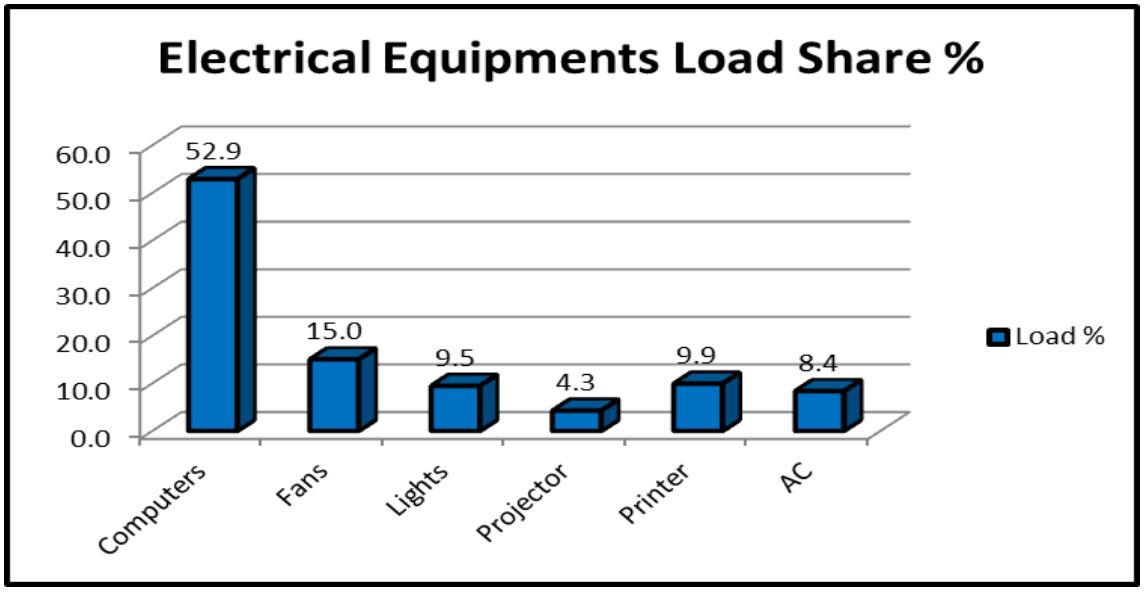


Figure:- Connected load of the Campus Like Tubelight, AC

4.2 Load share of the Electrical Equipments :-

Sr. no.	Particulars	Rated watt	Quantity	Total Power Consumption (kW)	Load %
1	Computers	85	1117	94.9	52.9
2	Fans	60	450	27.0	15.0
3	Lights	20	850	17.0	9.5
4	Projector	120	64	7.7	4.3
5	Printer	350	51	17.9	9.9
6	AC	1500	10	15.0	8.4
	Total Connected load (kW)			**179.5**	100.0

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GREEN & ENVIRONMENT AUDIT

REPORT | 2022

K. S. Institute of Technology

MSME
MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम

Green Aura
Built Environment Sustainability & Transformation

692F,12TH A CROSS BEL LAYOUT, BENGALURU- 560091
(MSME registered organisation)

Certificate of Green Audit - 2022

THIS CERTIFICATE IS PRESENTED TO

K. S. INSTITUTE OF TECHNOLOGY

This is to certify that K. S. INSTITUTE OF TECHNOLOGY has successfully undergone 'Green Audit' on 16th January, 2023 and assessed the Green and Sustainability measures, policies and standards in the campus were found to be excellent.

This certificate is valid till 31st December, 2023

Ref. No: GA / GREEN AUDIT / 01 / 01/ 23

MR NISCHAY N GOWDA
Founder & Director - Green Aura
CERTIFIED ISO EMS-LA, IGBC - AP,
US GREEN BUILDING COUNCIL - GREEN ASSOCIATE.

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K. S. INSTITUTE OF TECHNOLOGY

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This certificate is valid till 31st December, 2023
Ref. No: GA / ENVIRONMENTAL AUDIT / 03 / 01 / 23

MR NISCHAY N GOWDA
Founder & Director - Green Aura
CERTIFIED ISO EMS-LA, IGBC - AP,
US GREEN BUILDING COUNCIL - GREEN ASSOCIATE.

Acknowledgement

The Audit Assessment team expresses genuine appreciation to the management of K. S. Institute of Technology for granting us the privilege of conducting the Green Audit and Environment Audit. This endeavor is a testament to your commitment to environmental responsibility and sustainability.

We would like to extend our special thanks to the management and staff of K. S. Institute of Technology, The collaboration and active participation of the Institute's management and staff were indispensable. Their openness to the audit, provision of necessary data, and willingness to implement suggested improvements have made a significant impact on the overall success of the assessment.

The audit, conducted over multiple visits spanning from October to December 2022, aimed to assess and enhance the environmental practices and sustainability measures at K. S. Institute of Technology. Once again, we express our sincere gratitude to K. S. Institute of Technology for their trust, cooperation, and commitment to fostering a greener and more sustainable future. We look forward to continued collaboration and the implementation of the recommendations outlined in the Green Audit report.

The study team consisted of senior technical executives from Green Aura

- **Mr. Nischay N Gowda**, Founder & Director Green Aura, Bengaluru.
- **Mr. Sachin Kumawat**, Certified Energy Manager (EM-300475/23).
- **Mr. Akash Kumar**, Engineer.

Submitted to:
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Audited by:
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Disclaimer

The Audit team has prepared this report for K. S. Institute of Technology using the input data provided by the college representatives. Our findings are complemented by the expert judgment of our team members. While we have exercised reasonable care in its preparation, the details contained in this report have been compiled in good faith based on the information available.

It is important to note that the calculations are based on our best estimates, and we do not make any representation, warranty, or undertaking, either express or implied. The Audit team does not accept responsibility for any direct or consequential losses that may arise from the use of the information, statements, or forecasts in this report.

The information and analysis presented in this report are valid as of the date of our visit and the period of study at the site. Our work represents our best efforts and judgments based on the information available at the time this report was prepared. Green Aura does not guarantee the accuracy of this information or any conclusions drawn from it. The observations made in this report serve as an indication of the facility's performance based on our assessment and should not be construed as a definitive comment on the functioning of the facility. These observations are solely based on the data recorded at the time of our assessment.

Green Aura bears no responsibility for the reader's use of or reliance upon this report, nor for any decisions made based on its contents. Readers are advised that they assume all liabilities incurred by themselves or third parties as a result of their reliance on this report, including the data, information, findings, and opinions contained within it.

Executive Summary

Colleges wield a significant influence on their surroundings, contributing both positively and negatively to the world at large. The progress of a nation often commences within its educational institutions, where ecological considerations play a pivotal role in overall development. The activities undertaken by a College can result in a diverse range of environmental impacts. A clean and healthy environment not only facilitates effective learning but also fosters a conducive atmosphere for education. K. S. Institute of Technology places great importance on environmental factors and is actively incorporating eco-friendly concepts into its operations.

K. S. Institute of Technology is firmly committed to sustainability and has taken numerous proactive measures to minimize its environmental footprint. However, there are still several areas where significant improvements can be realized. This report aims to showcase the achievements of K. S. Institute of Technology while offering recommendations for enhancing its environmental sustainability. The College conducted a **Green Audit and Environment audit** for the year **2022** and remains dedicated to maintaining a sustainable campus environment.

The primary goal of this report is to identify areas for improvement and propose practical, economically viable solutions to optimize energy and water usage on the campus. Just as individual self-reflection is a natural and integral part of a quality education, institutional self-evaluation is equally essential for a quality educational institution. Consequently, it is imperative for the College to assess its own contributions toward a sustainable future.

K. S. Institute of Technology has undertaken various initiatives to promote an eco-friendly campus environment, including:

Energy Conservation, Water Conservation, Efforts for Carbon Neutrality, Hazardous and E-waste Management, Health and Well-Being, Plantation.

The college actively engage in activities through organizations like the N.S.S. (National Service Scheme) and other initiatives to raise eco-friendly awareness among students. Special programs featuring prominent personalities are organized to educate and train the public, and students are encouraged to participate in eco-friendly endeavors.

In conclusion, K. S. Institute of Technology is committed to its mission of sustainability and continuously strives to create a more environmentally responsible campus for the benefit of its students and the wider community.

Table of Contents

Green Auditing

The term "Green" signifies practices that are environmentally friendly and do not harm the natural environment. This concept can be encapsulated by the acronym "Global Readiness in Ensuring Ecological Neutrality" (GREEN). A "Green Audit" can be defined as the systematic process of identifying, quantifying, recording, reporting, and analyzing elements of ecological diversity, and expressing these findings in financial or social terms.

To effectively implement a Green Audit, it is essential to understand various key aspects, including the objectives, drivers, future potential, benefits, and advantages of such an assessment. The practical application of Green Auditing involves various measures such as energy conservation, the utilization of renewable energy sources, rainwater harvesting, efforts towards achieving carbon neutrality, and extensive plantation initiatives.

The concept of Green Auditing has gained significance in educational institutions and organizations alike, as it serves as a valuable management tool for evaluating and improving environmental standards. By embracing Green Auditing, institutions can contribute to sustainable development and enhance their overall environmental performance. Moreover, the reckless experimentation with nature, often disregarding natural laws and regulations, is a significant driver behind the growing importance of Green Auditing.

K. S. Institute of Technology – Campus

Approach & Methodology

A comprehensive study was conducted to thoroughly examine every aspect of K. S. Institute of Technology . This audit encompassed an array of measurements and analyses, with a specific focus on key areas of energy consumption, water usage, resource utilization, waste management, and sustainable practices. The objective was to assess real losses and potential savings, with a broader aim of enhancing the college environmental performance.

In pursuit of this goal, a straightforward and locally developed monitoring system was devised. This system involves a set of periodic questions that individuals can voluntarily respond to. It is designed to be user-friendly and accessible, emphasizing ease of use for all participants. The ultimate purpose of this auditing report is to inspire the College to set a positive environmental example for the community and to educate its students about sustainability principles.

The primary areas under investigation during the audit were categorized as follows:

1. **Site Selection:** Examining the appropriateness of the Institute's location.
2. **Built Environment:** Assessing the infrastructure and facilities on campus.
3. **Water Audit:** Analyzing water consumption and management.
4. **Energy Audit:** Evaluating energy consumption and efficiency.
5. **Good Health and Well-Being:** Promoting a healthy living environment.
6. **Waste Management:** Studying waste disposal practices and their impact.
7. **Green Education:** Integrating sustainability into the educational curriculum.
8. **Transportation:** Assessing transportation-related sustainability measures.

Throughout the audit process, there was a continuous dialogue involving College officials, faculty members, and students. This collaborative approach ensured that the suggestions and recommendations put forth were not only meaningful but also practical and feasible for concurrent implementation.

K. S. Institute of Technology - Campus

I. About
K. S. Institute of Technology

The Kammavari Sangham, a multi-activity non-profit oriented voluntary service organization, was established in the year 1952 with the sole objective of providing charitable service to community and society.

