Green Audit Report

Takshashila Mahavidyalaya

Shyam Nagar, Congress Nagar Road, Amravati, Maharashtra 444606, India

(For the AY 2020-21)

Prepared by

AiM Sustainability Services

Pune

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Acknowledgement

Green Audit Assessment Team would like to express grateful thanks to the management of Takshashila Mahavidyalaya, Amravati, for assigning this important work of Green Audit. We appreciate the cooperation of our Team for completion of study. Our special thanks to

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14	Miss. Neha Bhokre	Student Member

Sincere thanks to all for giving us necessary inputs to carry out this very vital exercise of Green Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We sincerely hope and believe that the efforts made by the present Green Audit Committee will be helpful for Takshashila Mahavidyalaya, Amravati and we hope that it becomes a responsibility of all the stakeholders of this college campus to follow the proposed management plan suggested in the report to reduce our impact on our environment.

Picture 01: Takshashila Mahavidyalaya, Amravati

Picture 02: Takshashila Mahavidyalaya, Amravati

Green Audit Team

Dr. Anuradha Borekar: The evaluation of criteria as *per chapter 7 of "National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges, December 2021 and Chapter VII of "Guidelines for the Creation of the Internal Quality Assurance Cell (IQAC) and Submission of Annual Quality Assurance Report (AQAR) by Accredited Institutions*" is done by Dr. Anuradha. Dr. Anuradha also examined the "performance indicators of Green Audit & Green Audit Parameters/ Projects performed" as a Lead Auditor from AIMSS. She performed several Green Campus audit at various academic institute as per NAAC guideline. Dr. Anuradha secured the M.Phil. (Botany, Molecular Biology, Biotechnology and plant breeding), Ph.D. (Water quality assessment, Water conservation, Biodiversity and Environment).

Mr. Ajit Ghule

Technical advisor for Green Audit. He performs onsite survey. He is graduate in Social Science and having 5 years of experience in Green Audit.

Disclaimer

Green Audit Team has prepared this report for Takshashila Mahavidyalaya, Amravati based on input data submitted by the representatives of Institute. Complemented the reportwith the best judgment capacity of the expert team. While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered. It is further informed that the calculations are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements, or forecasts in the report.

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List of Annexure

Abbreviations

AHU: Air Handling Unit

BEE: Bureau of Energy Efficiency

CFL: Compact Fluorescent Lamp

COP: Coefficient of Performance

CPCB: Central Pollution Control Board

DG: Diesel Generator

ECRM: Energy Consumption Reduction Method

EF: Emission Factor

HSD: High Speed Diesel

HOD: Head of Department

HVAC: Heating, Ventilation, And Air Conditioning

ISO: International Standardisation Organisation

Km: Kilometer

kV: kilo Volt

kW: kilo Watts

Lab: Laboratory

LED: Light-Emitting Diode

MNRE: Ministry of New and Renewable Energy

MSEDCL: Maharashtra State Electricity Distribution Co. Ltd.

NSS: National Service Scheme

UGC: University Grant Commission

WHO: The World Health Organization

TR: Tons of Refrigeration

Executive Summary

In accordance with the requirement of chapter 7 of “National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges, December 2021” Risk-Based Audit conducted at Takshashila Mahavidyalaya, Amravati for Academic year 2020-21. Site Visit to perform the green audit at college was done in April 2022. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management controlframework of Environment Sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. During the initial planning of the audit, an analysis was conducted in order to identify, evaluate and prioritize the risks associated with the environmental sustainability. The analysis was based upon an examination of the policies, supportive documents that govern the environmental sustainability, on data analysis, and on the results of preliminary interviews with personnel considered key in the environmental management in the campus. The criteria and methods used in the audit were based on the identified risks. The methodology used included physical inspection of the campus, review of the relevant documentation, and interviews.

Statement of Assurance

This audit has been conducted in accordance with the NAAC Green Audit requirement. In our professional judgement, sufficient and appropriate audit procedures were completed, and evidence gathered to support the accuracy of the conclusions reached and contained in this report. The conclusions are based on a comparison of the situations as they existed at the time of the audit with the established criteria. Green Audit Report is prepared for the academic session 2020-21.

Summary of Findings

The main findings of the audit show that, in general, all the departments and students are aware about the need for environmental protection at a general level. It was also observed that a number of best practices such as maintaining potted plants, rain water harvesting system, waste management (compost pit), water management, application of day light, cross ventilation, gender equity, health checkup plan, blood donation camp, vaccination camp, Divyangjan student facility, carpooling, biodiversity plantation, e-waste disposal, etc. are followed in the campus. Nevertheless, on detailed review, it was observed that, as the college is continued implementing Green Policy, several best practices are in pipeline. In addition, certain processes could benefit from further review in order to improve their efficiency, and consistency. This report explained the opportunity for improvement. Please refer chapter 5 for more details.

Chapter 01: Introduction

About the College:

Principle Desk

From the chair of the administrative head of one of the finest centers of Arts, Commerce, Science, Computer & Management education, I extend a warm welcome to all our patrons, stakeholders, teachers, well-wishers and students. Ours is a proud and premier institution in the region having been recognized as a Minority Institution by the Minority Development Department of Government of Maharashtra. We have emerged with flying colors in the NAAC assessments carried out twice, the first in 2004 with a C+ Gradation and the second in 2012 with a 'B' Grade earning a CGPA score of 2,44. With high hopes all of us at present are engaged in the preparations to undergo the 3rd cycle of the NAAC assessment in the near future. While striving to inculcate the scientific temper amongst our students we need to cater to their urge for scientific inquiry by way of research. This is an age of computers with an overwhelming explosion of information and knowledge. Internet proves to be an unfathomable ocean of information which calls for a prudent approach and sagacious handling. In an effort to shape the scientific minds we need to swim against the currents of global competition.

Started by a great visionary, Late Shri R.S. alias Dadasaheb Gawai and Hon'ble. Dr. Kamaltai R. Gawai, this torrent of learning was just a trickle to begin with; all the same, we have been fortunate enough to have a supportive parent society headed by most elegant Mrs. Kirtitai Rajesh Arjun, which has helped us to build a strong foundational infrastructure and an enviable reputation. Our aim is to create an ambiance for achieving excellence in the field of education with the most modern technologies and state-of-the-art laboratory and library facilities. We are in a way chasing our dreams armed with the scientific tools and a temperament to match, in order to render those dreams into reality…

Reference - https://tmvamt.co.in/?page_id=47

About Parent Body:

The Trust provides qualitative and invaluable service in the field of Education, especially for the poor and the down trodden classes of the society. The Trust was started by our Hon'ble Patron, Shri. R. S. Gawai. Today the Dadasaheb Gawai Charitable Trust runs 40 Institutions, from Primary schools to colleges. Takshshila Mahavidyalay has sufficient Infrastructural facilities and well qualified teaching faculty. The College is committed to the development of the student's in academics as well as personality and therefore conducts social activities like Meditation Camps and Awareness Drives for Family Planning, Employment for Rural Youth, Diagnostic Camps and Computer education for the poor.

About College:

Takshashila Mahavidyalaya, Amravati was established in June 1984.The mission undertaken by the parent trust Shri Dadasaheb Gawai Charitable Trust, Amravati was to strive for the realization of the goals laid down by Dr. B.R.Ambedkar, the great visionary and the father of Indian Constitution. The institution owes its existence to the vision and the foresight of Hon'ble Late Shri R.S. alias Dadasaheb Gawai, former Governor of Kerala State who inspires us all to seek perfection in our entire endeavour. All the institutions which were started by the Trust seeks to fulfil the goal of providing higher education to students belonging to the socially and the economically backward classes of the society.

Reference: https://tmvamt.co.in/#

Chapter 02: Green Audit

The process of assessing the environmental impact of an organization, process, project, product, etc. Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The “Green Audit" aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the Institute whose exercises can cause risk to the health of inhabitants and the environment. Green audit can be one of the initiatives for such institutes to account their “*energy conservation, water resource use as well as wastewater, E-waste, solid waste generation, biodiversity, rain water harvesting, waste recycling (solid/liquid waste management, e-waste management), carbon neutral, green practices, social aspects*”. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through Green Audit, one gets a direction as how to improve the condition of environment and society.

The National Assessment and Accreditation Council (NAAC), which is an autonomous body funded by the University Grants Commission of Government of India, has made ‘Environmental Consciousness’ mandatory criterion (Criterion VII) for grading educational institutes.

NAAC criteria VII Environmental Consciousness:

Universities are playing a key role in development of human resources worldwide. Higher education institutes campus run various activities with aim to percolate the knowledge along with practical dimension among the society. Likewise, different technological problems higher education institutes also try to give solution for issues related to environment. Different types of evolutionary methods are used to assess the problem concerning environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit etc. National Assessment and Accreditation Council (NAAC) which is a self-governing organization that declares the institutions as Grade according to the scores assigned at the time of accreditation of the institution. Green Audit has become mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of green audit is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring etc. for making the institution eco-friendlier. Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, no vehicle day, Rainwater harvesting, no plastic campus, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

Goals of Green audit:

Institute has conducted a green audit with specific goals as:

- Identification and documentation of green practices followed by Institute
- Identify strength and weakness in green practices
- Conduct a survey to know the ground reality about green practices
- Analyze and suggest solution for problems identified from survey
- Assess facility of different types of waste management
- Increase environmental awareness throughout campus
- Identify and assess environmental risk
- Motivates staff for optimized sustainable use of available resources
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem

Scope of Work:

The purpose of the audit is to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institute. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment and Social Sustainability as well as the degree to which the Institute are in compliance with the chapter 7 of "*National Assessment and Accreditation Council (NAAC) - Manual for Affiliated/Constituent UG & PG Colleges*". Therefore, the main objective of this green audit is to get a third-party verification on the quality of various natural / social aspect and to evaluate the opportunities of improvement, possible best practices.

