ENVIRONMENT AUDITREPORT

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Dr. G. T. Thampi
PRINCIPAL
Thadomal Shahani Engineering College
Bandra (W), Mumbai-400 050.

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1. ACKNOWLEDGMENT

VARSHASOOKT CONSULTANTS Environment Audit Team thanks the management of THADOMAL SHAHANI ENGINEERING COLLEGE for assigning this important work of Environmental Audit. Our special thanks are due to:

- Honorable Principal G.T. Thampi
- Teaching & Supporting Staff of Collage for giving us necessary inputs to carry out this very vital exercise of Environmental Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

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ENVIRONMENT AUDIT CERTIFICATE

This is to certify that "Environment Audit" for Thadomal Shahani College of Engineering, Linking Rd, TPS III, Bandra West, Mumbai, Maharashtra 400050, has been conducted in Feb -2021 to assess the green initiatives planning and efforts implemented in the college **campus like** Green Campus Management. Carbon Footprint, plantations, waste management, rainwater harvesting and conservation of energy. This green audit is also aimed to assess eco-friendly initiatives for maintenance of **impact of green** campus.

Place: Bandra

Date: 12th March 2021

Ms. Chitralekha Vaidya

(Lead Auditor)

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2. CONTEXT

The National Board of Accreditation Council (NBA) have made it mandatory that all Higher Educational Institutions (HEI) should submit Environmental Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures. In view of the NBA circular regarding Environmental Auditing, the College Management decided to conduct an external Environment Evaluation by a competent Environment Auditor along with an Environment Audit Assessment Team headed by Ms. Chitralekha Vaidya.

Thadomal Shahani Engineering College, Bandra. Green Audit or Environment Audit focuses on the Green Campus, Waste Management, Water Management, and Energy Management being implemented by the College Management. The concept, structure, objectives, methodology, tools of analysis, objectives of the auditor mentioned below.

3. CONCEPT

The term 'Environmental audit' or 'Green audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Green Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989). The ICC defines Environmental Auditing as: "A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects." The European Commission, in its proposed regulation on environmental auditing, has also adopted the ICC definition of Environmental Audit. However, the outcome of Green Audit should be established with concrete evidence that the measures undertaken and facilities in the institution under green audit.

4. EXECUTIVE SUMMARY

A nation's growth starts from its educational institutions. Where, the ecology is thought as a prime factor of development associated with environment. A clean and healthy environment aids effective learning and provides a conducive learning environment. Educational institutions, now- a-days, are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by several educational institutes to solve their environmental problems such as promotion of the energy savings by installing more efficient electronics and electrical equipment, proper segregation and recycle of waste, water use reduction, water harvesting and conservation etc. The activities pursued by colleges can also create a variety of adverse environmental impacts.

Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. Environment audit is defined as an official examination of the effects a college has on the environment. As a part of such practice, internal environmental audit is conducted to evaluate the actual scenario at the campus.

Environment audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources. The college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. Environment auditing and the implementation of mitigation measures is a win-win situation for all the college, the learners and the planet. It can also create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Environment impact on campus. Environment auditing promotes financial savings through reduction of resource use. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. This audit report contains observations and recommendations for improvement of environmental consciousness.

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5. INTODUCTION

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Environmental Management Systems (EMS) is very popular in the industrial sector, but the general belief is that EMS is something pertaining to industries only. Other parts of the world have started adopting compatible environmental management systems either voluntarily or for promoting standards by external certification. International environmental standards do not suit the existing Indian educational system. Hence EHS Alliance has developed a compatible system by developing locally- applicable techniques. A very simple indigenized system has been devised to monitor the environmental performance of educational institutions. It comes with a series of questions to be answered on a regular basis. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user-friendly and totally voluntary. The environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.

Environment Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience. Environment audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Environment impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. Through Environment Audit one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Environment Audit.

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5.1 About the College

Thadomal Shahani Engineering College (TSEC) is an engineering college in Mumbai, India. Founded in 1983, it is the first and the oldest private engineering institute affiliated with the University of Mumbai. TSEC was founded by the Hyderabad (Sind) National Collegiate Board (HSNC Board) in the year 1983. It is named after one of Mumbai's most respected philanthropists, Dada Kishinchand T. Shahani's father, Thadomal Shahani. The HSNC board is a charitable trust established by the Sindhi Community in 1922. With active support and encouragement from one of Bombay's influential Barrister H.G. Advani, the HSNC Board came into existence in 1949 at Bandra, Mumbai. The Late Barrister became the Founder-President, whereas Vidyasagar Principal K.M. Kundnani was the Founder-Secretary and Founder-Principal of the first college started by the board was R.D National College. Since then the Board has been offering unique pre-degree study, undergraduate and post graduate degrees in a wide range of programs. It has produced professionals' par excellence in the fields of Arts, Science, Commerce, Management, Education, Law, Engineering, Technology and Para- Medical.