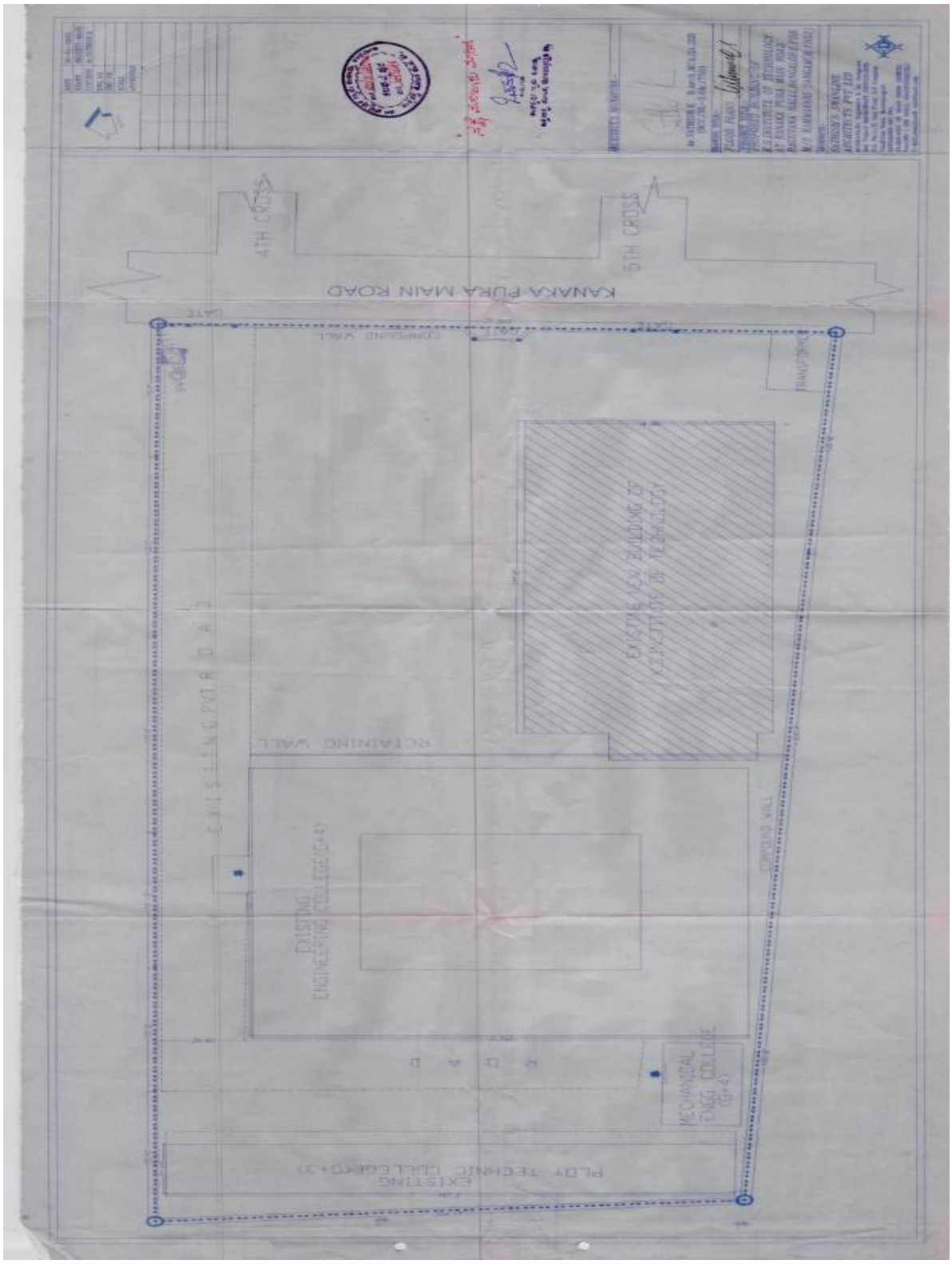
The Sangham has diversified its activities since its establishment over five decades ago. With a firm belief that quality and meaningful education only can lay the strong foundation for bringing about economic and social changes to the lives of thousand, the Sangham went about establishing educational institutions, starting with K.S. Polytechnic in 1992.

Enthused with this success of its foray into technical education, the Sangham moved forward by starting the K.S Institute of Technology (KSIT). Its Engineering College in the year 1999. In the following years both these institutions have carved for themselves an enviable niche through academic excellence achieved in a very short span of time. By providing FREE hostel accommodation and scholarship to the deserving students in the community, it has furthered its Commitment to education.