Objectives:

The main objective of this green audit is to assess the environmental quality and the management strategies being implemented in the campus. The specific objectives are:

- To identify and analyze significant environmental issues.
- To monitor environmental management practices.
- To examine the current practices that can impact the environment.
- To create awareness among the various stakeholders of the Institute.
- To prepare a Green Audit Report on green practices followed by different Departments, support services and administration
- To prepare a checklist of flora and fauna diversity in and around the college campus.
- To find out various sources of organic and solid waste generation and mitigation possibilities.
- To suggest sustainable energy usage and water conservation practices.
- Continuous assessment for betterment in performance in green practices and its evaluation.

Methodology

To perform green audit, the methodology included different techniques such as physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following area to summaries the present status of environment and social management in the campus:

- Onsite field visits were conducted by the Green Audit Team
- Enquiries were conducted amongst different stakeholders to know about the various components in connection with water use, energy consumption and waste disposal, biodiversity, renewable energy use, carbon footprint, social aspects etc.
- The water quality analysis was done using standard protocols
- Air quality analyses of the college campus were carried out using standard protocol
- The noise levels were measured using a Sound Level Meter at selected sampling stations during the day time within the campus
- Lux measurement was done at the classroom, library, offices and laboratories
- Electricity consumption and management
- Waste management
- Biodiversity status of the campus

Chapter 03: Target Areas of Green Audit

Environmental Aspects:

1. Water

Water which is precious natural national resource available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to ever rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the national mission on water conservation was declared by the then Hon. Prime Minister Narendra Modi as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggested for conducting water audit for all sectors of water use.

Water assessment can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water. Water assessment is nothing but an effective measure for minimizing losses, optimizing various uses and thus, enabling considerable conservation of water in irrigation sector, domestic, power and industrial as well. A water assessment is a technique or method which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment. Please find below reference for permissible limit of Drinking Water as per Indian Standard DRINKING WATER — SPECIFICATION (Second Revision) ICS 13.060.20

https://cpcb.nic.in/wqm/BIS_Drinking_Water_Specification.pdf

Table 1 Organoleptic and Physical Parameters
(*Foreword* and *Clause* 4)

Sl No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Method of Test, Ref to Part of IS 3025	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
i)	Colour, Hazen units, *Max*	5	15	Part 4	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources
ii)	Odour	Agreeable	Agreeable	Part 5	a) Test cold and when heated b) Test at several dilutions
iii)	*pH* value	6.5-8.5	No relaxation	Part 11	—
iv)	Taste	Agreeable	Agreeable	Parts 7 and 8	Test to be conducted only after safety has been established
v)	Turbidity, NTU, *Max*	1	5	Part 10	—
vi)	Total dissolved solids, mg/l, *Max*	500	2 000	Part 16	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

2. Air

Air quality in the academic institute is very important for the health of the students, faculty and staff of the institute. The air pollution sources in the college campus are wind, storm, pollen grains, natural dust, vehicular emissions, fire and laboratory fumes etc. Therefore, air quality assessment in the college campus is necessary.

Reference: https://cpcb.nic.in/uploads/National_Ambient_Air_Quality_Standards.pdf

3. Noise

Noise pollution is unwanted and unpleasant sound which can deteriorate human health and other living organisms present in the Environment. At workplace machines, traffic, vehicles create occupational noise. Employees and occupants are exposed to this harmful noise. Due to this occupant can face many health problems such as headache, hearing impairment, hypertension, heart problem, annoyance and sleep disorder. Noise Pollution Monitoring process is a part of Environmental Monitoring & Testing as noise pollution is also increasing exponentially in recent years. Noise intensity distracts the day today working in college campus. Noise intensity is measured in dB. Permission limit as CPCB and WHO guideline is as below.

Reference: https://cpcb.nic.in/who-guidelines-for-noise-quality/

In WHO noise quality guidelines, values are summarized with regard to specific environments and effects. For each environment and situation, the guideline values take into consideration the identified health effects and are set, based on the lowest levels of noise that affect health (critical health effect). Guideline values typically correspond to the lowest effect level for general populations, such as those for indoor speech intelligibility. Noise guideline values are for the onset of health effects from noise exposures.

Specific Environment	Time Base (hours)	Standard limits as per WHO guidelines	
		LAeq [dB]	LAmax, fast [dB]
School class rooms and pre-schools, indoors	During class	35	-
School, playground outdoor	During play	55	-

4. Energy

Consumption of energy helps in understanding the success towards green environment. Lesser the consumption of energy more contribution the environment is. Electricity can be used efficiently by replacing CFL bulbs and tube lights with LED lamps and fluorescent tubes wherever possible and use of LED screens in place of CRT. Star rated Air conditioners should be placed in place of old air conditioners. Efficiency of air conditioners should be increased by minimizing the leakage using through open doors and cupboards of the room. Infrastructural changes that allow maximum natural light but minimizes heat in-grace help in reducing theuse of electricity. Simple practices like cleaning skylights and lamps will increase the luminosity. There should not be any idle energy consumption.

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances and vehicles. Energy use is clearly an important aspect of campus sustainability.

The Standards & Labeling Programme is one of the major thrust areas of BEE. A key objective of this scheme is to provide the consumer an informed choice about the energy saving and thereby the cost saving potential of the relevant marketed product. The scheme targets display of energy performance labels on high-energy end-use equipment & appliances and lays down minimum energy performance standards.

Presently, S&L program covers star rating for 26 appliances/equipment. List of the appliances covered under the ambit of Star Labeling is as given below:

Reference: https://beeindia.gov.in/content/standards-labeling

For Lighting systems in schools

Reference: https://www.partnershipsforschools.org.uk/documents/Design/SSLD_4_Lighting_systems.pdf

5. Carbon Footprint

Carbon footprint is the total amount of Green House Gases (GHGs) emitted in terms of carbon dioxide by a person, institute, company, state or country. Carbon footprint is typically given in tons of CO_2 equivalent per year. For calculation of carbon foot print the basic data regarding direct and indirect sources of emission of Green House Gases is needed. How we get around and commute to and from college each day has an impact on the environment through the emission of greenhouse gases into the atmosphere by the burning of fossil fuels (such as petrol). The most common greenhouse gases are carbon dioxide, water vapor, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions

Reference: https://www.carbonfootprint.com/ and https://ghgprotocol.org/standards

Emission factor reference:

CEA: https://cea.nic.in/cdm-co2-baseline-database/?lang=en

DEFRA: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021

6. Waste Management

This indicator addresses waste production and disposal of different wastes like paper. food, plastic, glass, dust etc. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. For the implementation of this mission, collective mass effort is necessary. For proper segregation and management. proper use of waste bins is the only solution for waste management purpose in the college campuses.

E waste management reference: https://cpcb.nic.in/uploads/Projects/E-Waste/e-waste_amendment_notification_06.04.2018.pdf

https://mpcb.gov.in/waste-management/electronic-waste

Solid waste management reference:

https://www.mpcb.gov.in/waste-management/municipal-solid-waste

https://www.mpcb.gov.in/sites/default/files/solid-waste/msw_rules_2016.pdf

Biomedical waste management: https://mpcb.gov.in/waste-management/biomedical-waste

7. Green Belt/ Biodiversity status

To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to understand the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

This study allows us to understand the faunal and floral diversity of the surrounding areas of the college premises and their interrelationship

Reference: https://www.worldwildlife.org/pages/what-is-biodiversity

Biodiversity is all the different kinds of life you'll find in one area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life. Biodiversity supports everything in nature that we need to survive: food, clean water, medicine, and shelter.

8. Social Aspects

"Social Auditing is a process that enables an organization to assess and demonstrate its social benefits and limitations. It is a way of measuring the extent to which an organization lives up to the shared values and objectives it has committed itself to. Social auditing provides an assessment of the impact of an organization's non-financial objectives through systematically and regularly monitoring its performance and the views of its stakeholders."

A. Health and Safety

The very purpose of greening of educational campuses is to ensure that the students study and grow up in a healthy environment, giving out the best of their physical and intellectual contributions to the society. The method for assessing the physical wellbeing of the educational institution has been decided as follows:

i. Examine the prevalence of sickness leave, if there are any.
ii. Examine the first aid and medical facilities available for resident students and staff.
iii. Evaluate the atmospheric quality, drainage systems and land pollution – if any within the campus; and Assess the achievements of students in sports and games, especially in inter collegiate and inter-Institute contests.

https://www.ugc.ac.in/pdfnews/4006064_Safety-of-Students-Guidelines.pdf

https://www.education.gov.in/sites/upload_files/mhrd/files/SOP_Guidelines_for_reopening_schools.pdf

https://www.ugc.ac.in/pdfnews/4613471_Guidelines.pdf

B. Accessibility to Divyangjan and Gender Justice

Right of Persons with Disabilities Act, 2016 prohibits discrimination against individuals with physical and mental disabilities. Institute shall be is against all kinds of discrimination on any grounds including disability. Institute shall intend to advance a comprehensive and inclusive teaching and learning environment in which incapacitated students and employees are not distraught or treated unfavorably. The institute must aim to design its programs, administrations, and activities accessible to the students. All the authorities of the institute shall strive in order to extend a help hand towards the differently abled so as to make sure about the Benefits of grounds programs, administrations, and activities.

- Institute shall have Inclusive Culture to avoid discrimination, exploitation and exclusion of Disable Students and Staff from all spheres of work and education.
- Institute shall create suitable regulatory mechanism for effective delivery of services to Disable Students and Staff of the institute
- Institute shall ensure implementation of all legislations with respect to persons with disabilities. Toprovide accessible and inclusive education at the institute.
- Institute shall ensure full participation of persons with disabilities and to provide them the equal opportunities for development.
- Institute shall provide necessary budget allocation to achieve above objectives.

Reference: https://www.ugc.ac.in/pdfnews/1604485_person-with-disabilities-Uni.pdf

https://www.ugc.ac.in/pdfnews/7348678_Guidelines_Exam-Divyangjan-JAN-2019.pdf

https://disabilityaffairs.gov.in/content/page/guidelines.php

https://disabilityaffairs.gov.in/upload/uploadfiles/files/Corrigendum-08-02-19.pdf

https://disabilityaffairs.gov.in/upload/uploadfiles/files/Guidelines-29_08_2018.pdf

https://upload.indiacode.nic.in/showfile?actid=AC_CEN_25_54_00002_201649_1517807328299&type=notification&filename=Guidelines%20notification_04.01.2018.pdf

Gender Justice:

Reference: https://www.un.org/sustainabledevelopment/gender-equality/

Goal 5: Achieve gender equality and empower all women and girls

Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.