5.2 Vision

- Contributing to evolving supply chain of human capital for National Economy
- Creating entrepreneurs and 'game changers' to support heightened level of economic activities underpinning ever increasing human aspiration
- Helping the Nation evolve as a total solution provider
- Value and wealth creation for the mankind

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5.3 Mission

- Product and processes innovation
- Leveraging human cognitive and behavioral science for creating instructional content
- Pervasive and ubiquitous Information Communication Technologies for customized content for learning
- Acknowledge and facilitate various learning styles and learning abilities
- Migrating from teaching paradigm to learning paradigm
- Every day discourse shall inculcate research culture and further the cause of societal advancement
- Understand various markets and cultures
- Collaborative learning and emotional integrity
- Sensitizing about opportunities in Energy, Education, Environment and Health care sectors
- Extensively promoting computer aided design, analysis, and manufacturing procedures
- Theoretical rigor to develop conceptual clarity
- Modelling and design of experiments to inculcate culture of investigation
- Helping foot print on Project management and collaborative human endeavor.
- Interdisciplinary studies and exposure to functional areas.

5.4 Other Facilities

- Library
- Seminar Hall
- Laboratory
- Canteen
- Wi-fi and 3G communication enabled campus
- Spacious student loun

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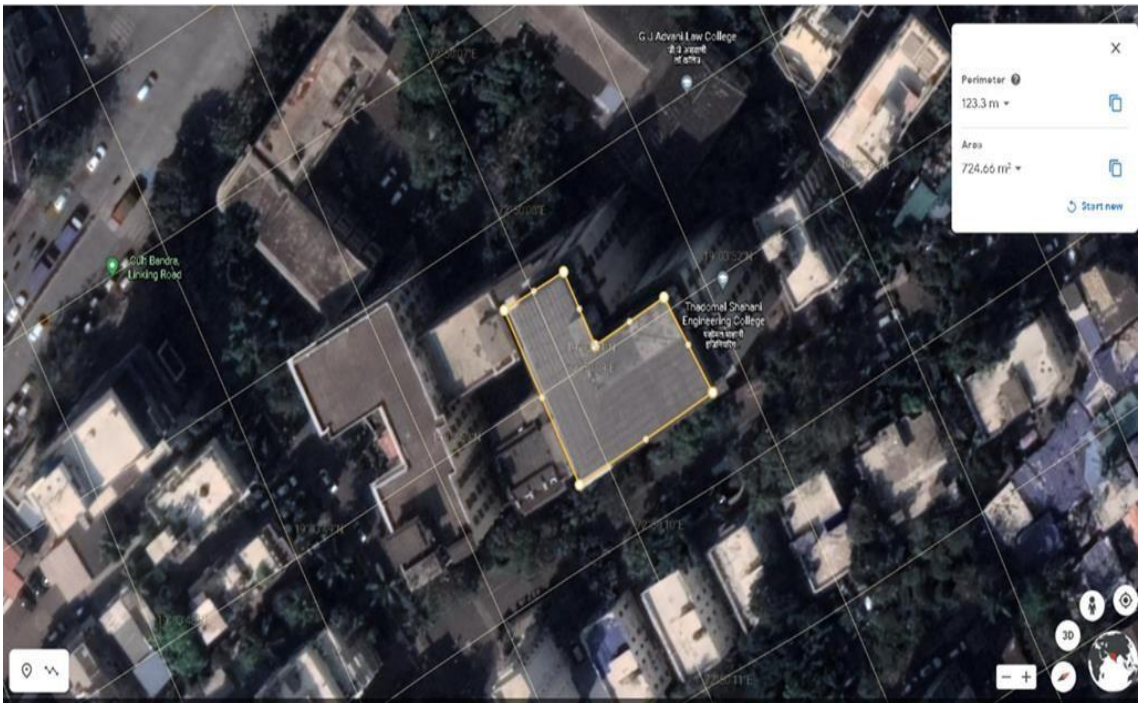
No. of Buildings	2
No. of Floors in Building-1	11
No. of Floors in Building-2	6

6. OVERVIEW OF INSTITUTE

- **New Building**



- **Old Building**

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7. OBJECTIVES

- Environmental education through systematic environmental management approach
- Financial savings through a reduction in resource use
- Reduction in resource use
- Improving environmental standards
- Developing an environmental ethic and value systems in young people
- Enhancement of university profile

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8. ENVIRONMENTAL AUDIT - QUESTIONARE

The areas of eco/environmental/green auditing to be followed/practiced by participating institutions:

1. Waste Minimization and Recycling
2. Greening
3. Energy Conservation
4. Water Conservation
5. Animal Welfare
6. Environmental Legislative
7. General Practices

TOTAL POPULATION OF THE COLLEGE

Particulars	Male	Female
Professor	02	08
Associate Professor	11	10
Assistant Professor	27	57
Students	1,200	800
Total	1,240	875

Approximate Number of Visitors (Per day) -100

What is the total number of working days of your campus in a year? -291

9. Geographical Assessment of the college

Which of the following are available in your college?