K. S. Institute of Technology - Campus

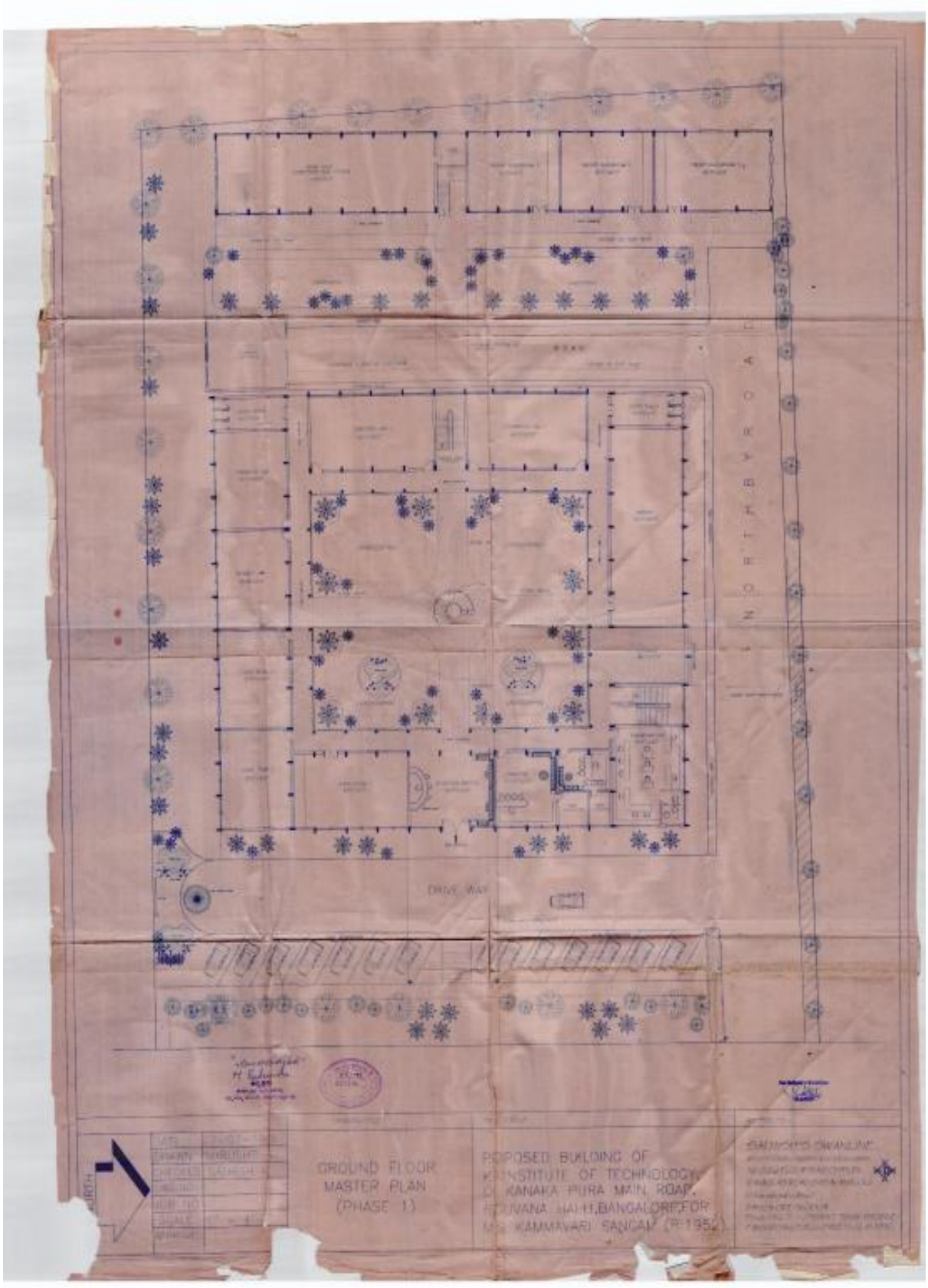
II. Built Environment

i. Site plan

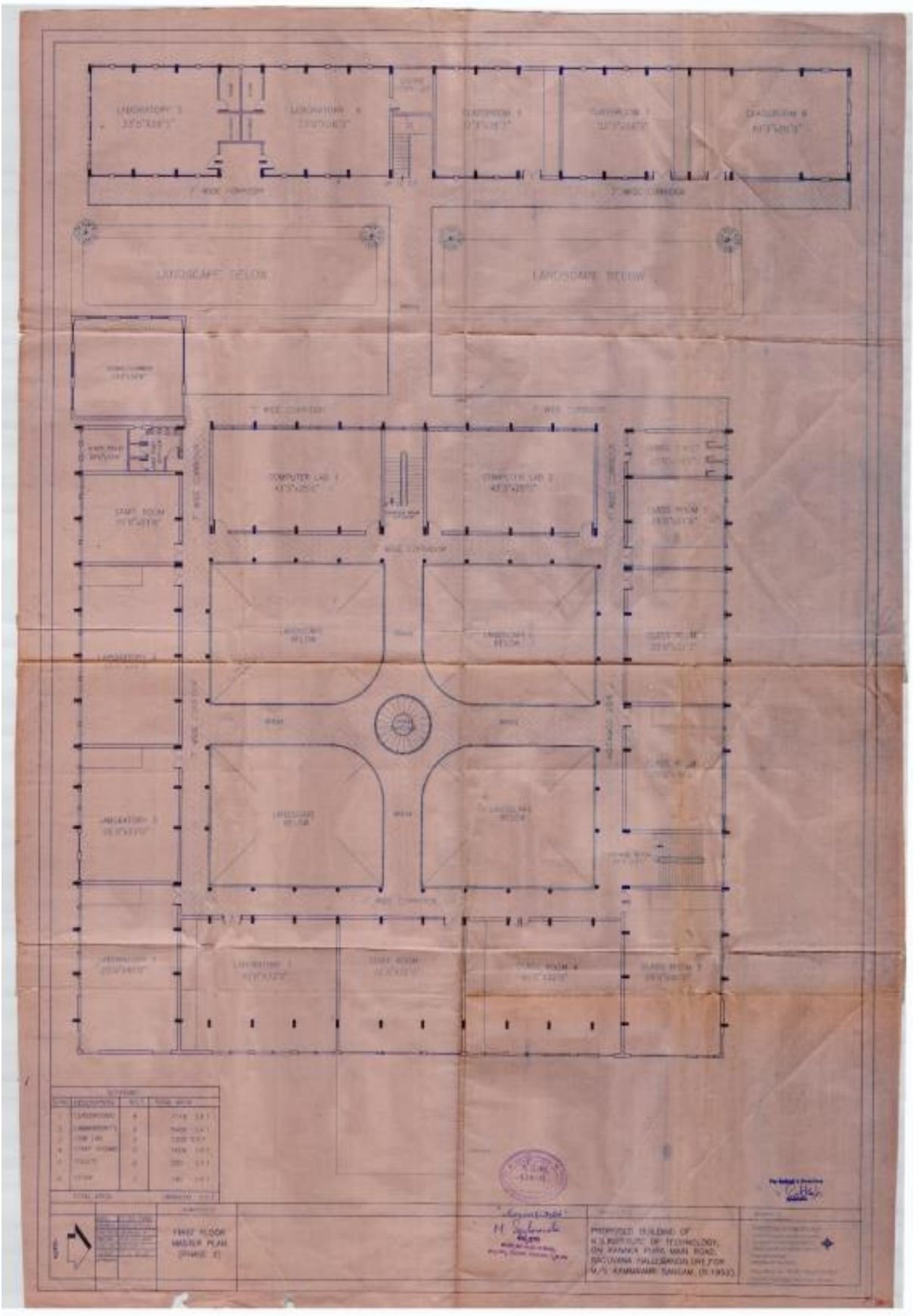


K. S. Institute of Technology - Site plan

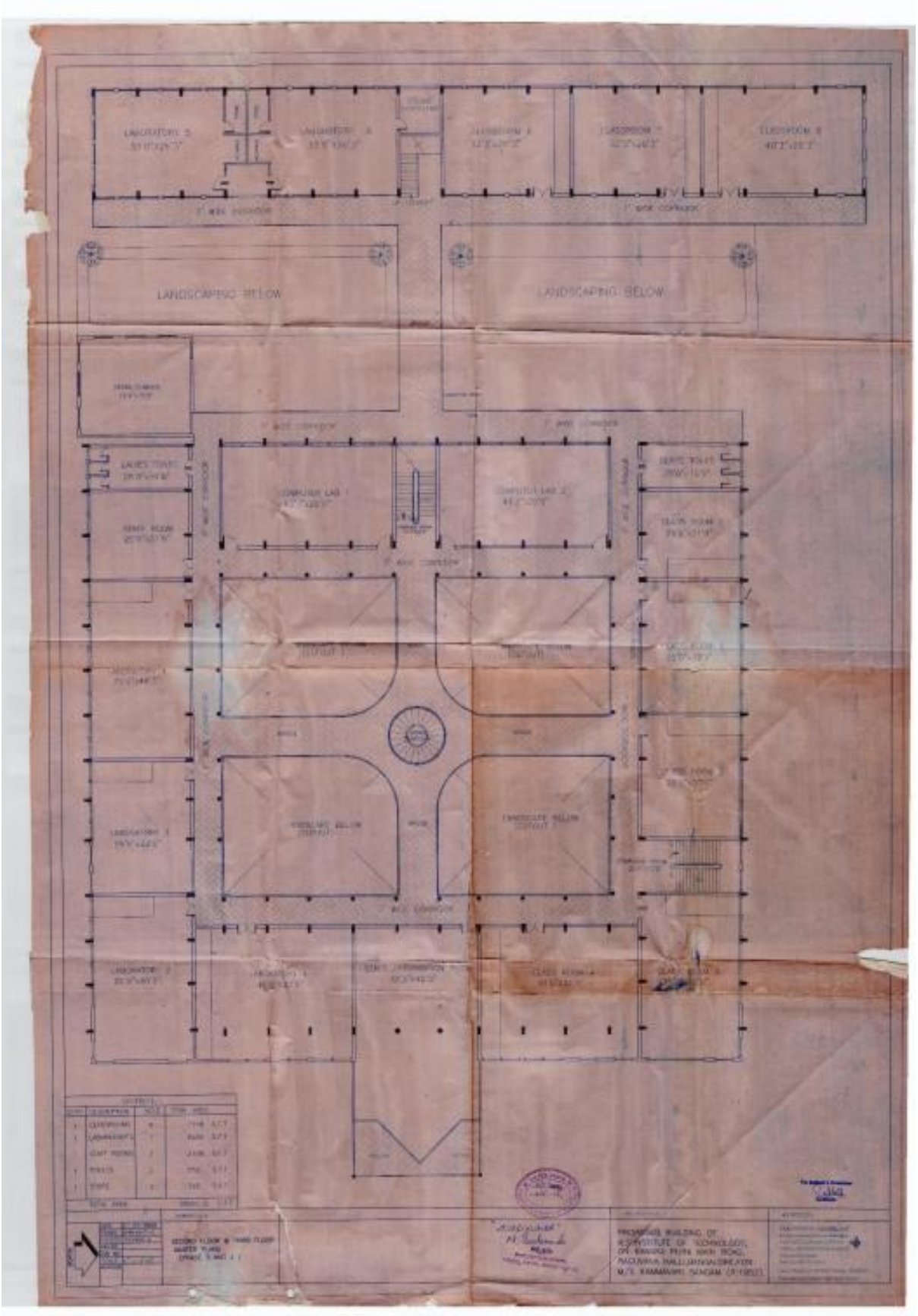
ii. Floor plans



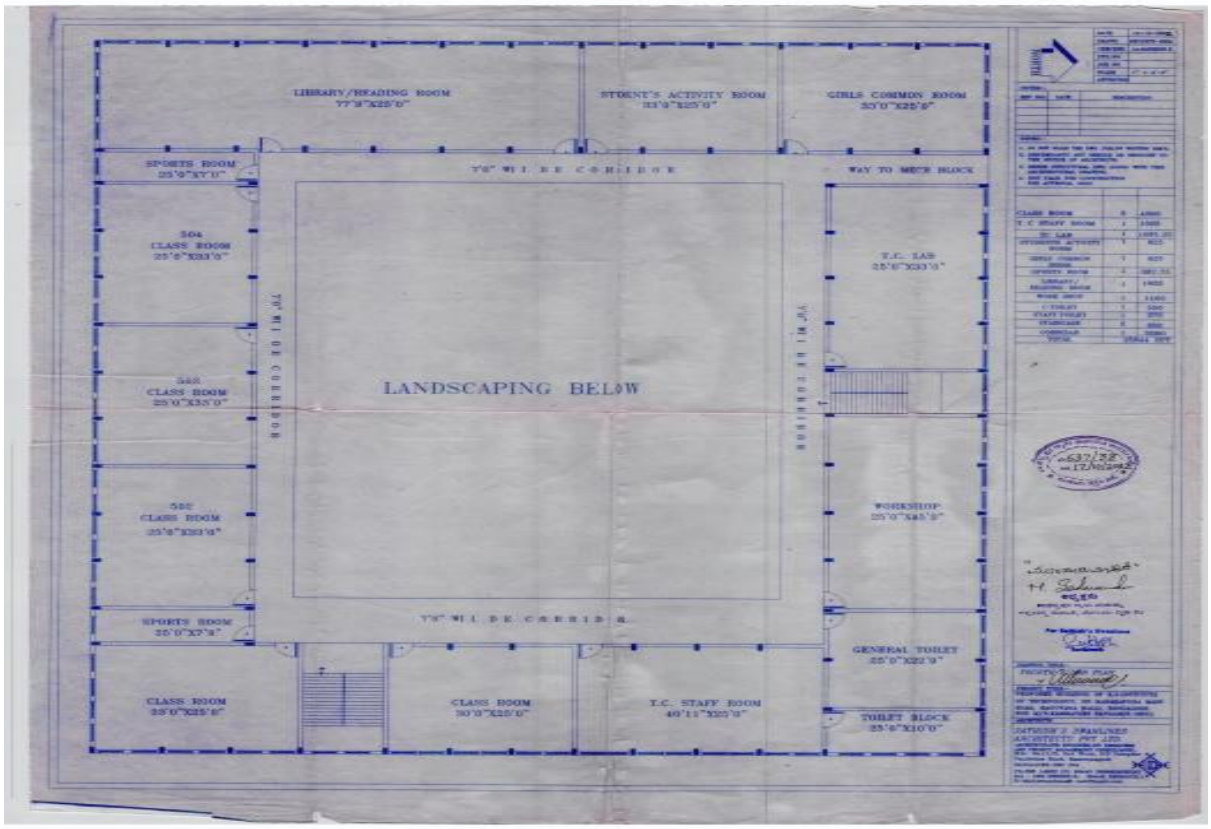
Ground Floor plan

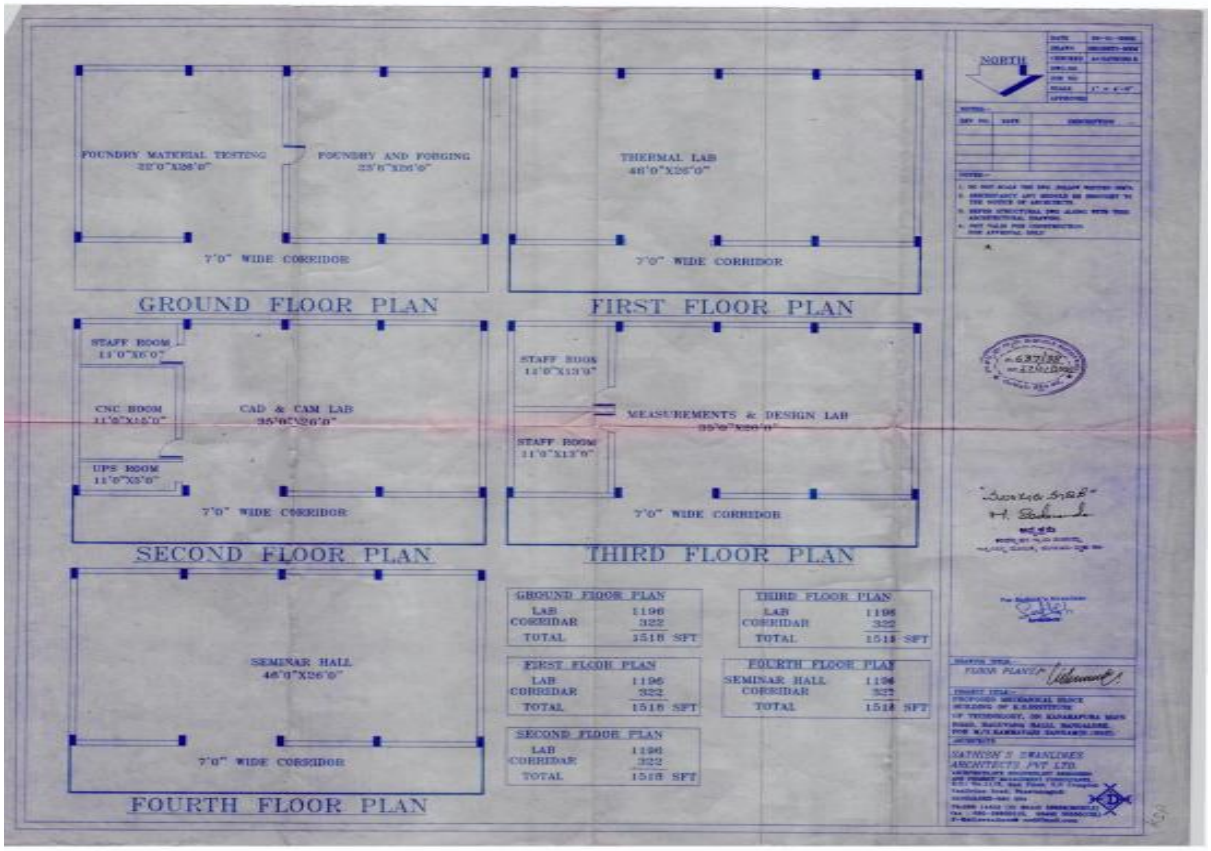


First Floor plan



Second Floor and Third floor plan





Block 2 Floor plan

iii. Total built-up area of the College

Building Name	Build Up Area (In Sq.m)	Carpet Area-Instructional (In Sq.m)	Carpet Area-Administrative (In Sq.m)	Carpet Area-Amenities (In Sq.m)	Building Plan Approving Authority	Building Plan Approval Date
KSIT EXISTING BLOCK I	8189	4319	1001	937	SECRETARY, THALAGHATTAPURA GRAMPANCHAYATH, OFFICE	06-08-1998
KSIT SILVER JUBILEE BLOCK II	14490	5120	976	4227	SECRETARY, THALAGHATTAPURA GRAMPANCHAYATH, OFFICE	02-11-2012
TOTAL AREA	22679	9439	1977	5164		