There has been progress over the last decades: More girls are going to school, fewer girls are forced into early marriage, more women are serving in parliament and positions of leadership, and laws are being reformed to advance gender equality. Despite these gains, many challenges remain: discriminatory laws and social norms remain pervasive, women continue to be underrepresented at all levels of political leadership, and 1 in 5 women and girls between the ages of 15 and 49 report experiencing physical or sexual violence by an intimate partner within a 12-month period. The effects of the COVID-19 pandemic could reverse the limited progress that has been made on gender equality and women's rights. The coronavirus outbreak exacerbates existing inequalities for women and girls across every sphere – from health and the economy, to security and social protection. Women play a disproportionate role in responding to the virus, including as frontline healthcare workers and carers at home. Women's unpaid care work has increased significantly as a result of school closures and the increased needs of older people. Women are also harder hit by the economic impacts of COVID-19, as they disproportionately work in insecure labour markets. Nearly 60 per cent of women work in the informal economy, which puts them at greater risk of falling into poverty. The pandemic has also led to a steep increase in violence against women and girls. With lockdown measures in place, many women are trapped at home with their abusers, struggling to access services that are suffering from cuts and restrictions. Emerging data shows that, since the outbreak of the pandemic, violence against women and girls – and particularly domestic violence – has intensified.

Chapter 04: Audit Framework and detailed findings

Audit Framework and detailed findings

The following audit framework is used for conducting Green Audit in 2021-2022. The framework also lists thefindings and observations for every criterion

Checklist Question	Response from college
Organizational Level Efforts	
Do you have a campus green team?	Yes, audit team interacted with Green Committee established by institute during audit.
Have you established an environmental mission/vision for yourcampus?	Yes, audit team reviewed below environmental mission / vision during audit process and found deemed OK. Mission: To improve environmental sustainability in c measurable energy and water savings, educating the about sustainability, encouraging behavioral changes environment preparing future professionals in environ collaborating with other sustainability organizations. Vision: The campus seeks to have our campus serve green campus for sustainability, providing learning ex students, faculty and staff may develop, apply and pr campus and extended communities.
Have you set environmental goals foryour campus?	While discussing with Green team of institute, below environmental goals referred by Institute 1) Water conservation 2) Tree plantation(वन मोहोत्सव 1st to 7 July) 3) Rain water Harvesting 4) Botanical Garden 5) Cleanness program However, targets for each goal is missing. Institute can set the objective and target to achieve the goal. Further use of solar energy via Solar roof top PV module can be considered as important goal to reduce Carbon Footprint.
Do you encourage sustainable behavior via? ➢ education campaigns? ➢ Poster, placard, message, stickers ➢ contests? ➢ awards?	Audit team observed sustainable culture in the institute. Audit team interacted with Management personal including Chairman, Secretary, and members. Management is very keen about implementation new sustainable programs in near future. Below awareness program informed by Green committee members during on site audit.

Sr No	Name of the awareness program
1	Voter awareness program
2	Cleanliness Campaign
3	Health awareness program

	4 Plastic free campus 5 Blood donation camps 6 Yoga Day celebration 7 Leprosy awareness 8 Reading Motivation Day 9 Green Oath Program 10 Detoxification Program
Are sustainability concepts and environmental literacy integrated across disciplines? between the environment, society?	Yes, below courses are having dedicated environmental subject as part of syllabus BA, BCom, B.Sc, BBA, BCA, (Second Year Environmental). The subject includes below topics Air Pollution, Population, Water conservation, Soil Conservation, Industrialization, Biodiversity, Eco system etc.
Are staff encouraged to teach sustainability concepts, including the relationship	Yes, audit team found the engagement of teaching staff to impart the knowledge about sustainability concepts. Department of Social Science, Department of Science, Department of NSS and NCC regularly organized following programs • Tree plantation • Water conservation • Voter awareness program • Biodiversity, • Eco system
What are the environment and social awareness programs conducted in thecampus?	Yes, following programs conducted in the campus under NSS scheem • Tree plantation in Campus • Cleanliness campaign in adapted villages during NSS camp • Voter awareness program • Vyasanmukti program • Karate coaching for girls to empowered • Ek mutti Anaj on occasion of annual function of college • Red Ribbon Club formation • Blood donation camp • Biodiversity • Eco system
Does it include key stakeholders?	Yes, following stakeholders included in the programs Faculty, Staff, Students, Parents, Alumina
Does it meet regularly?	Yes

<table>
<tr><td>Is it empowered to recommend projects to campus leadership?</td><td>Yes, many projects are recommended to the leadership like, Solar roof top, LED etc.</td></tr>
<tr><td>Energy Audit</td><td></td></tr>
<tr><td>Have you done an energy audit? (Personal, classroom, campus)</td><td>No</td></tr>
<tr><td>Do you track your energy use and cost? (Personal, classroom, campus)</td><td>Yes, periodic review of electricity bill, diesel bills are reviewed by committee members.</td></tr>
<tr><td>Electricity bill amount for the last year</td><td>
<table>
<tr><td>Month (Year 2021)</td><td>Unit</td><td>Amount (Rs.)</td></tr>
<tr><td>January</td><td>1360</td><td>12200</td></tr>
<tr><td>February</td><td>1255</td><td>10400</td></tr>
<tr><td>March</td><td>1142</td><td>10950</td></tr>
<tr><td>April</td><td>1322</td><td>11230</td></tr>
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<tr><td>December</td><td>1337</td><td>11735</td></tr>
<tr><td>Total</td><td>19737</td><td>157955</td></tr>
</table>
</td></tr>
<tr><td>Do you offer energy conservation lessons and programs?</td><td>Yes,
Sticking labels of energy conservation found in the campus.</td></tr>
<tr><td>Do you encourage responsible energy use via?
➢ education campaigns? (Lights Off, Power Down, Energy Conservation Month
➢ incentives?
➢ contests?</td><td>Yes,
Sticking labels of energy conservation found in the campus.</td></tr>
<tr><td>Do you use natural lighting when possible</td><td>Yes, audit team found abundant use of day light at office area, corridor, classrooms, laboratory, library, hostel etc.</td></tr>
<tr><td>Do you use task lighting instead of overhead area lighting?</td><td>We have not seen any task light application.</td></tr>
<tr><td>Have you installed lighting occupancy sensors?</td><td>No, light occupancy sensors are fitted at campus.</td></tr>
<tr><td>Do you use natural ventilation/windows when possible?</td><td>Yes, audit team found good ventilation at office area, corridor, classrooms, laboratory, library, hostel etc.</td></tr>
</table>

Have you enabled the power management settings on your computers/monitors/all-in one machines?	Yes, Computer goes automatically to sleep mode, if not in use.
Do you purchase ENERGY STAR® certified equipment?	Yes, audit team observed, • AC- 2 and 3 star • Refrigerator- 2 and 3 star • LED installation
Do you minimize the use of personal appliances, such as microwaves and refrigerators?	Yes, at campus, we have not seen any personal appliance like microwave, refrigerator.

Have you maximized the efficiency of your refrigerators/freezers by? ➢ unplugging mini refrigerators/freezers and using communal ones? ➢ setting energy-efficient temperatures for your refrigerators (36°- 40° F) and freezers (0°- 2° F)? ➢ ensuring refrigerators/freezers properly seal? ➢ keeping the refrigerator/freezer full? ➢ cleaning condenser coils on the back of the refrigerator/freezer?	Yes, audit team observed the setting temperatures @ refrigerators (36°- 40° F) and freezers (0°- 2° F) to improve the efficiency of refrigerator. Further periodic cleaning of condenser coils at the back of the refrigerator/freezer, informed by campus staff during interview.
List ways that you use energy in your Institute. (Electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel and others)	Audit team observed below energy consuming instruments at Campus • LED • FAN • Air Conditioners (2 and 3 star) • LPG-14.5 • Microwave • Generator (diesel) 75kv • Induction Gas • Computer • Battery back -10kv • Printer • Scanner • Refrigerator • Barcode Scanner • Barcode Printer • Photocopier Machine
How many LED bulbs has your Institute installed? Mention use (Hours used/day for how many days in a month)	LED Bulb – 134 are installed at campus. Per day used of LED is approx. 5-6 Hours. Around 25 days in the month can be considered.
How many fans are installed in your Institute? Mention use (Hours used/day for how many days in a month	Fan – 118 are installed at campus. Per day used of Fan is approx. 5-6 Hours. Around 25 days in the month can be considered.
How many air conditioners are installed in your Institute? Mention use (Hours used/day, for how many days in a month	AC – 10 are installed at campus. Per day used of AC is approx. 5-6 Hours. Around 25 days in the month can be considered.

How many computers are there in your Institute? Mention the use (Hours used/day for how many days in a month)	Computer Desktop – 136 are installed at campus. Per day used is approx. 5-6 Hours. Around 25 days in the month can be considered.
How many photocopiers/printers are installed by your Institute? (Hours used/day for how many days in a month).	Photocopiers - 2 Printers - 10 Per day used is approx. 5-6 Hours Around 25 days in the month can be considered.

<table>
<tr><td>How many scanners are installed by your Institute? (Hours used/day for how many days in a month).</td><td>Scanner – 03 are installed at campus. Per day used is approx. 2-3 Hours. Around 25 days in the month can be considered.</td></tr>
<tr><td>How many inverters your Institute installed?