1. Garden area	Present
2. Playground	NA
3. Kitchen	Present
4. Toilets	Present
5. Garbage or Waste Store Yard	NA
6. Laboratory	Present
7. Canteen	Present
8. Hostel Facility (numbers)	NA
9. Guest House Available	Present

Which of the following are found near your institute?

1. Garbage heap	NA
2. Public convenience	Present
3. Sewer line	Present
4. Stagnant water	NA
5. Open drainage	NA
6. Industry – (Mention the type)	NA
7. Bus / Railway station	Present
8. Market / Shopping complex / Public halls	Present

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I – WASTE MINIMIZATION AND RECYCLING

What is the approximate amount of waste generated per day? (In Kilograms/month) (approx.) Bio Degradable and Non-Biodegradable Hazardous others 50kg & 10kg Yes

Does your institute generate any waste? If so, What are they?	Yes, Solid waste Canteen waste, Paper, plastic, Horticulture Waste etc.		
What is the approximate amount of waste generated per day?	**Biodegradable**	**Non-Biodegradable**	**Hazardous**
	30kg	5kg	0 kg
Do you use recycled paper in institute?	No		
Do you use reused paper in institute?	No		
Does college have waste segregation?	Yes On each floor there are two dustbins Blue(non-biodegradable) and Green(Biodegradable)		

II – GREENING

Is there is a garden in your college?	Yes
Do students spend time in the garden?	Yes
Total number of Plants in Campus	26
Is the college campus have any Horticulture Department?	No
Number of Staff for Gardening activity	One

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III – ENERGY CONSERVATION

List ways that you use energy in your institute.	a. Lighting Requirements b. Centralized AC c. Water Pump
Are, there any energy saving methods employed in your institute? If yes, please specify. If no, suggest some	No
Fire Hydrant in College?	On each floor there is Fire Extinguisher on each floor and there is a Fire Hose box present
Are your computers and other equipment's put-on power-saving mode?	Yes
Do you run "switch off" drills at institute?	Yes
List of Electronic Equipment	Yes, Electronic Timer for Water Pump

Fig-1. Fire Extinguisher on each Floor

IV – WATER CONSERVATION

List four uses of water in your institute	Basic use of water in campus: 1. Drinking 2. Gardening 3. Kitchen and Toilets 4. Others
Does your college harvest rain water?	Yes, water is stored in underground tank by Rain water
Is there any water recycling System?	No
Write down four ways that could reduce the amount of water used in your institute	Basic Four ways: 1. Close the taps after usage 2. Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage 3. Water Conservation awareness for new students
If there is water wastage, specify why and How can the wastage be prevented / stopped?	No

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V – ANIMAL WELFARE

List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)	Birds
How many dogs in your area have undergone Animal Birth Control - Anti Rabies (ABC - AR)?	No

VI – ENVIRONMENTAL LEGISLATIVE COMPLIANCE

Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
Does Environmental Water and Wastewater Quality monitoring conduct by the college?	No
Does any Hazardous waste generate by the Institute? If yes explain its category and disposal method	No
Does Environmental Ambient Air Quality Monitoring conduct by the college?	No

VII – GENERAL

Does housekeeping schedule in your campus?	Yes
Are students and faculties aware of environmental cleanliness ways? If Yes Explain	Yes, Swachh Bharat Abhiyan.
Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?	No
Does Institute use renewable energy?	No
Does college have any Recognition/certification for environment friendliness?	No

10. RECOMMENDATION

Following are the recommendations to make the college completely in environmental sustainable,

Water Management

The study observed that water comes from BMC and it is used for drinking purpose, canteen, toilets, laboratory and gardening. During the survey, no loss of water is observed, neither by any leakages nor by over flow of water from overhead tanks. The rain water harvesting system in installed in one building which stores in one underground tank and the water is for Gardening purpose. This is one of the unique steps towards greening practices for storing and reuse of rain water.

- To indicate the water consumption, water sources, irrigation, storm water appliances and fixtures the college must go undergo water audit purpose.
- Repair sources of water leakage, such as dripping taps. Regular checking and maintenance of pipelines can be done to control water wastage.
- Minimize wastage of water and use of electricity during water filtration process, Minimize wastage of water and use of electricity during water filtration process, such as Aquaguard filtration process and ensure that the equipment's are regularly serviced with no wastage of water.
- Encourage to decrease the water source at various water usage points.
- Test the water parameters ph, BOD, COD, TSS etc to know the water condition.