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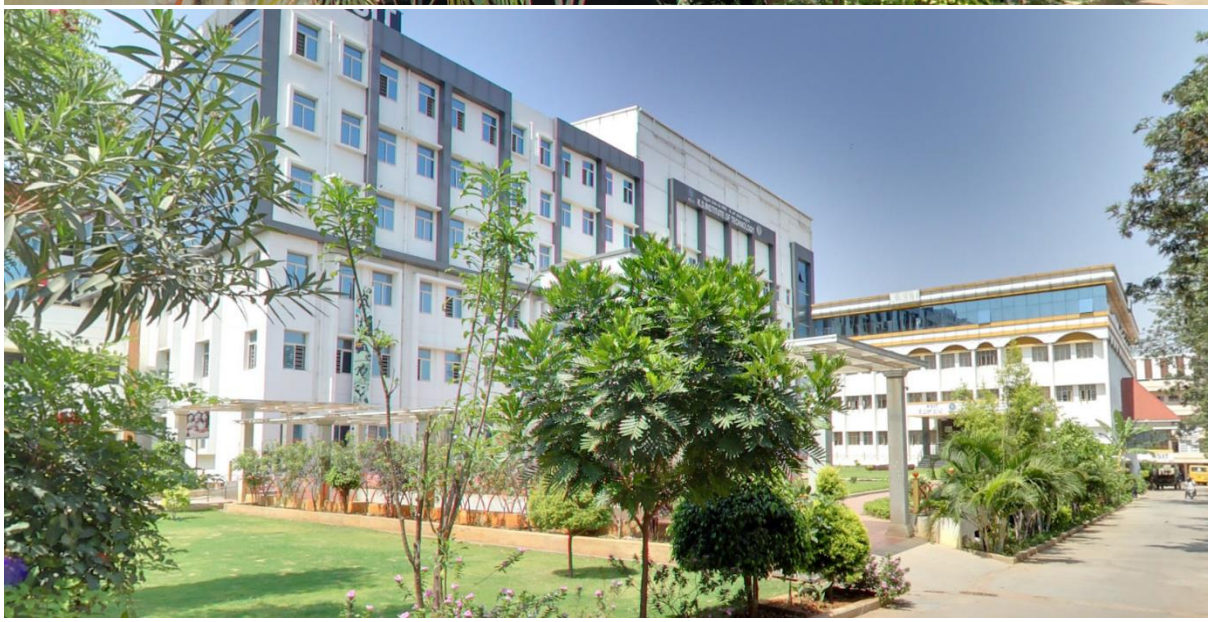
iv. Development Footprint and Green Cover

At K. S. Institute of Technology , the preservation of site features, particularly greenery within its campus, stands as a cornerstone of its development ethos. Embracing a conscientious approach, the campus prioritizes the retention of natural elements—trees, plants, and green spaces during its construction endeavors. This deliberate strategy serves to curtail site damage and reduce the associated negative environmental impacts.

K. S. Institute of Technology, Campus development footprint and green cover

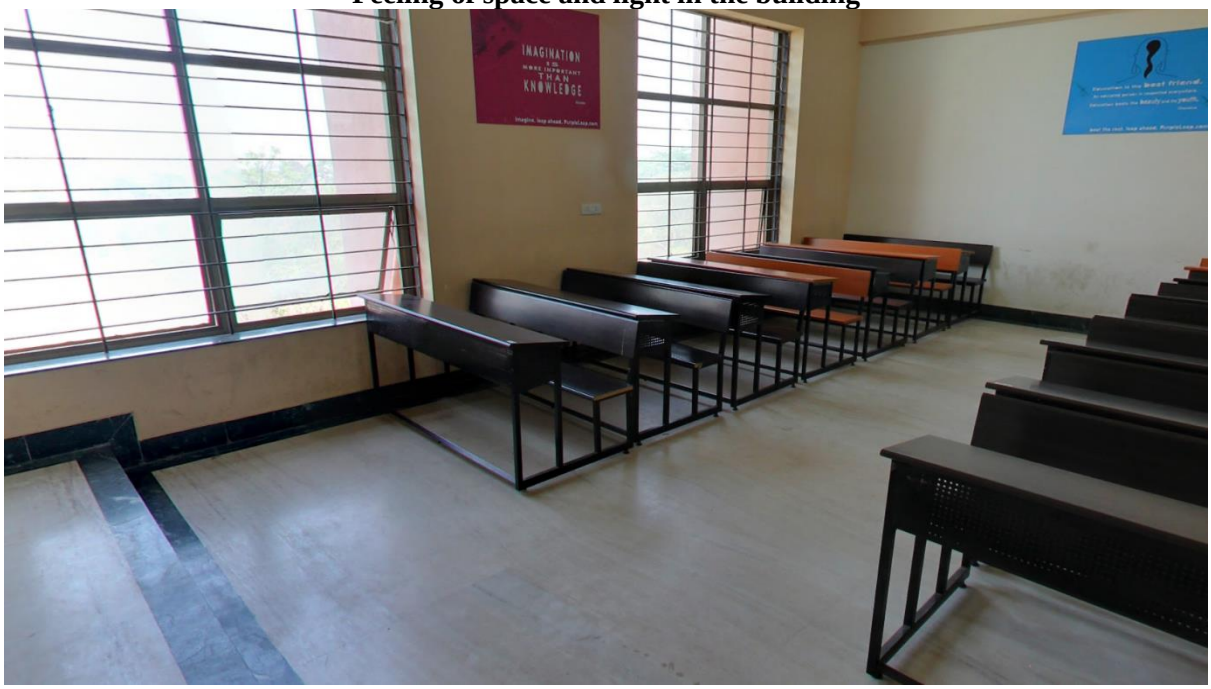


K. S. Institute of Technology, Campus development footprint and green cover

v. Day lighting

At K. S. Institute of Technology , the integration of abundant natural daylight through passive architectural methods stands as a hallmark of its design philosophy. Across various spaces, including classrooms, laboratories, computer labs, and the library, the campus showcases a deliberate and thoughtful approach to maximize the use of natural light. Through strategic placement and expansive windows, each area is meticulously designed to invite in copious amounts of daylight, creating bright, inviting, and conducive spaces for learning, research, and study. This conscious use of daylight not only enhances the aesthetic appeal of the campus but also fosters an environment that supports the well-being, focus, and productivity of students and faculty across different educational and research settings.

Feeling of space and light in the building



Use of Natural light for Classrooms

Laboratories: The laboratories at College are intelligently designed with a focus on optimizing natural daylight. Employing passive architectural methods and spacious windows, these spaces are bathed in natural light, fostering an ideal setting for scientific experiments and practical work. The abundance of daylight not only enhances visibility but also creates an inspiring and comfortable environment for research and experimentation.

It is maintained that all regularly occupied spaces are daylit, thereby improving health and well-being of students & teachers.

Feeling of space and light in all the labs

Use of Natural light for library

III. Water Audit

Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water, the efforts of thecampusin water usage and management is seen through following activities it is satisfactory and no unnecessary water wastage is noticed in the campus.

During the survey, no wastages were observed. The open grounds provide means for water percolation as they are not barren due to ample greenery on campus. The campus has a functional rain water harvesting unit and the water collected is used for campus needs. All the waste water from the campus is treated by a fully functional Sewage Treatment Plant and is reused for gardening purposes in the Institution.

i. Water Supply and Usage

The primary water source for meeting the campus water demands is derived from 5 bore wells, effectively catering to the campus water needs. With a total of three bore wells strategically located across the campus, the Institution has established a robust system to harness groundwater efficiently. These bore wells, carefully situated, act as essential reservoirs, ensuring a consistent and reliable water supply throughout the year. Recognizing the importance of water conservation and replenishing groundwater resources, the Institution has undertaken a commendable effort by implementing recharge structures for all its bore wells. These recharge structures, designed and integrated systematically, play a pivotal role in replenishing the aquifers by allowing rainwater and surface runoff to percolate into the ground, thus contributing to the preservation and sustainability of the groundwater resources. This conscientious approach to utilizing bore well water as the primary source, coupled with the deployment of recharge structures, exemplifies the Institution's commitment to efficient water management and the conservation of precious water resources.

Borewell

ii. Water consumption

As a primary data collected by survey, we found

Sr. No.	Particulars	Details
1	Students	1351
2	Teaching Staff	73
3	Non-Teaching Staff	68
4	Visitors	15
	Total	1507

Estimation of water requirement for drinking & domestic use as per (Source: NBC 2016, BIS)

Sr. No.	Particulars	Details	Water Consume limit	Total water in lit/day
1	Students at Institution	1351	45 lit/day	60,795
2	Teaching Staff	73	45 lit/day	3,285
3	Non-Teaching Staff	68	45 lit/day	3,060
4	Visitors	15	15 lit/day	225
	Total	1507		67,365

Total expected Water consumption as per NBC 2016, BIS is – 67.63 m^3/day.

iii. Water quality

The quality of the bore well water has been assessed and meets the standards for potable (drinkable) water. To ensure the continued safety and quality of the drinking water provided to staff and students, thecampushas implemented a comprehensive water treatment system. This system includes UV (Ultraviolet) and RO (Reverse Osmosis) filtration systems installed on each floor of every block. These filtration systems effectively purify the water, making it safe for consumption, and contribute to the overall well-being of the Institution community by providing access to clean and potable drinking water.

RO water filtration system and Test report

iv. Rain water harvesting

The K. S. Institute of Technology has taken a bold step towards sustainable water management by embracing a comprehensive approach to rainwater harvesting on its campus. Through innovative strategies and meticulous planning, the institute aims to optimize rainwater utilization and enhance groundwater recharge effectively. Utilizing the non-roof method, the campus has strategically implemented specific structures like recharge pits across its premises to capture and infiltrate rainwater into the ground. These efforts not only conserve water but also significantly contribute to boosting the groundwater table.

Moreover, the campus has incorporated an advanced system of drain channels intelligently distributed throughout its landscape. These channels are designed to collect rainwater and channel it to centralized points or low-lying areas, ensuring efficient gathering and redirection of rainwater to specific zones for absorption or collection. This holistic approach minimizes surface runoff and maximizes rainwater management, thus benefiting both groundwater replenishment and water resource conservation.

To complement these initiatives, the campus boasts four large tanks, each with a capacity of 10,000 liters, totaling an impressive 40,000 liters. These tanks serve as crucial reservoirs for storing harvested rainwater, further enhancing the institute's ability to sustainably manage water resources. Through these integrated efforts, K. S. Institute of Technology demonstrates its commitment to environmental stewardship and sets a commendable example for sustainable practices in higher education institutions.