Mentions use (Hours used/day for how many days in a month)</td><td>Inverter – 2 are installed at campus. Per day used is approx. 24 hours per day used. Around 20/31 days in the month can be considered.</td></tr>
<tr><td>How many electrical equipment are used in different labs of your Institute? Mention the use (Hours used/day for how many days in a month)</td><td>
<table>
<tr><th>Room No. / name</th><th>Electrical device/ item</th><th>Quantity</th></tr>
<tr><td rowspan="4">Wing A</td><td rowspan="4">LED, AC , FAN. COMPUTER, PHOTOCOPIER , PRINTER, WATER COOLER, TV PROJECTOR , REFRIGERATOR</td><td>LED-45,</td></tr>
<tr><td>AC-2 ,</td></tr>
<tr><td>FAN 47. COMPUTER, 17 PHOTOCOPIER 1, PRINTER-7, WATER COOLER-2, TV-1</td></tr>
<tr><td>PROJECTOR-1 REFRIGERATOR-1</td></tr>
<tr><td rowspan="6">Wing B</td><td rowspan="6">LED, AC , FAN. COMPUTER, PHOTOCOPIER , PRINTER, WATER COOLER, TV PROJECTOR , REFRIGERATOR</td><td>LED-53,</td></tr>
<tr><td>AC-8 ,</td></tr>
<tr><td>FAN 36</td></tr>
<tr><td>COMPUTER-85</td></tr>
<tr><td>PHOTOCOPIER 1, PRINTER-4, WATER COOLER-, TV-1</td></tr>
<tr><td>PROJECTOR-1 REFRIGERATOR-1</td></tr>
<tr><td rowspan="3">Wing C</td><td rowspan="3">LED, FAN.</td><td>LED-16,</td></tr>
<tr><td>FAN 17</td></tr>
<tr><td></td></tr>
<tr><td rowspan="2">Wing D</td><td rowspan="2">LED, , FAN. COMPUTER, PRINTER, PROJECTOR ,</td><td>LED-20,</td></tr>
<tr><td>FAN 15. COMPUTER, 4 PRINTER-1, PROJECTOR-1</td></tr>
<tr><td rowspan="8">LIBRARY</td><td rowspan="8">LED, , FAN. COMPUTER, PRINTER</td><td>LED- 13</td></tr>
<tr><td>FAN.-7</td></tr>
<tr><td>COMPUTER-10</td></tr>
<tr><td>PRINTER-1</td></tr>
<tr><td>LAMINATION MACHIN-1 BARCODE PRINTER-1</td></tr>
<tr><td>BARCODE SCANNER-1</td></tr>
<tr><td>HEAD PHONE-10</td></tr>
</table>
</td></tr>
<tr><td>No. of streetlights in your institute</td><td>There are 4 street lights observed at institute.</td></tr>
<tr><td>No. of TV in your institute and hostels</td><td>There are 2 TV set observed at institute.</td></tr>
</table>

How many boards displayed for saving energy awareness?	Yes Sticking a labels of energy conservation in college Campus
Renewable Energy	
Are any alternative energy sources/nonconventional energy sources? employed / installed in your Institute? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Specify.	No Its recommended that, institute must go for Solar roof top PV module. As per our discussion with management, there is future plan of PV module installation.
Have you purchased renewable energy certificates for your campus' electricity use?	No
Water Audit	
Have you done a water audit? (Personal, classroom, campus)	No
Do you encourage responsible water use via? ➢ education campaigns? (Skip the Drip) ➢ incentives? ➢ contests? ➢ awards?	Yes, through NSS program, institute develop awareness and encourage for student how to use water and save water

Have you installed low-flow faucets, automatic faucets, and/or faucet aerators?	Yes In washroom, institute installed low flow faucets.
Do you use collected rainwater for onsite watering needs?	No, However its recommended that to use the rain water for washroom at least during monsoon season and reduce the intake of water.
Have you optimized your irrigation system (if applicable) to? ➢ operate at night or early morning hours to minimize evaporation? ➢ water the minimum time and frequency necessary for the applicable vegetation	No, Its recommended that to install the drip irrigation system for water the trees.
List uses of water in your Institute	At institute water is utilized for Washroom, Drinking Water, Gardening, Washing Cleaning.
What are the sources of water in your Institute?	At institute water is supplied via Bore Well, Corporation Water Connection.
How many wells are there in your Institute?	There is no wells at institute.
No. of motors used for pumping water from each well and HP of motor	1 HP Bore well pump installed
Quantity of water stored in your overhead water tank. (In liters)	4000 Lit
Quantity of water pumped every day. (In liters)	8000 Lit
Where does waste water come from?	Waste water generates from Wash rooms, as sewage water
Where does the wastewater go?	Sewage water is directly connected to municipal corporation sewage line.
What happens to the water used in your labs? Whether it gets mixed with ground water?	There is no waste water generates from Laboratory.
Is there any treatment for the lab water?	No
No. of water coolers. Amount of water used per day. (In liters)	There are 3 water coolers installed at Institute. Approximate 1500 Liters of water is used for drinking purpose per day.

No. of toilet, urinals. Amount of water used per day?	Approximate 2000 lit water is used at toilet
Amount of water used per day for garden use.	Approximate 1000 lit water is used for gardening
Total use of water in each hostel?	Approximate 2000 lit water is used at gardening
Is there any water used for agricultural purposes?	No
Does your Institute harvest rainwater? If yes, how many rainwater harvesting units are there?	Yes One rainwater harvesting system is installed and another one is planned to install in near future. However its recommended that to recycle the water use for wash room flush during monsoon season.
How many of the taps are leaky? Amount of water lost per day?	No leakage observed during our survey at institute and hostel.
Are there signs reminding people to turn off the water? Yes / No	Yes.
Are there any waterless toilets?	No
How many water fountains are there?	No
How often is the garden watered?	2 times during summer season and 1 time during winter season. During rainy season, watering is not needed.
Are there any water saving techniques followed in your Institute? What are they?	We recommended for • Waterless urinal • Recycle of rainwater and use for toilet flush • Drip irrigation
Transport	
Do you provide green transportation infrastructure such as? ➢ safe, connected, and accessible walkways and pathways? ➢ bike paths and/or lanes ➢ bike racks ➢ green vehicle priority parking? (fuel-efficient, alternative fuel, carpool)	No
Do you offer walking/biking field trips?	No
Purchase	

Have you done a purchasing audit? (campus)	Yes
Do you have a green product list for items such as? ➢ green cleaning products? ➢ paper/paper products with minimum recycled content (at least 30% postconsumer waste) and responsibly managed and harvested trees? ➢ refillable pens/pencils? ➢ no- to low-odor (VOC) markers? ➢ no- to low-VOC paints? (Via Facilities) ➢ plates, cups, and serving ware that are reusable, contain minimum recycled content, and/or are recyclable/compostable? ➢ compostable bags for compost collection? ➢ rechargeable batteries and chargers? ➢ ENERGY STAR certified computers, monitors, printers, refrigerators, and other energy-using equipment? ➢ Water Sense labeled faucets, toilets, showerheads, and other water-using equipment? ➢ printers with duplexing (double-sided) functionality?	Yes. Institute purchase, ENERGY STAR certified computers, monitors, printers,refrigerators, and other energy-using equipment. Printers with duplexing (double-sided) observed during audit.
Do you track your purchasing to ensure adherence to any green product guidelines	Yes, We have seen the promotion of Green product or energy efficient equipment purchase.
Do you limit the purchase of single serve bottles and containers?	Yes, There is no major purchase of plastic bottle or cups.
Indoor and Outdoor Air Quality	
Have you done an air quality audit? (campus)	No However during audit, Air Quality at campus was checked via website https://air-quality.com/place/india/amravati/ac5b2f1d?lang=en&standard=aqi_us

Air Quality Index Standard, India CPCB

Good: 0~50

Air quality is considered satisfactory, and air pollution poses little or no risk.

Satisfactory: 51~100

Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.

Moderately polluted: 101~200

Slight irritations may occur, individuals with breathing or heart problems should reduce outdoor exercise.

Poor: 201~300

Healthy people will be affected. People with breathing or heart problems will experience reduced endurance in activities. These individuals and elders should remain indoors and restrict activities.

Do you have indoor plants to naturally clean the air?	Yes
Do you regularly replace air filters?	Yes
Are A/C intake vents at least 10 feet from odor or emission sources (dumpsters, chicken coops, compost piles, pick-up/drop-off locations	Yes
Have you located printers in well-ventilated areas that minimize frequent/repeated exposure to students/staff?	Yes
Do you practice regular housekeeping practices to minimize dust and allergens?	Yes
Waste Management	
Have you done a waste audit? (Personal, classroom, campus)	No
Do you know where your trash goes when it leaves your campus?	Yes, its goes to recycler for recycle of all waste material, mainly paper and plastic.
Do you track the amount of waste that leaves your campus?	Yes
Do you have accessible, consistent zero waste stations set up campus-wide that include all applicable waste disposal options (landfill, compost, recycle) with containers	No
Do you reduce cafeteria waste via? ➢ reusable trays, plates, bowls, cups/bottles, and serving ware? o minimizing use of products with excess packaging? (Plastic-wrapped utensils) ➢ engaging students to properly sort waste? ➢ engaging parents to reduce packaging waste and single-serve containers?	There is no canteen facility, institute is having.

Do you reduce paper waste via? ➢ encouraging digital reading, note-taking, and activities? ➢ setting printers and computers to default to duplex (double-sided) printing? ➢ reducing margins and white space on documents that must be printed? ➢ printing multiple pages per sheet? ➢ minimizing paper correspondence with families? ➢ opting out of unwanted mail?	Yes ➢ setting printers and computers to default to duplex (double- sided) printing. ➢ reducing margins and white space on documents that must be printed. ➢ printing multiple pages per sheet. ➢ minimizing paper correspondence. ➢ opting out of unwanted mail.
Do you provide recycling collection for additional recyclable materials—like plastic bags, CFL (spiral) light bulbs, batteries, drink pouches, candy wrappers, and electronics—that cannot go in the single-stream blue bins?	Yes
Are cleaning products, grease, strippers, batteries, fluorescent lighting, science lab materials, and other potentially hazardous products disposed of properly?	Yes
How is the waste generated in the Institute managed? Methods ➢ Composting ➢ Recycling ➢ Reusing ➢ Others (specify)	At institute paper waste sent for recycle, for garden waste compost is recommended, e-waste management is still not established and needs to improve.
Is there any waste wealth program practiced in the Institute?	No
Can you achieve zero garbage in your Institute? (Reduce, Recycle, Reuse, Refuse) If yes, how?	No
Green Belt & Landscaping, including Biodiversity	
Have you taken action to green your Institute yard through implementation of? ➢ onsite composting?	Yes, institute developed the garden and tree plantation, but still there is scope of improvement. Further compost pit needs to develop.