Waste Management

College is working on 3Rs concept "Reduce. Reuse and Recycle" by reducing paper demand with the help of digital concept. All offices work on paper less concept by digital display of all the notices and information, Re-use one-sided paper for notes, sketches, rough work, etc.

- College must installed different colour (Red, Green and Blue) dustbins for segregated dumping of waste as recyclable (Red), degradable (Green) and Non-biodegradable (Blue). In their campus.

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- Routine disposal of debris and droppings from trees are done through TSEC housekeeping staffs. They dust all the floors of academic buildings, hostels and pathways as per timeline and ensure campus cleanliness. All the waste of fallen leaves and tree branches should be Dumped in to the vermin composting pits for manure. Or college must go for composting method.
- Reduce the absolute amount of waste that it produces from college staff offices.
- Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, colored and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.

Energy Consumptions

Energy source utilized by all the departments and common facility center is electricity only. Total energy consumption is determined for Feb month 2021 is, the total units consumptions are 9,041units and electricity bill pay for the Feb month is 1,60,010/- of all 12 meters present in the campus. The Water bill for the month Feb 2020 to Feb 2021 is 24,888/-. All the departments and common facility centers are equipped with Led bulb and CFL. The college can install the solar power generation to save electricity.

- Energy saving through the replacement of incandescent bulbs, CFL lamps and tube lights to LED light.
- Awareness programs for the stakeholders to save energy may also increase sustainability in the utilization of various energy source.
- Use energy efficient light-emitting diode (LED) bulbs instead of incandescent and CFL bulbs, maintain appliances and replace old appliances.
- Installation of complete solar power generation system in order to reduce conventional power and to have larger saving in power consumption and electricity bills.

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11. CONCLUSION

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. The audit has identified several observations for making the campus premise more environmental friendly. The recommendations are also mentioned with observations for campus team to initiate actions.

The Environment audit assists in the process of testing performance in the environmental arena and is fast becoming an indispensable aid to decision making in a college. The Environment audit reports assist in the process of attaining an eco-friendly approach to the sustainable development of the college. Hope that the results presented in the Environment auditing report will serve as a guide for educating the college community on the existing environment related practices and resource usage at the college as well as spawn new activities and innovative practices.

A few recommendations are added to curb the menace of environment management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of Environment Campus and thus sustainable environment and community development.

It has been shown frequently that the practical suggestions, alternatives, and observations that have resulted from audits have added positive value to the audited organization. A Environment audit report is a very powerful and valuable communications tool to use when working with various stakeholders who need to be convinced that things are running smoothly and systems and procedures are coping with natural changes and modifications that occur.

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Amenities at College

- **Aqua gaurd filter on each floor**

- **Two separate dustbins on each floor**

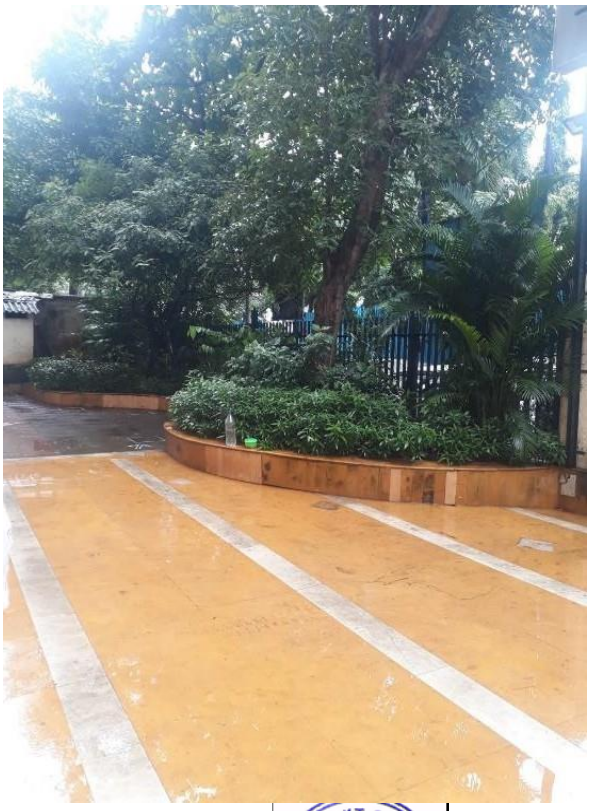
- **Dustbins present backyard of college**

- **Entrance of old building**

- **Planted trees in campus**

- **Fire Hose Box to extinguish fire in the Campus**

- **Parking area in Campus**



- **Electrical Room in the College**

- **Library in the College**

- **Floor plan on each floor**

- **Computer Lab**

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