Rain water pipes

Open Rain water channels

This multi-faceted strategy underscores the institution's commitment to sustainable water management. By combining the non-roof method with an intricate network of drain channels, the Institution demonstrates a dedication to eco-friendly practices and responsible water utilization, ensuring an environmentally sustainable campus for the benefit of present and future generations

The campus has implemented rainwater recharge pits, specifically designed to improve the groundwater table and augment the vegetated area on campus. These pits, constructed with a depth of 15 feet, are strategically located within the institution's premises, primarily near the bore well.

The primary objective of these recharge pits is to facilitate the restoration of groundwater levels by enabling rainwater to permeate through the soil and recharge underground aquifers. Placing these pits in close proximity to the bore well is a carefully considered decision, accounting for crucial factors such as the catchment area, soil percolation rates, and groundwater depth. This strategic placement near the bore well maximizes water infiltration in a specific targeted area, effectively contributing to the institution's sustainable water resource management and promoting groundwater replenishment. The recharge structures are dedicated specifically to the bore well, ensuring a localized and efficient recharge process.

IV. Good Health and Well-being

i. Campus design caters to differently able people

The campus design places a strong emphasis on accessibility and inclusivity, catering to differently-abled individuals and senior citizens. Several measures have been implemented to ensure their comfort and ease of movement, including:

Non-Slippery Ramps: Ramps with non-slip surfaces have been installed to provide smooth access for individuals with mobility challenges, ensuring safe and secure movement.

Non slippery ramps

Wheel chair facility

Medical Assistance

Wheelchairs: Wheelchairs are provided to assist those who require mobility aids, facilitating their movement within the campus.

Uniformity in Floor Level: Exterior common areas have been designed with consistent floor levels to ensure unobstructed movement and accessibility for all.

Easy Access to Main Entrance: The main entrances of buildings are easily accessible, removing barriers and enabling smooth entry for everyone.

Preferred Parking for Differently-Abled: Designated parking spaces have been allocated for differently-abled individuals, allowing them convenient access to the campus facilities.

Appropriately Designed Preferred Car Park Spaces: Specifically designed preferred car park spaces are situated for easy access to the building's main entrance enhancing convenience for differently-abled and senior citizens.

ii. Basic Amenities

Institution has Provide access to basic amenities, so as to reduce negative impacts caused from automobile use and also make it easy for students, basic amenities such as cafeteria, canteen, bus stop in front of the College and several other basic amenities, within the campus itself.

Canteen facility

V. Waste Management Audit

K. S. Institute of Technology is committed to promoting environmentally responsible practices, and one key area where this commitment is evident is in its waste management strategies. By implementing a range of initiatives, the College aims to reduce its environmental impact, minimize landfill contributions, and foster a culture of sustainability among its students and staff.

Source Segregation:

The College has established a robust source segregation system, encouraging the separation of waste at its origin. Dust bins for biodegradable and plastic waste are strategically placed across the campus, facilitating the easy disposal of waste materials by students and staff.

Specialized Handling of Hazardous Waste:

College is responsible for the collection and proper disposal of various types of hazardous waste generated within the College, ensuring adherence to safety and environmental standards.

Kammavari Sangham (R) - 1952
K.S.Group of Institutions

K S INSTITUTE OF TECHNOLOGY

#14,Raghuvanahalli, Kanakapura Main Road,Bengaluru-560109

DEPARTMENT OF CHEMISTRY
REPORT ON HANDLING OF HAZARDOUS CHEMICALS

Date: 1-09-2022

Raw chemicals are not using directly, chemicals are diluted at very low grade concentrations, and while doing experiments again it will get even more diluting. And finally it is collected in waste chemical collecting containers and again it is diluted with water and dumped in separate drainage pits, empty chemical containers were handled to house keeping department.

Fuming chemicals are handled separately in fumigation chamber which will exhaust separately through fuming ducts while doing solution preparations. Flamable chemicals are stored in cool and dry place avoiding sunlight, electrical batteries and switches to avoid short circuits etc..

Washing hands with soap after using chemicals for both students and staff.

Instructing students to wear uniform, apron and shoes for safety.

First aid kit facility is provided for laboratory.

Minimal usage of chemicals for the experiments.

Laboratory safety practices followed.

LAB. INCHARGE
(SHYLAJA K.R.)

LAB. INSTRUCTOR
(DEEPAK RAJ R.T.)

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Hazardous chemicals waste management report

Regular Cleaning and Municipal Service Collaboration:

Daily cleaning activities ensure the maintenance of a clean and hygienic environment.

A significant portion of non-biodegradable waste is efficiently lifted by the City Municipal service, reinforcing the Institute's commitment to responsible waste disposal.

Dedicated Collection Centers:

Specific collection centers on campus are designated for all kinds of waste generated, ensuring safe and compliant handling of these materials.

E-waste Management:

The College recognizes the importance of responsible e-waste management. Defective items from the computer lab and other electronic waste are stored appropriately.

An approved e-waste management and disposal facility have been contacted to ensure the scientific and environmentally sound disposal of electronic waste, with a focus on potential reuse.

Promotion of 3R Principles:

Reduce:

K. S. Institute of Technology has taken significant steps to reduce paper usage. Paperless processes have been implemented for admissions, examination forms, and financial transactions. Students are encouraged to use both sides of paper for writing tests, and the adoption of paper binding for academic practical records has replaced the use of plastic. The dissemination of notices and circulars to faculty is predominantly done through email, minimizing the need for printed materials.

Reuse:

The College stores e-waste and defective items from the computer lab with the intention of facilitating their reuse wherever possible. By embracing a culture of reusing materials, K. S. Institute of Technology actively contributes to the reduction of waste generation.

Recycle: The waste management is in order with the installation of dust bins. The waste is segregated at source by providing separate dust bins for Biodegradable and Plastic waste. Students and staff members are given sufficient information regarding the effective management of the waste generated in the campus.

Conclusion:

K. S. Institute of Technology has successfully implemented a comprehensive waste management strategy that aligns with the principles of sustainability. Through source segregation, collaboration with municipal services, and dedicated handling of various waste streams, the College is setting a positive example for responsible waste management within the academic community. The commitment to the 3R principles—Reduce, Reuse, and Recycle—underscores the institution's dedication to minimizing its environmental footprint and fostering a culture of sustainability among students, staff, and the broader community.

VI. Biodiversity Audit

A comprehensive scientific survey of the campus' flora and fauna was conducted throughout the rainy, winter, and summer seasons in 2022. This biodiversity audit yielded noteworthy findings, including the identification of numerous tree species and a diverse array of mammals, birds (Aves), arthropods, and annelids. These discoveries underscore the remarkable composition of flora and fauna thriving on the campus. Notably, the campus hosts a seasonal influx of various bird species, further enhancing its ecological significance. Moreover, the institution has embarked on a commendable initiative to label trees and plants with their botanical names and assign unique numerical identifiers. This concerted effort aligns with the broader goal of preserving and celebrating the campus's rich biodiversity, fostering a deeper appreciation for the natural world.

Campus Plantation Overview: In the campus, there is a dedicated effort towards creating a vibrant and green environment with a focus on a variety of plants that contribute to the beauty and ecological balance of the surroundings.

Horticulture Department Presence: In the campus, there is a dedicated Horticulture Department overseeing the management of the garden areas.

Staff Composition in the Horticulture Department:
- 01 Assistant Facility Manager
- 01 Supervisor
- 03 Gardeners

This integrated approach to horticulture not only beautifies the campus but also instills a culture of environmental stewardship and community engagement among the campus occupants.

Biodiversity Details

No.	Common Name of plant/tree	Scientific Name of plant/tree
1	Dwarf umbrella tree	Heptapleurum rboricola
2	Rose	Rosa rubiginosa
3	Tuberose (rajinigndha)	Agave amica
4	Chinese Evergreen	Aglaonema
5	Golden Evergreen	Aglaonema commutatum
6	Indian Laurel Fig	Ficus retusa
7	Song of India	Pleomele reflexa variegata
8	Pride of India	Dracaena reflexa
9	Dumb cane	Dieffenbachia seguine
10	Osage orange	Maclura pomifera
11	Indian mint	Coleus Amboinicus

12	Madagascar Periwinkle	Catharanthus roseus
13	Trailing Krameria	Krameria lanceolata
14	Patharchatta	Kalanchoe pinnata
15	Veldt Grape	Cissus quadrangularis
16	Screw pine	Pandanus veitchii
17	Red silky oak	Alloxylon flammeum
18	Tulsi	Ocimum sanctum
19	Chinensis Ixora	Ixora Chinensis
20	Border Plant	Alternanthera Loropetalum
21	Ficus microcarpa	Chinese banyan
22	Aesculus californica	California buckeye
23	Rubber Plant	Hevea brasiliensis
24	Spreading phlox	Phlox diffusa
25	Hibiscus	Hibiscus rosa-sinensis
26	Yellow Creeping Daisy	Sphagneticola trilobata
27	East-Himalayan Derris	Aganope thyrsiflora
28	Minnieroot	Ruellia tuberosa
29	Onion cedar	Owenia cepiodora
30	Mangrove fan palm	Licuala spinosa
31	Persian silk tree	Albizia Julibrissin
32	Pomegranate	Punica granatum
33	Mango tree	Mangifera indica
34	Madagascar Jasmine	Stephanotis floribunda
35	Red cedar	Juniperus virginiana
36	Copper leaf	Acalypha wilkesiana
37	Golden Champa	Magnolia champaca
38	Green sannaleaves plant	Senna alexandrina
39	Watery rose apple	Syzygium aqueum
40	Caricature plant	Graptophyllum pictum
41	Paperbark-tree	Melaleuca quinquenervia
42	Eagles ford ficus	Ficus benjamina
43	Frangipani	Pulmeria
44	Rose bay	Nerium oleander
45	Korean dendropanax	Dendropanax morbiferus
46	Jack fruit	Artocarpus heterophyllus
47	Zebra plant	Aphelandra squarrosa
48	Canna lilly	Canna indica
49	Chilian pine	Araucaria araucana
50	Neem tree	Azadirachta indica

51	Buddhist Pine	podocarpus totara
52	Crown of thorns	Euphorbia milii
53	Arrowhead vine	Syngonium podophyllum
54	Copperleaf	Acalypha wilkesiana
55	African dream herb	Niche garage
56	Chinese Evergreen	Aglaonema commutatum
57	Beach Spiderlily	Hymenocallis littoralis
58	Lemon tree	Citrus limon
59	Peace lily	Spathiphyllum wallisii
60	Alovera	Aloe barbadensis Miller
61	Pink rain lily	Zephyranthes rosea
62	Diagnosis red cordyline	Diagnosis red cordyline
63	Bush lily	Clivia miniata
64	Variegated Sedge	Carex siderosticha variegata
65	Lantana camara	Lantana aculeata L. Camara vulgaris
66	Miracle Leaf	Kalanchoe Pinnata

A diverse range of mammal, bird, arthropod, and annelid species were observed on campus, showcasing an unexpectedly rich composition of flora and fauna. This biodiversity is particularly remarkable given the urban location of the campus in the heart of the city, underscoring the resilience and adaptability of the local wildlife to coexist in this unique environment.