<table>
<tr><td>

- habitat gardens?
- native and drought-tolerant landscaping?
- livestock, fowl, bees, and other animals?
- tree planting and care?

</td><td></td></tr>
<tr><td>Is there a garden in your Institute? Area?</td><td>Yes.</td></tr>
<tr><td>List the plants in the garden, with approx. numbers of each species.</td><td>
<table>
<tr><td>1</td><td>Codiaeum variegatumकोडीयम</td><td>5</td></tr>
<tr><td>2</td><td>Dypsislutescensपिवळापाम</td><td>10</td></tr>
<tr><td>3</td><td>Ficus macrocarpa फिकस / चीनीवड</td><td>12</td></tr>
<tr><td>4</td><td>Tamarix gallicaविद्या</td><td>16</td></tr>
<tr><td>5</td><td>Plumeriarubraलालचाफा</td><td>3</td></tr>
<tr><td>6</td><td>Alliumtuberosumजंगलीकांदा</td><td>2</td></tr>
<tr><td>7</td><td>Acaciafarnesianaगंधीबाभूळ</td><td>4</td></tr>
<tr><td>8</td><td>Bryophyllumpunnatumपर्णफुटी</td><td>2</td></tr>
<tr><td>9</td><td>Jatrophaintegerrimaचंद्रज्योती</td><td>6</td></tr>
<tr><td>10</td><td>Ficusreligiosaपिंपळ</td><td>7</td></tr>
<tr><td>11</td><td>Syzygiumcuminiजांभूळ</td><td>6</td></tr>
<tr><td>12</td><td>Punicagranatumडाळिंब</td><td>4</td></tr>
<tr><td>13</td><td>Thevetiaperuvianaपिवळाकन्हेर / बिट्टी</td><td>12</td></tr>
<tr><td>14</td><td>Polyalthialongifoliaअशोक</td><td>9</td></tr>
<tr><td>15</td><td>Terminaliacatappaकडूबदाम</td><td>3</td></tr>
<tr><td>16</td><td>Aloeveraकोरफड</td><td>5</td></tr>
<tr><td>17</td><td>Lawsoniainermisजंगलीमेहेंदळी</td><td>15</td></tr>
<tr><td>18</td><td>Caesalpinia decapetalaचिल्हारी</td><td>8</td></tr>
<tr><td>19</td><td>Calatropisgiganteaपांढरीरुई</td><td>3</td></tr>
<tr><td>20</td><td>Costusspiralisकुष्ठा</td><td>4</td></tr>
<tr><td>21</td><td>Asperagusofficinalisशतावरी</td><td>3</td></tr>
<tr><td>22</td><td>Ocimumtenuflorumजंगलीतुळस</td><td>3</td></tr>
<tr><td>23</td><td>Livistonachineisisचिनीपाम</td><td>12</td></tr>
<tr><td>24</td><td>Acalyphawikesianaखजोती</td><td>6</td></tr>
<tr><td>25</td><td>Cupressus semperviensसारू</td><td>8</td></tr>
<tr><td>26</td><td>Agapanthuspraecoxआफ्रिकनलिली</td><td>4</td></tr>
<tr><td>27</td><td>Yuccaaloifoliaयुक्का</td><td>7</td></tr>
<tr><td>28</td><td>Dianthusbarbatusगोडविलम</td><td>3</td></tr>
<tr><td>29</td><td>Metrosiderosexcelsaमहारुख</td><td>4</td></tr>
<tr><td>30</td><td>Ixoracoccineaपटकुळीण</td><td>16</td></tr>
<tr><td>31</td><td>Hubiscusrosa-sinensisजास्वंद</td><td>18</td></tr>
<tr><td>32</td><td>Leucophyllumcandidumल्युकोफायलम</td><td>4</td></tr>
<tr><td>33</td><td>Gladioluscommunisग्लॅडिओलस</td><td>5</td></tr>
<tr><td>34</td><td>Rosasp.गुलाब</td><td>18</td></tr>
</table>
</td></tr>
</table>

	35 | ***Alstoniascholaris*** *सातवीन / सप्तपर्णी* | 8 36 | ***Jacaranda mimosifolia*** निळामोहर | 4
Whether you have displayed scientific names of the trees in the campus?	YES
What are the vegetables cultivated in your vegetable garden? (Mention the quantity of harvest in each season)	NO
How much water is used in the vegetable garden and other gardens? (Mention the source and quantity of water used)	No
Are you using any type of recycled water in your garden?	No
List the name and quantity of pesticides and fertilizers used in your gardens?	NA
Whether you are doing organic farming in your Institute? How?	No
Is there any botanical garden in your campus? If yes give the details of campus flora.	No
What is the involvement of students in the green cover maintenance?	Yes, under NSS program, trees are planted and maintained by student
Noise Level	
Do you measure ambient noise level at • Classroom	Please refer annexure to understand the noise level. Noise level is within permissible limit

<table>
<tr><td>

- Near main gate
- Near main building
- Near admin building

</td><td></td></tr>
<tr><td>Carbon Footprint</td><td></td></tr>
<tr><td>Annual Diesel consumption by DGgenerators</td><td>Yes, Institute reported 400 kg Annual HSD consumption</td></tr>
<tr><td>Annual LPG consumption used in theinstitute (canteen and labs and hostel.)</td><td>Yes, Institute reported 58 kg Annual LPG consumption</td></tr>
<tr><td>Annual electricity consumption</td><td>Yes
<table>
<tr><td>Month - 2021</td><td>Unit</td><td>Amount</td></tr>
<tr><td>January</td><td>1360</td><td>12200</td></tr>
<tr><td>February</td><td>1255</td><td>10400</td></tr>
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<tr><td></td><td>19737</td><td>157955</td></tr>
</table></td></tr>
<tr><td>Scope 1 GHG Emission</td><td>Please refer annexure for scope 1 GHG emission</td></tr>
<tr><td>Scope 2 GHG Emission</td><td>Please refer annexure for scope 2 GHG emission</td></tr>
<tr><td>Social awareness</td><td></td></tr>
<tr><td>Do you encourage staff and studentsto conduct social awareness programs?</td><td>YES</td></tr>
<tr><td>Number of Divyangjan students inyour institute.</td><td>6</td></tr>
<tr><td>Special facilities provided to Divyangjan student .</td><td>Yes</td></tr>
<tr><td>Have you maintained gender equityratio (Male/Female ratio) in your institute?</td><td>Yes. Please refer annexure for gender equity ratio.</td></tr>
</table>

Gender equity No. Male and Female Staff No. Male and Female Student	Total 50 staff - 28 Male and 22 Female Staff 1512 Male and 1003 Female Student
Do you conduct and support women empowerment programs/ activities?	Yes, institute is having • Women's redress cell • Girls self Defense Training • Girls Counseling
Health and safety	Yes, institute conducted below activities • Rubella Vaccine • Covid 19 Vaccinations • (Red Ribbon) HIV Program • Wending Machine • CCTV Surveillance

Is there a health surveillance Programme / Medical checkup once in a year?	Yes, below programs observed in year 2021 • Rubella Vaccine • Covid 19 Vaccinations • (Red Ribbon) HIV Program
Do you provide some health facilities for students and employees in your campus?	Yes, during audit, we have observed • Sanitary pad Wending Machine • First Aid Box
Have you conducted health awareness camps or programmes in your institute?	Yes, below programs observed in year 2021 • Rubella Vaccine • Covid 19 Vaccinations • (Red Ribbon) HIV Program • Blood Donation Camp
What are the safety measures for staff and students in your institute?	Yes
Health and Safety point of view, Do you fulfil below basic needs for staff and student? • Adequate ventilation • Easily accessible emergency exits • Sanitation in cafeterias and restrooms • Access to potable water • Exposed or unmarked electrical wiring • Emergency response plan • Fire suppression equipment and evacuation plans	Yes • Adequate ventilation • Easily accessible emergencyexits • Access to potable water • Exposed or unmarked electrical wiring • Fire suppression equipmentand evacuation plans
Child Labor Have you given an employment to the underage candidates? Are there any underage candidates working in your institute?	No
Do you protect your students and staff from discrimination based on origin, caste, race, religion, gender, political affiliation, and other attributes?	Yes

Chapter 05: Audit Observations

BEST Practices of Institute:

The institute is quite aware of its role towards the environmental consciousness and hence the institute follows the various green practices for the same.

Aiming towards environment consciousness the Institute has executed the following activities at the campus:

- Tree plantation program is conducted every year under NSS unit.
- The wastewater from the basins and water cooler are transferred to the plants of the garden nearby to the building
- Institute has established good policies to manage E-waste.
- Rain water harvesting project implemented to recharge the water table
- College campus garden developed and maintained with plants and trees.
- Aiming towards Social awareness, the Institute has implemented and conducted several activities
- All easily accessible facilities provided to Divyangjan student like ramp, special washrooms.
- For Divyangjan student Braille Lipi Books are available to read and understand in college library.
- Dedicated Staff to assist Divyangjan students during listening Audio Lectures
- Institute has installed Fire Extinguishers at every floor, and in Lab available for safety purpose
- Institute has provided health facilities like, Medical Room, First Aid Box in each department.
- Health awareness programmes, health checkup camp, free vaccination camp conducted
- Sports department in the institutes provides many facilities to students, like Karate coaching to girls, Coaching of different games.
- The NSS department Organizes Blood Donation Camps every year in the College
- The NSS department of college Organises Health checkup camps in its special camp at the adopted village It offers Collaborative services in the camp every year
- During Covid-19 NSS students conducted different activities like, Mask & Sanitizer distribution, Food distribution, Groceries distribution, Area Sanitization campaign, COVID awareness
- Institute is having many jobs oriented short term and degree courses which helps directly placement of students after completion of degree education like Journalism, film making etc.

Opportunity of Improvement:

- Installation of rain water harvesting system at wing D, B, C
- Development of botanical garden
- Refill of expired fire extinguisher
- Adopt an Environment , Health and Safety policy for the Institute

- Establish a purchase policy to promote environmentally friendly materials
- Conduct more seminars and group discussions on environmental and social education
- Environmental and Social advisory committee could be formed. The discussions/ information sharing among different departments can generate lot of ideas and awareness on green issues and social causes
- Maintain minutes of meetings of environment and social committees; evaluate the effectiveness of various environmental programs conducted by the institutes. Set annual targets for Green Initiatives & monitor them closely. Create 'Green Champions'
- Establish water, waste and energy management systems
- Encourage efficient water use and reporting by installing water meters at key locations. Provide information on water usage and savings to students/ staff through notices, screen savers in computer labs.
- Institute can start metering water consumption, measuring waste generation. Drinking water testing on periodic basis, recording all readings on periodic basis, so that monthly data can be establish.
- Drinking water tank cleaning schedule needs to establish
- Drinking water filter reconditioning is required to maintain the TDS level
- Installation low-flow faucets, automatic faucets, and/or faucet aerators is recommended.
- We recommend the institute to strive for zero waste to landfill. Institute needs to identify to projects and implement in coming years to reduce the waste generation and avoid landfill
- Institute needs to install solar PV module to reduce grid electricity consumption and to become 100% carbon neutral.
- Installation of sensor-based electrification items like fans, lights, etc. can save electricity.
- Replace all tube lights by 100% energy efficient LEDs.
- Replace old ceiling fans by new energy efficient fans.
- More Notices/ signage can be put up/ displayed near switches and on notice boards, informing students and staff to switch off all electricals when not in use
- Encourage the use of natural light during the day time, it saves energy
- Vertical gardening can be done using indoor plants. Hydroponic garden can be an option where in small space also plants can be planted.
- Installation of 100% drip irrigation recommended to conserve water.
- Grey water/ sewage recycling system can be installed for flushing toilets. This will reduce the fresh water footprint.
- Installation of incinerator for Bio Medical waste disposal
- Installation of waterless urinals can be considered to reduce water consumption

Reference list of Websites

i. IEEE 519 - http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=2227
ii. http://mnre.gov.in/solar-energy/ch2.pdf
iii. BEE - http://www.beeindia.in/
iv. ECBC - http://beeindia.in/content.php?page=schemes/schemes.php?id=3
v. http://www.energymanagertraining.com/new_index.php
vi. http://www.usailighting.com/stuff/contentmgr/files/1/92ffeb328de0f4878257999e7d46d6e4/misc/lighting_comparison_chart.pdf
vii. https://www.bijlibachao.com/lights/use-energy-efficient-lights.html
viii. http://www.bijlibachao.com/air-conditioners/air-conditioner-selection-understand-tonnage-eercop-and-star-rating.html
ix. http://www.indiawaterportal.org/sites/indiawaterportal.org/files/Roof%20Top%20Rainwater%20
x. https://mausam.imd.gov.in/imd_latest/contents/all_india_forcast_bulletin.php
xi. http://www.cea.nic.in/tpeandce.html
xii. https://timesofindia.indiatimes.com/india/power-ministry-may-make-24-degree-celsius-as
xiii. https://prmceam.ac.in/

Annexure 1 : Reference Documents / Surveys

Sr. No.	Reference documents/ Survey
1.	Institute Registration details, pervious NAAC certificate
2.	Institute Awards, recognition
3.	Academic staff, designation and qualification
4.	Short note about institute including establishment details, area, subjects, faculty, staff, labs, students, campus etc. mission, vision, values, policy statement
5.	List of environmental issues identified by institute
6.	List of environmentally friendly practices, List of projects - energy conservation, rain water harvesting, waste recycling (solid/liquid waste management, e-waste management), renewable energy project, plantation etc.
7.	List of days celebration like – Environment day, energy day etc. with program details and photos
8.	institution facilitates the differently abled (Divyangjan friendliness)
9.	Social responsibility project list, CSR project for community, village, support to economically challenged students, Child labour, Human rights.
10.	Drinking water facility: Functionality of RO water plant
11.	Recycle of water: Utilization of RO reject water for gardening
12.	Natural resource utilization: Setup for rain water harvesting
13.	Measures for maintaining cleanliness in campus
14.	Measures for garbage collection and disposal
15.	Electricity Bills for duration of 12 months
16.	Measures for health and safety of students and staff
17.	Roll of staff, students and management to save electricity in campus
18.	Lighting survey (number of tube lights, CFL and LED)
19.	AC survey (number of AC and their star rating)
20.	Water harvesting (Photographs of the water harvesting structure)
21.	Initiatives by college for the community NSS camps, Swatch Bharat with photos
22.	Gender ratio in staff and student – diversity
23.	Policy statement by Leadership w.r.t. Environment conservation.

Annexure 2: Physical Structure of College

The college is located in about 0.643 acres of land. The built-up area of the college is 0.528 acres.

Departments	2000 sq ft (9 Departments)
Laboratories	3900 sq ft (9 Laboratories)
Conference halls	2000 sq ft (1 Conference halls)
Libraries	2100 sq ft (1 Libraries)
Auditorium	1500 sq ft (1Auditorium)
Canteens	NA
Hostel	1500 sq ft (1 Hostel)

Annexure 3: Waste management

Different types of waste generated in the college and their disposal.

Types of waste	Particulars	Disposal method
E-waste	Computers, electrical and electronic parts	Collected and given to vendor for recycling
Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc.	Segregated and given to Recycling Unit in MIDC
Solid waste	Damaged furniture, paper waste, paper plates, food wastes	Damaged furniture – sold out Paper waste – sold for recycling Food waste – sent to composting pit
Waste water	Washing, urinals, bathrooms	Sent to Percolation Soak Pit
Chemical waste	Laboratory waste	Sent to Percolation Soak Pit
Glass waste	Broken glass wares from the labs	Collected and sent to AMC dumping site
Sanitary napkins	Medical waste	Sanitary Napkins Incinerator Installed in each department.

Annexure 4 : On site Measurement

Date:	20 April 2022
Ambient Temperature:	40 Degree Celsius
Relative humidity:	7% RH

Lighting Survey

Location	Lux - Spot 01	Lux - Spot 02	Lux - Spot 03	Lux - Spot 04	Comment
Class room 01	167	250	168	248	OK, Lux level is within permissible limit. Classrooms are full of daylight.
Class room 02	150	170	250	200	
Class room 03	300	280	400	220	
Class room 04	200	250	205	180	
Chemistry Lab	370	400	500	380	

Water Quality Survey

Location	TDS (ppm)	pH	Comment
Water cooler 01	165	7.5	OK, within permissible limit.
Water cooler 02	172	7.5	

Ambient Noise level Survey

Locations	Average reading dB Level during Day time	Comments
Near main gate	74	OK, within permissiblelimit.
Near main building	58	OK, within permissiblelimit.
Near college office	46	OK, within permissiblelimit.
Classroom	55	OK, within permissiblelimit.

Annexure 5: Carbon Footprint Calculation

AY 2020-2021

Scope	Annual Ele consumption (MWh)	EF (tCO2/MWh)	tCO2	Ref of EF
2	19.737	0.92	18.16	CEA User guide ver16 (2020)
Scope	Annual HSD consumption (ton)	EF (tCO2/ton)	tCO2	Ref of EF
1	0.4	3.954	1.58	Defra guideline 2020 (including WTT)
Scope	Annual LPG consumption (ton)	EF (tCO2/ton)	tCO2	
1	0.058	3.298	0.19	Defra guideline 2020 (including WTT)

Annexure 6: List of Plants and Trees Biodiversity

1	***Codiaeum variegatum***कोडीयम	5
2	***Dypsislutescens***पिवळापाम	10
3	***Ficus macrocarpa*** फिकस / चीनीवड	12
4	***Tamarix gallica***विद्या	16
5	***Plumeriarubra***लालचाफा	3
6	***Alliumtuberosum***जंगलीकांदा	2
7	***Acaciafarnesiana***गंधीबाभूळ	4
8	***Bryophyllumpunnatum***पर्णफुटी	2
9	***Jatrophaintegerrima***चंद्रज्योती	6
10	***Ficusreligiosa***पिंपळ	7
11	***Syzygiumcumini***जांभूळ	6
12	***Punicagranatum***डाळिंब	4
13	***Thevetiaperuviana***पिवळाकन्हेर / बिट्टी	12
14	***Polyalthialongifolia***अशोक	9
15	***Terminaliacatappa***कडूबदाम	3
16	***Aloevera***कोरफड	5
17	***Lawsoniainermis***जंगलीमेहेंदळी	15
18	***Caesalpinia decapetala***चिल्हारी	8
19	***Calatropisgigantea***पांढरीरुई	3
20	***Costusspiralis***कुष्ठा	4
21	***Asperagusofficinalis***शतावरी	3
22	***Ocimumtenuflorum***जंगलीतुळस	3
23	***Livistonachineisis***चिनीपाम	12
24	***Acalyphawikesiana***खजोती	6
25	***Cupressus semperviens****सारू*	8
26	***Agapanthuspraecox***आफ्रिकनलिली	4
27	***Yuccaaloifolia***युक्का	7
28	***Dianthusbarbatus***गोडविलम	3
29	***Metrosiderosexcelsa***महारुख	4
30	***Ixoracoccinea***पटकुळीण	16
31	***Hubiscusrosa-sinensis***जास्वंद	18
32	***Leucophyllumcandidum***ल्युकोफायलम	4
33	***Gladioluscommunis****ग्लॅडिओलस*	5
34	***Rosasp.***गुलाब	18
35	***Alstoniascholaris****सातवीन / सप्तपर्णी*	8
36	***Jacaranda mimosifolia***निळामोहर	4

Annexure 7: Attendance Register - Audit

Green Campus Audit	Attendance Register	AiM

☒ External Audit
☐ Internal Audit
☐ Experience Exchange Meeting
☐ Other:

Date: 20 April 2022
Location: Amravati

TOPICS: Green Campus Audit @ Takshashila Mahavidyalaya

-
-
-

Name	Position	Signature
Dr. S.V Deshmukh	D.P.E.	
~~Asst~~ P.B. Patil	Asst Prof	
P. N. Wankhade	Asst. Prof	
N. D. Patil	Asst. Prof.	
R. S. Belsare	Junior Coll. Teacher	
S. A. Kumare	Jr. College Teacher	
S. D. Kalakar	— " —	
V. A. Deshmukh	— " —	Deshmukh
S. B. Mundhe	— " —	
N. K. Gangane	— " —	
Dr. A. C. Deshmukh	— " —	
S. M. Pandit	— " —	

Attendance Register (1) Page 1 of 1 Rev.00 / 2021_12

Green Campus Audit	**Attendance Register**	

☒ **External Audit**
☐ **Internal Audit**
☐ **Experience Exchange Meeting**
☐ **Other:**

Date: 20 April 2022
Location: Amravati

TOPICS:

-
-
-

Name	Position	Signature
Dr. J. S. Gawande	Jr. Co Teacher	
Ku. M. B. Patil	Jr. Co Teacher	
Ku. N. G. Bhore	Jr. Co Teacher	
M. R. Umap	HSC. VOC. Teacher	
I. M. Nawalkar	HSC Voc Teacher	
Dr. Rekha J. Wankhade	Asso. professor	
Dr. Anjali R. Wath	Assist. Prof.	
S. D. Shrikhande	Assit. Prof.	
Dr. Sanober Kahlleshan	Asst. Prof.	
Dr Pranali M. Pete	Librarian	

Annexure 8: Gender Equity

Particular	Total	Male	Female	Gender Equity Ratio
No of students	2515	1512	1003	1.51
No of teachers	50	28	22	1.27
No of Non-teaching staffs	10	10	0	

Annexure 9: Event Organized Report (AY- 2020-21)

Annual Function

Ek Mutthi Annaj Movement

‘एक मुठ्ठी अनाज’ ही संकल्पना प्रत्येक स्नेहसंमेलात राबविणे गरजेचे!

Blood Donation Camp

Cleanliness Campaign

NSS Camp


ADMISSIONS
OPEN


AWAI INSTITUTE OF ENGINEERING & TECHNOLOGY DARAPUR

Yoga Day


आंतरराष्ट्रीय योग दिन निमीत्त
एक दिवसीय योग शिबिर

Tree Plantation


राष्ट्रीय सेवा योजना पथक
माझा भारत, व्यसनमुक्त भारत
जिल्हा अभियान
माझी शाळा, व्यसनमुक्त शाळा
राजयोग व नैतिक मूल्यांच्या शिक्षणाद्वारे
व्यसनमुक्ती अभियान

Karate Coaching

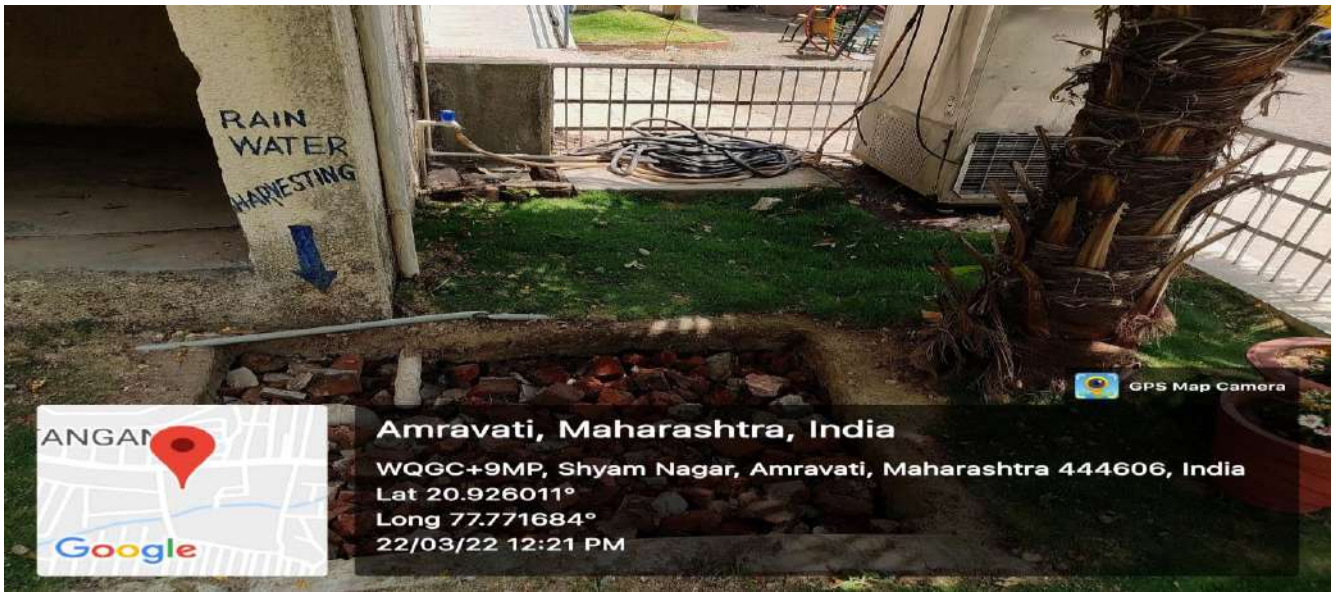

WORLD AIDS DAY
Red Ribbon Club
Start Talking
Stop HIV
पत्रकारिता व जनसंवाद विभाग

Red Ribbon

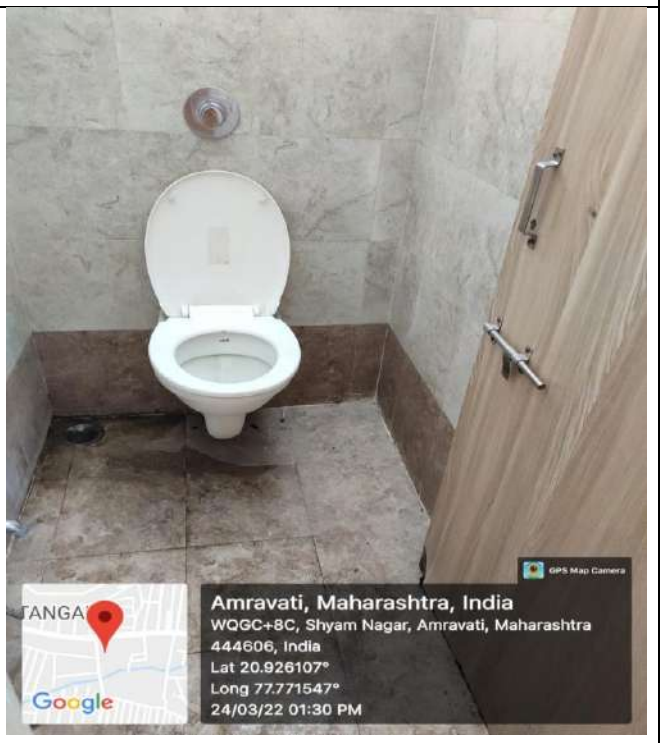
Annexure 10: Best Practices of Institute