Animals and Birds most observed are as follows:

	Sr. No.	Common Name	Species
Birds	1	House Sparrow	Passer domesticus
	2	Great Egret	Ardea alba
	3	Rosy Starling	Paster roseus
	4	Large Grey Babbler	Turtoides malcolmi
	5	Alpine swift	Apus melba
	6	Common Cuckoo	Cuculus canorus
	7	Common Myna	Acridotheres tristis
	8	Pigeon	Columbidae
Reptiles	1	Indian cobra	Naja naja
	2	Graceful racer	Platyceps gracilis
	3	Indian Palm Squirrel	Funambulus palmarum
Insects	1	Sphinx moths	Sphingidae
	2	Common Gull	Cepora nerissa
	3	Common grass yellow	Eurema hecabe
	4	Lemon migrant	Catopsilia Pomona
	5	White orange tip	Ixias Marianne
	6	Common Jay	Grapium doson
	7	Peacock pancy	Junonia almanac
	8	Common crow butterfly	Euploea core
	9	Lesser grass blue	Zizina otis
	10	Forget Me Not	Catochrysops Strabo
	11	Common Mormon Swallowtail	Papilio polytes
	12	Lime Swallowtail	Papilio demoleus
	13	Lime blue	Chilades lajus
	14	Grasshopper	Poekilocerus pictus
	15	Blue Tiger	Tirumala limniace
	16	Common evening brown	Melanitis leda

Institution is Minimizing disturbances and restoring vegetation in the campus, so as to promote habitat and biodiversity.

VII. Green Policy and Education

College is actively promoting green education by engaging students and local communities to elevate awareness levels and inspire the adoption of eco-friendly practices through the National Service Scheme (NSS). NSS plays a pivotal role in educating students about the environment, environmental laws, and their responsibilities in safeguarding the environment. The institution conducts a myriad of programs and awareness initiatives dedicated to environmental protection. These activities are organized periodically and encompass various outreach and educational programs throughout the year, involving both campus residents and local communities. This collective effort aims to enhance public awareness of environmental sustainability and the green initiatives implemented on the campus.

The institution also celebrates significant environmental occasions such as Environmental Day, Earth Day, and Water Day every year. These celebrations often involve tree planting activities, serving as a means to raise awareness and expand green coverage in and around the campus. This commitment to environmental awareness and action demonstrates the institution's dedication to sustainable practices and the well-being of the environment.

K. S. Institute of Technology Celebrates World Environment Day with Tree Planting Event

Date: June 6, 2022

Location: K. S. Institute of Technology Campus

Overview:

In honor of World Environment Day, K. S. Institute of Technology proudly organized a tree planting event on June 6th, 2022. As stewards of the environment, the institute recognizes the importance of sustainable practices and aims to instill a sense of responsibility towards nature in its students and the community.

Event Highlights:

1. **Tree Planting Ceremony:** The event commenced with a solemn tree planting ceremony where faculty members, students, and staff came together to plant saplings on the institute's campus. Each sapling symbolized our commitment to environmental conservation and served as a tangible contribution towards a greener future.
2. **Educational Workshops:** Concurrently, educational workshops were conducted to raise awareness about the significance of preserving our natural resources. Experts in the field shared insights on topics such as climate change, biodiversity, and the importance of tree plantation in mitigating environmental degradation.
3. **Interactive Sessions:** Engaging discussions and interactive sessions encouraged participants to brainstorm innovative ideas for sustainable living. Students eagerly

shared their perspectives on incorporating eco-friendly practices into everyday life, fostering a sense of collective responsibility towards environmental stewardship.

4. **Community Engagement:** Beyond the confines of the institute, students and faculty extended their efforts to the local community, organizing outreach programs to promote environmental consciousness. Initiatives such as neighborhood clean-up drives and awareness campaigns further amplified the message of environmental sustainability.

ENVIRONMENTAL DAY

Date of Conduction of Program: 06.06.2022

Venue: KSIT

Organized by: NSS UNIT OF KSIT

Duration: 2.50pm -3.30pm

Participants: Principal, NSS Officer, HOD's and NSS volunteers.

HISTORY OF ENVIRONMENTAL DAY

World environment day is celebrated on June 5 every year and this day is commemorated to raise awareness about environmental issues, the increasingly deteriorating conditions, climate change etc. This day acts as a reminder to people to be more considerate and aware of the Earth's existing conditions, in terms of the environment

SCOPE OF ENVIRONMENTAL DAY

To celebrate by planting new saplings.

OBJECTIVE OF THE EVENT

It calls for collective,transformative action on a global scale to celebrate,protect and restore our planet Earth.

HIGHLIGHTS OF THE EVENT

All the volunteers took part in the event for celebrating environmental day organized by KSIT NSS unit. They planted several saplings of different kinds. Students from all the semester came up front as a joint force to save mother Earth and to preserve and raise awareness about the deteriorating environmental conditions. The event went on successfully.

Impact and Future Endeavors:

The tree planting event at K. S. Institute of Technology served as a catalyst for fostering a culture of environmental responsibility within the institution and beyond. By nurturing saplings and nurturing minds, the institute aims to cultivate a generation of environmentally conscious individuals equipped to address the challenges of tomorrow.

As we reflect on the success of this event, we remain committed to integrating sustainable practices into every facet of our academic and operational endeavors. Through ongoing initiatives and collaborative efforts, we endeavor to create a brighter, greener future for generations to come.

NSS Special Camp Report: Creating Awareness and Service in Ammallidoddi

Date: 06/07/2022 to 12/07/2022
Venue: Ammallidoddi, Virupakshipura Hobali, Channapatna Taluk, Ramanagar District
Organized by: NSS unit of KS Institute of Technology
Participants: NSS Officer - Mr. Naveen V, Physical Education Director - Mr. Umesh, 50 NSS volunteers

Objectives of the Program:

1. To create awareness regarding cleanliness by cleaning village streets and drains.
2. To conduct medical and dental camps for educating the villagers regarding healthcare.

Highlights of the Program:

Day 1 - 06/07/2022:

- NSS volunteers gathered at KS Institute of Technology Campus and departed for Ammallidoddi.
- Inaugural function attended by local dignitaries, where the program was inaugurated with planting trees.
- Badge distribution ceremony and cultural programs by NSS volunteers.
- Teams formed for various activities such as cleaning, cultural events, and organizing.

Guests entering the Inaugural function

Audience of the Inaugural function

Day 2 - 07/07/2022:

- Activities commenced with morning cleaning and awareness programs.
- Teams assigned different responsibilities including cleaning, cultural events, and food management.
- Medical and dental camps organized for the villagers.
- Cultural programs and distribution of momentos to villagers.




Volunteers cleaning the village streets and drains

Volunteers Group photo

Volunteers Group photo

Day 3 - 08/07/2022:

- Flag hoisting and health check-up camps organized.
- Drama on the importance of education performed.
- Cultural programs by NSS volunteers and village kids.
- Dental camp organized in association with Rajarajeshwari Dental College and Hospital.

Volunteers cleaning the streets

Photos of Dental Camp

Day 4 - 09/07/2022:

- Flag hoisting and blood donation camp conducted.
- Distribution of books and slates to school students.
- Address by D K Suresh, MP of Bangalore Rural, on the significance of NSS.
- Cultural performances by ABCD Dance Academy and NSS volunteers.

Distributing pamphlets of health check-up

Blood donation Camp

Day 5 - 10/07/2022:

- Flag hoisting and health check-up camp.
- Personality development program by ShivaKumar, a Gold Medalist.
- Health check-up camp for villagers.
- Cultural performances and distribution of awards.

Health check-up for villagers

Personality development program

Day 6 - 11/07/2022:

- Flag hoisting and plantation drive.
- Cleaning activities and lunch served to visitors.
- Cultural programs and felicitation of guests.
- Campfire and cultural exchange.

The NSS special camp in Ammallidoddi was a testament to the dedication and service-oriented mindset of the NSS volunteers. Through various activities and programs, they successfully created awareness and provided essential services to the villagers, leaving a positive impact on the community.

Conclusion:

The World Environment Day celebration at K. S. Institute of Technology was not merely an event but a reaffirmation of our commitment to safeguarding the planet. As we take pride in our accomplishments, we also recognize the collective responsibility we bear towards preserving the environment for future generations. Let us continue to nurture the seeds of change and cultivate a sustainable future, one sapling at a time.

VIII. Observation and Recommendation

Observations of the Green Audit and Environment Audit

Our recent Audit has yielded several noteworthy observations that reflect commitment to sustainability and environmental responsibility. These observations encompass various aspects of our operations and practices across:

1. **Well-Maintained Signages:** We are pleased to report that signages, essential for guiding and informing our campus community, have been meticulously maintained at all relevant locations across our campuses.

2. **Paper Consumption Monitoring:** Vigilant paper consumption monitoring is in place across all our buildings, reflecting our dedication to reducing paper waste and promoting eco-friendly practices.

3. **Effective Waste Management:** Waste bins and containers are strategically positioned, with separate receptacles for different types of waste. Continuous waste quantity monitoring ensures efficient waste management.

4. **Responsible E-Waste Disposal:** E-waste is responsibly handled by returning it to suppliers for proper disposal, minimizing its environmental impact.

5. **Afforestation Efforts:** Our commitment to environmental conservation is exemplified by the planting of over 100 saplings in and around our campus as part of NSS and other initiatives.

6. **Environmentally Friendly Cleaning Practices:** We prioritize the use of environmentally friendly cleaning agents for maintaining the cleanliness of our floors and toilets across all campuses.

7. **Fire Safety Measures:** Fire extinguishers are regularly refilled, and mock drills are conducted to prepare our campus community for potential fire emergencies.

8. **First Aid Availability**: To ensure that first aid kits are readily available on each floor of campus at convenient locations. Regular monitoring ensures that all items are consistently accessible.

These observations reaffirm College dedication to environmental sustainability and our resolve to create a greener, safer, and more eco-conscious environment campuses.

Recommendations for Sustainable Practices

Following the recent Green Audit, we have identified several key recommendations aimed at further enhancing our sustainability efforts and environmental responsibility:

1. **Sustainability Training:** Launch comprehensive sustainability training programs to educate our community on eco-friendly practices and environmental stewardship.
2. **Environmentally Responsible Purchasing Policy:** Adopt an Environmentally Responsible Purchasing Policy to guide procurement decisions, reducing our environmental footprint.
3. **Stakeholder Engagement:** Foster involvement from government, foundations, and industry in interdisciplinary research and education for sustainable development.
4. **Canteen Renovation:** Explore renovating our canteen's cooking system by installing solar water heaters with heat pumps to cut gas consumption and promote renewable energy.
5. **Employee Tree Ownership:** Foster a sense of ownership by assigning trees to employees, encouraging responsibility for our campus's green spaces.
6. **Butterfly Garden:** Develop a butterfly garden to celebrate and preserve biodiversity on campus, appreciating the diversity of flora and fauna.
7. **Water Meter Installation:** Install water meters at all tank outlets to monitor and control water usage accurately, promoting conservation.
8. **Low VOC Paints:** Use low VOC paints during renovation and construction to minimize air pollution and promote healthier indoor air quality.
9. **Leak Repairs:** Address leaks promptly by fixing taps and pipes to minimize water wastage and conserve resources.
10. **Automatic Faucets:** Install auto-flush systems for basins to reduce water usage and encourage efficient handwashing practices.
11. **Water-Saving Fixtures:** Install water-saving fixtures across campus facilities to reduce water consumption and promote sustainability.
12. **Biogas Unit:** Introduce a biogas unit to convert organic waste into energy, reducing reliance on fossil fuels and promoting renewable energy sources.


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ENERGY AUDIT REPORT | 2022

K. S. Institute of Technology

MSME
MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम

Green Aura
Built Environment Sustainability & Transformation

692F,12TH A CROSS BEL LAYOUT, BENGALURU- 560091

(MSME registered organisation)

Certificate of Energy Audit - 2022

THIS CERTIFICATE IS PRESENTED TO

K. S. INSTITUTE OF TECHNOLOGY

This is to certify that K. S. INSTITUTE OF TECHNOLOGY has successfully undergone 'Energy Audit' on 16th January, 2023 and assessed the electrical energy conservation, energy saving measures, policies and standards in the campus were found to be excellent.

This certificate is valid till 31st December, 2023

Ref. No: GA / ENERGY AUDIT / 02 / 01 / 23

MR NISCHAY N GOWDA

Founder & Director - Green Aura

CERTIFIED ISO EMS-LA, IGBC - AP,
US GREEN BUILDING COUNCIL - GREEN ASSOCIATE.

ENERGY AUDIT REPORT 2022

CONSULTATION REPORT

K. S. INSTITUTE OF TECHNOLOGY

Bengaluru, Karnataka – 560109

Submitted to:
Principal,
No.14, Raghuvanahalli,
Kanakapura Road,
Bengaluru – 560109

Audited by:
Green Aura,
692F,12th A cross Bel layout,
Bengaluru- 560091.

CONTENT

ACKNOWLEDGEMENT

GREEN AURA, Bangalore, Karnataka takes this opportunity to appreciate & thank the management **K.S Institute of Technology** for giving us an opportunity to conduct energy audit for the Institute.

We are indeed touched by the helpful attitude and co-operation of all faculties and technical staff, who rendered their valuable assistance and co-operation the course of study.

Energy Audit Team

The study team constituted of the following senior technical executives from **Green Aura**.

- **Mr. Nischay N Gowda**, Founder & Director Green Aura, Bengaluru.
- **Mr. Sachin Kumawat**, Certified Energy Manager (EM-300475/23).
- **Mr. Akash Kumar**, Engineer.

Mr Nischay N Gowda,
Director

EXECUTIVE SUMMARY

The executive summary of the energy audit report furnished in this section briefly gives the identified energy conservation measures in the Institute.

AREAS FOR IMPROVEMENT

SOLAR SYSTEM

- There is a good potential to installation of 50 KWp solar roof top grid connected system in the Institute. Expected annual solar unit generation @ 4 units per KWp is 73,000/- Unit.

LIGHTING SYSTEM

- It is observed that there is good potential for replacement of "conventional T-8 (40 Watt) tube light by 20-Watt energy efficient LED lighting
- Installation of "timer control on straight light and focus light on building" recommended for energy saving in the Institute.
- Installation of motion sensor in non-working area (wash room, Store room, corridor etc.) recommended for energy saving in the Institute.

CEILING FAN.

- It is recommended to replace "conventional ceiling fan (60 Watt)" by energy efficient star rated BLDC based i.e. energy efficient fan (28 Watt) in institute building etc. It has great potential for energy saving.

ENERGY MANAGEMENT WORKSHOP AND TRAINING

- Develop energy management policies for institute. Establish a procurement policy that is energy saving and eco-friendly.
- Conduct awareness and training programs for faculty, student and non-teaching staffs. Conduct seminars, workshops and exhibitions on energy management education.
  Involve All Stakeholders - Encourage involvement of government, founder members, and industry for supporting interdisciplinary research, education, policy formation, and information exchange in energy management system

CHAPTER-01
INTRODUCTION OF ENERGY AUDIT

1.1 About Energy Audit

An energy audit is a systematic process of evaluating and analyzing the energy consumption and efficiency of a building, facility, or organization to identify opportunities for energy savings and improved energy performance. The primary goal of an energy audit is to assess how energy is used, wasted, or potentially conserved within a given system or operation.

1. Identify Energy Consumption: - Determine how and where energy is being used within a facility or organization, including electricity, natural gas, heating oil, water, and other energy sources.
2. Quantify Energy Efficiency: - Assess the efficiency of energy-consuming systems and equipment, such as HVAC (heating, ventilation, and air conditioning) systems, lighting, appliances, and industrial processes.
3. Identify Energy Conservation Measures (ECMs):- Identify specific opportunities to reduce energy consumption and improve energy efficiency. This may involve upgrading equipment, optimizing operations, or implementing energy-efficient technologies
4. Estimate Cost Savings: - Calculate potential energy and cost savings associated with implementing recommended ECMs. This helps organizations prioritize energy-saving initiatives based on return on investment (ROI).
5. Prioritize Recommendations: - Present a list of recommendations, along with their associated costs and benefits, to help stakeholders make informed decisions about which energy-saving measures to pursue.
6. Promote Sustainability: -Energy audits can contribute to sustainability efforts by reducing greenhouse gas emissions and environmental impact, which is particularly important in the context of climate change mitigation

The GREEN AURA, Bangalore, carried out the energy audit at the site to find improvements required in the energy consumption pattern for K.S Institute of Technology. A technical report has been prepared as per the data basis & need of the requirement of the project.

1.2 Objectives of Energy Auditing

The primary object of an energy audit is to assess and analyze the energy usage and efficiency of a building, facility, or process. Energy audits are conducted to achieve several specific goals and objectives, including

1. Identify Energy Efficiency Opportunities.
2. Fixing of energy saving potential targets for individual cost centers
3. To reduce operational costs.
4. To reduce energy consumption per unit product output.
5. Improve Energy Performance.
6. Relating energy inputs and production output
7. To find and apply effective planning for more effective use of energy throughout the industry works.
8. Identifying potential areas thermal and electrical energy efficiency.

1.3 Energy Audit Methodology

An energy audit is a systematic process of evaluating and analyzing energy usage in a facility or organization to identify opportunities for energy efficiency improvements. The goal of an energy audit is to reduce energy consumption, lower energy costs, and minimize environmental impacts. There are different levels of energy audits, ranging from a basic walkthrough audit to a comprehensive investment-grade audit.

1. **Preparation and Planning**

- Define the scope and objectives of the energy audit.
- Gather historical energy consumption data and utility bills.
- Assemble a team of auditors with expertise in energy systems, including HVAC, lighting, electrical, and building envelope.
- Obtain building plans, equipment manuals, and other relevant documentation.
- Schedule the audit and secure necessary permissions and access to facilities

2. **Site Assessment**

- Conduct a walkthrough of the facility to understand its layout, systems, and operations.
- Identify and document key energy-consuming equipment and systems.
- Collect data on operating hours, temperature settings, and occupancy patterns.
- Note any maintenance issues or equipment malfunctions that may affect energy efficiency.
- Perform basic energy benchmarking to compare the facility's energy performance with industry standards or similar facilities

3. **Data Collection and Analysis**

- Install energy monitoring equipment, such as data loggers, to track energy usage in real-time if necessary.
- Collect data on energy consumption for each identified system and equipment.
- Analyze energy bills to determine cost breakdown and seasonal variations.
- Calculate energy consumption and efficiency metrics (e.g., kWh, BTUs, Energy Use Intensity, etc.).

4. **Data Collection and Analysis**

- Develop a list of energy-saving recommendations based on the audit findings.
- Prioritize recommendations based on cost-effectiveness, payback period, and potential energy savings.
- Provide detailed specifications for implementing each recommendation, including estimated costs and potential incentives or rebates.
- Consider both low-cost/no-cost measures (behavioral changes, maintenance improvements) and capital-intensive measures (equipment upgrades, retrofits)

5. **Reporting and Documentation**

- Compile the audit findings, recommendations, and supporting data into a comprehensive audit report.
- Include a summary of potential energy savings, estimated costs, and return on investment (ROI) for each recommendation.
- Present the report to key stakeholders, such as management, facility operators, and decision-makers.

6. **Monitoring and Verification**

- After implementing energy-saving measures, monitor energy consumption to verify actual savings.
- Adjust operations and maintenance practices as needed to maintain energy efficiency.
- Periodically review and update the energy management plan to ensure continuous improvement.

7. **Education and Training**

- Provide training to facility staff to ensure proper operation and maintenance of energy-efficient systems.

CHAPTER-02
POWER SUPPLY SYSTEM
2.1 Transformer

The power supply for the K.S Institute of Technology taken is from BESCOM with the help of 11 kV feeders under Tariff 1HT2C2. There is one transformer with capacity of 250 KVA.

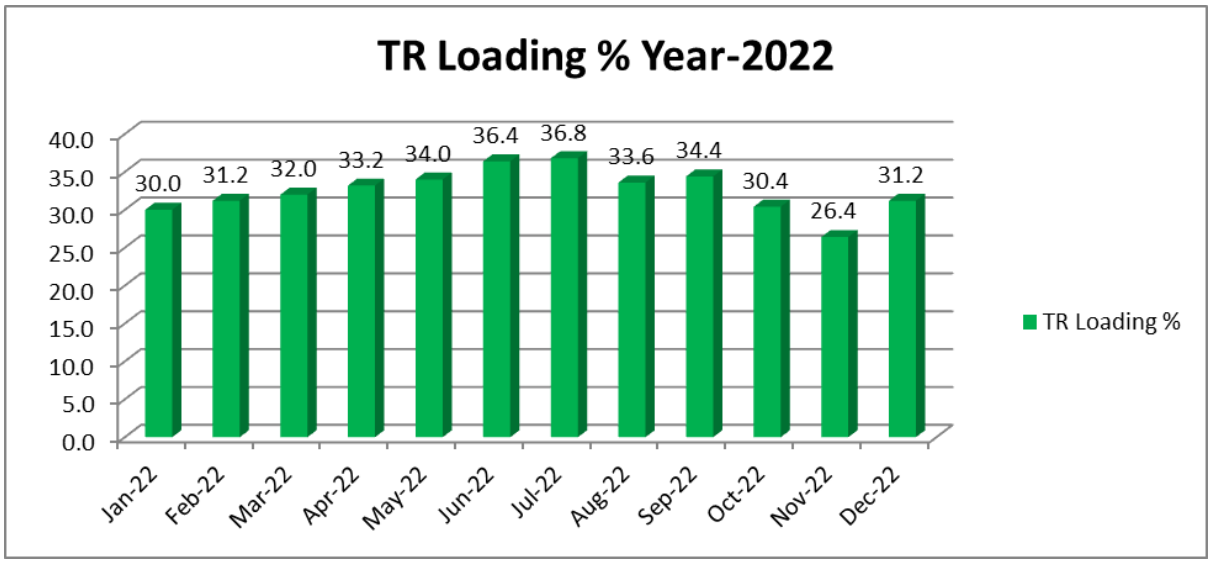
Table: 2. 1 Technical Specifications of transformers.

Sr. No.	Items	Technical details
1	Make	KPRS
2	Serial No	2000 10 F 501
4	Year	2000
5	Rating (kVA)	250
6	Voltage (HV/ LV)	11/433
7	Current (HV/LV)	13.12 /333.34
8	Total Tap Position	5

Transformer

Loading of the Transformer: -

Sr. No	Month & Year	Maximum demand (KVA)	TR Loading %
1	Jan-22	75	30.0
2	Feb-22	78	31.2
3	Mar-22	80	32.0
4	Apr-22	83	33.2
5	May-22	85	34.0
6	Jun-22	91	36.4
7	Jul-22	92	36.8
8	Aug-22	84	33.6
9	Sep-22	86	34.4
10	Oct-22	76	30.4
11	Nov-22	66	26.4
12	Dec-22	78	31.2
		Average	**32.5**



Graphical representation of Transformer Loading Year-2022

Observation: -

The average loading of the transformer is 32.5 % which are under loaded condition. The loading of the transformer depends of the operating load of the transformer.

2.2 DG SETS

The institute campus has 01 Nos. of DG set and the capacity is 250 KVA. It supplies emergency power during the grid power failure.

Sr. No.	Parameter	Technical Specification of DG set
1	Make	Powerica Limited
2	Capacity (KVA)	250 KVA
3	Serial No	01/12/03/6089
4	Noise Limit	< 75 dB

DG Set (250 KVA)

Observation: -

- DG set use in case of grid power failure.
- There is no system to monitor fuel consumptions w.r.t. unit generation

CHAPTER-03
ELECTRICITY BILL ANALYSIS

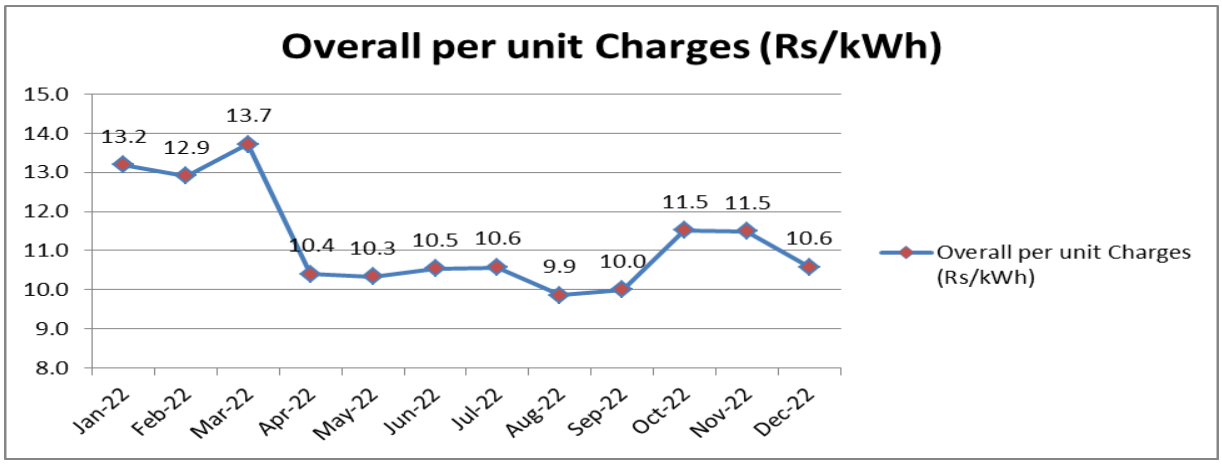
3.0 Electricity Bill Analysis

Electricity bills of last 01 year were analyses. Detailed of unit consumption, annual average power factor, Demand analysis and annual per unit charges are determined as follow

3.1 Monthly electrical energy consumption (2022)

The monthly electrical consumption for the institute is given in the table.

Sr. No	Month & Year	Unit Consumption (kWh)	Billing Amount (Rs/-)	Overall, per unit charges (Rs/kWh)
1	Jan-22	17,534	2,31,425/-	13.2
2	Feb-22	18,214	2,35,241/-	12.9
3	Mar-22	17,999	2,46,970/-	13.7
4	Apr-22	18,256	1,89,950/-	10.4
5	May-22	19,294	1,99,471/-	10.3
6	Jun-22	20,915	2,20,537/-	10.5
7	Jul-22	20,414	2,15,871/-	10.6
8	Aug-22	21,727	2,14,323/-	9.9
9	Sep-22	19,826	1,98,362/-	10.0
10	Oct-22	14,561	1,67,690/-	11.5
11	Nov-22	14,715	1,69,184/-	11.5
12	Dec-22	17,024	1,80,079/-	10.6
	Total	**2,20,479**	**24,69,103/-**	**11.3**



Graphical representation of actual per unit charges year 2022

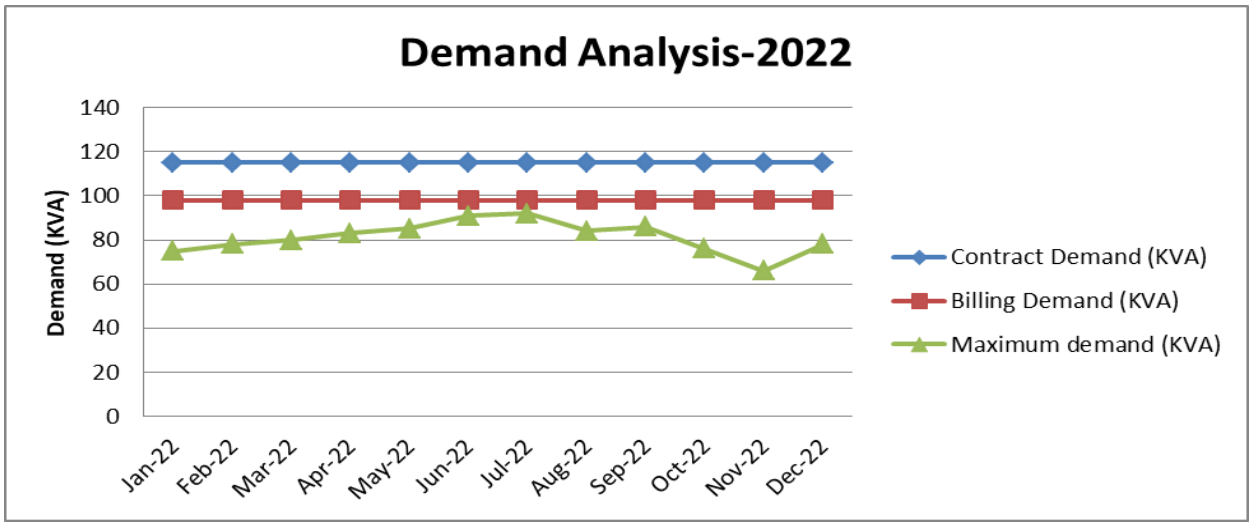
Observation: -

It was found out that total energy consumption in last 12 month was 2, 20,479/- unit. Average annual energy charges Rs 11.3 /kWh

3.2 Monthly Demand analysis-2022

The monthly demand consumption for the college is given in the table.

Sr. No	Month & Year	Contract Demand (KVA)	Billing Demand (KVA)	Maximum demand (KVA)
1	Jan-22	115	98	75
2	Feb-22	115	98	78
3	Mar-22	115	98	80
4	Apr-22	115	98	83
5	May-22	115	98	85
6	Jun-22	115	98	91
7	Jul-22	115	98	92
8	Aug-22	115	98	84
9	Sep-22	115	98	86
10	Oct-22	115	98	76
11	Nov-22	115	98	66
12	Dec-22	115	98	78
		Minimum Demand (KVA)		**66**
		Maximum Demand (KVA)		**92**
		Average Demand (KVA)		**81**



Graphical representation of Demand analysis year 2022

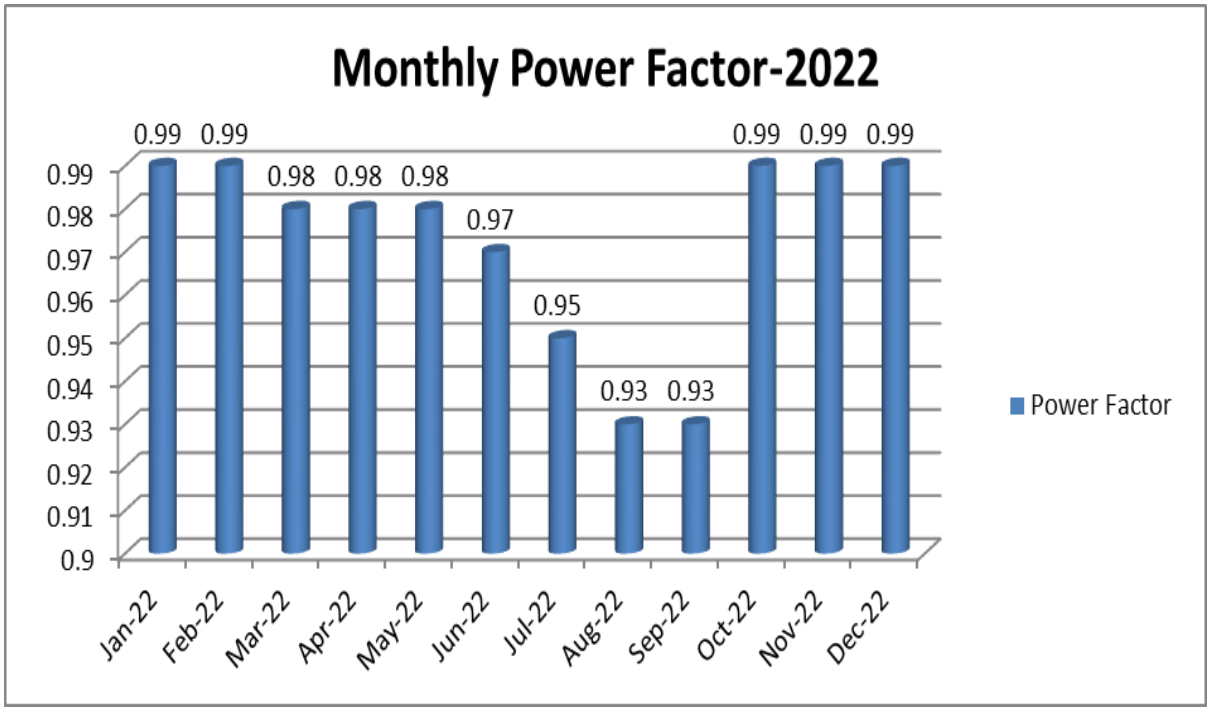
Observation: -

- It was observed that contact Demand of the Institute is 250 KVA. As per applicable Tariff Billing Demand is 85% of contract demand.
- Minimum Demand is 66 KVA in Nov-2022
- Maximum Demand is 92 KVA in July-2022.
- Average Demand is 81 of the year-2022.

3.3 Monthly Power factor analysis:

The monthly Power Factor for the institute is given in the table.

Sr. No	Month & Year	Power Factor
1	Jan-22	0.99
2	Feb-22	0.99
3	Mar-22	0.98
4	Apr-22	0.98
5	May-22	0.98
6	Jun-22	0.97
7	Jul-22	0.95
8	Aug-22	0.93
9	Sep-22	0.93
10	Oct-22	0.99
11	Nov-22	0.99
12	Dec-22	0.99
	Average	**0.97**



Observation:

The average power factor for the year 2022 was 0.97. It is acceptable.

CHAPTER- 4

Connected load of the Institute

4.1 Details of the Total Connected load of the campus

SL. NO.	PARTICULARS	TOTAL
1	**Computers**	1117
2	**Fans**	450
3	**Lights**	850
4	**Projector**	64
5	**Printer**	51
6	**AC**	10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