Drinking water facility

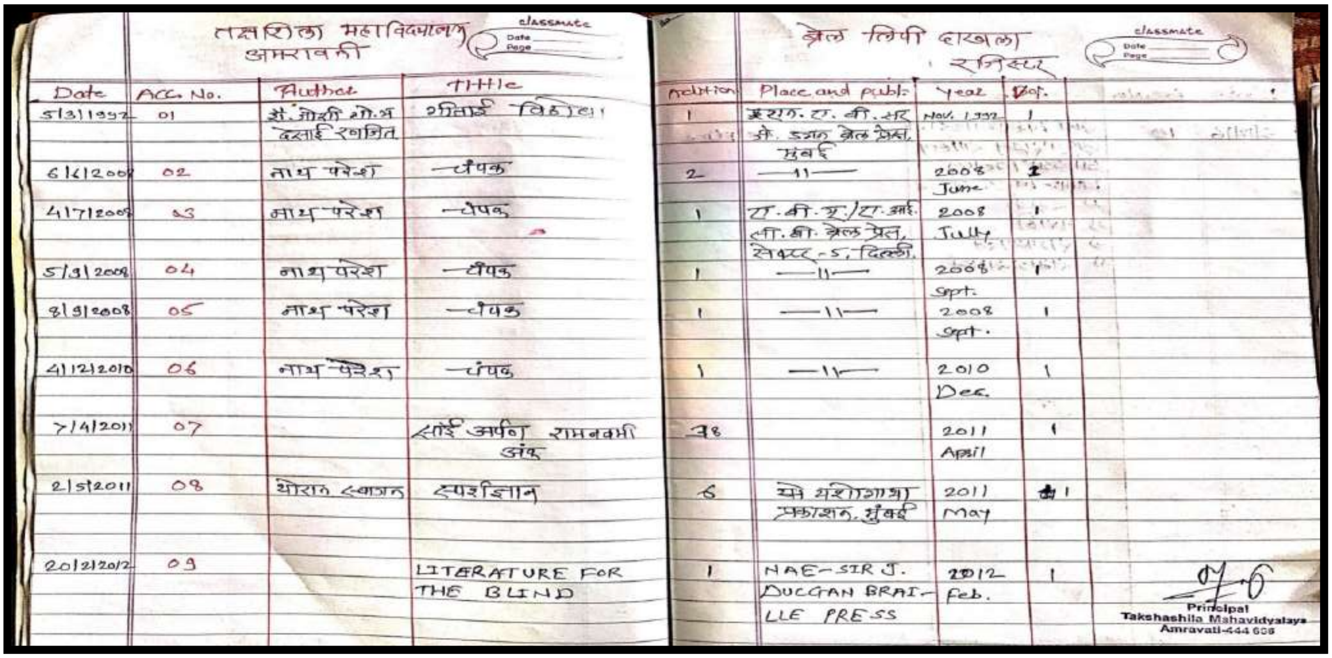
Rain Water Harvesting



Divyangjan - friendly, barrier free environment



Braille books and facilities during study for Divyangjan

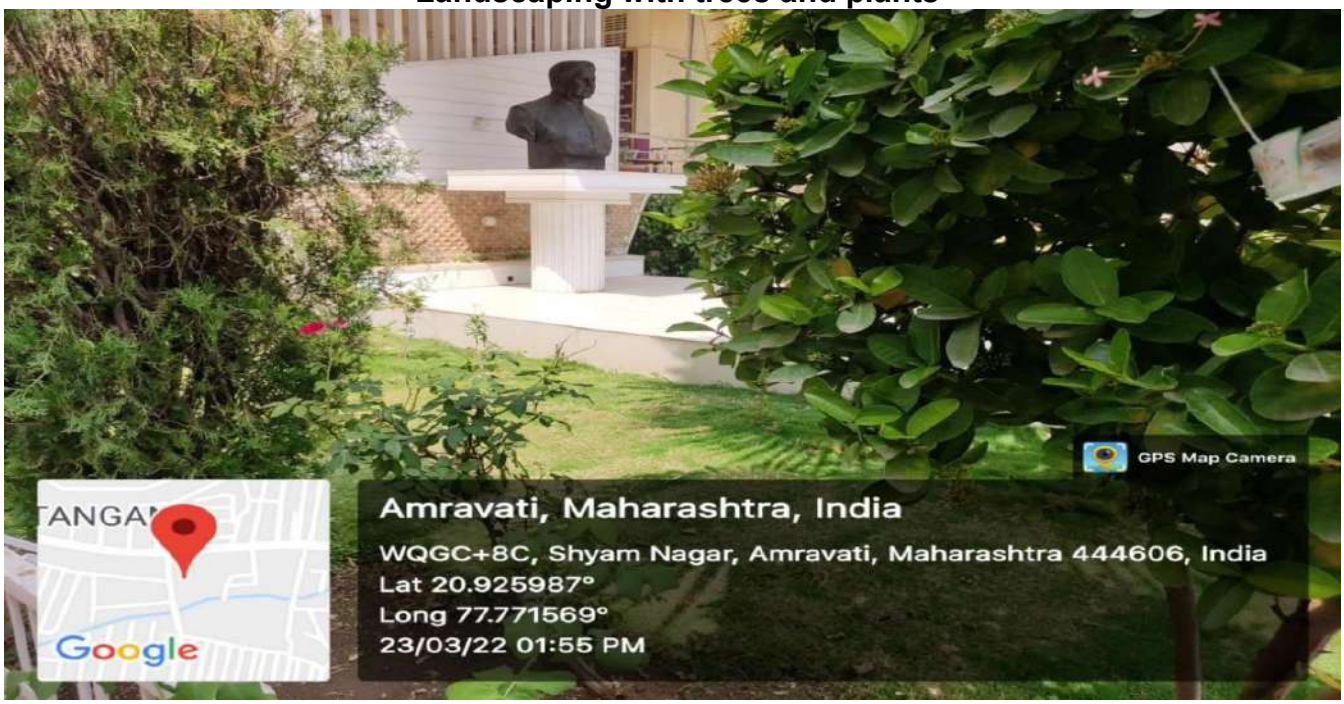

तक्षशिला महाविद्यालय अमरावती

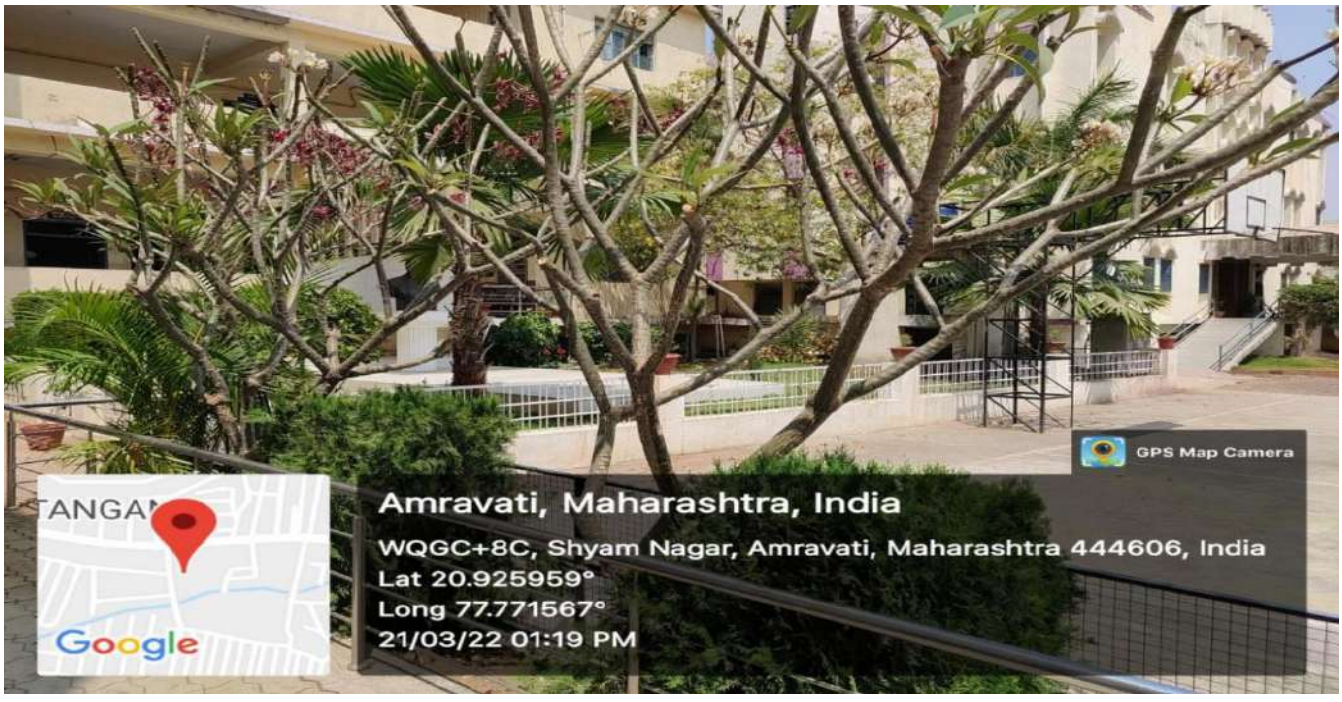
ब्रेल लिपी दाखला रजिस्टर

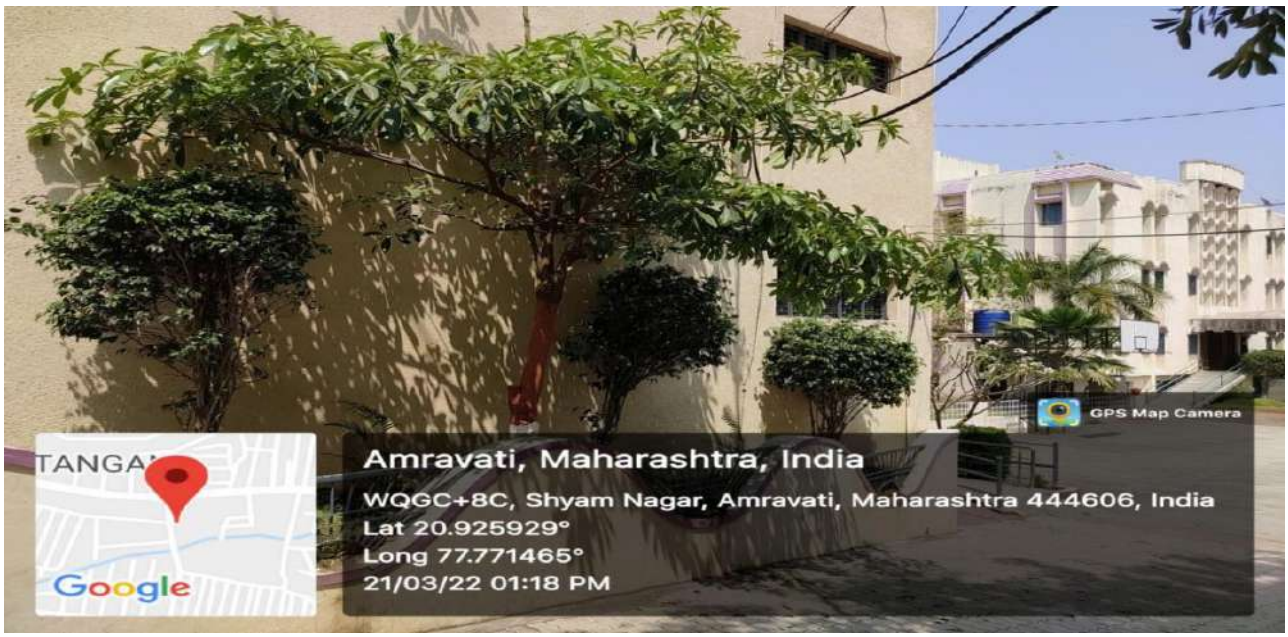
Date	Acc. No.	Author	Title	Edition	Place and publ.	Year	Vol.
5/3/1992	01	डॉ. जोशी सौ. व देसाई रचित	[illegible]	1	[illegible] ओ. इमान ब्रेल प्रेस, मुंबई	Nov. 1992	1
6/6/2008	02	नाथ परेश	चंपक	2	—॥—	2008 June	1
4/7/2008	03	नाथ परेश	चंपक	1	[illegible] ब्रेल प्रेस, सेक्टर-5, दिल्ली.	2008 July	1
5/9/2008	04	नाथ परेश	चंपक	1	—॥—	2008 Sept.	1
8/9/2008	05	नाथ परेश	चंपक	1	—॥—	2008 Sept.	1
4/12/2010	06	नाथ परेश	चंपक	1	—॥—	2010 Dec.	1
7/4/2011	07		साई अर्पण रामनवमी अंक	38		2011 April	1
2/5/2011	08	थोरात स्वागत	स्पर्शज्ञान	6	[illegible] प्रकाशन, मुंबई	2011 May	1
20/2/2012	09		LITERATURE FOR THE BLIND	1	NAE-SIR J. DUCGAN BRAILLE PRESS	2012 Feb.	1

Principal
Takshashila Mahavidyalaya
Amravati-444 606

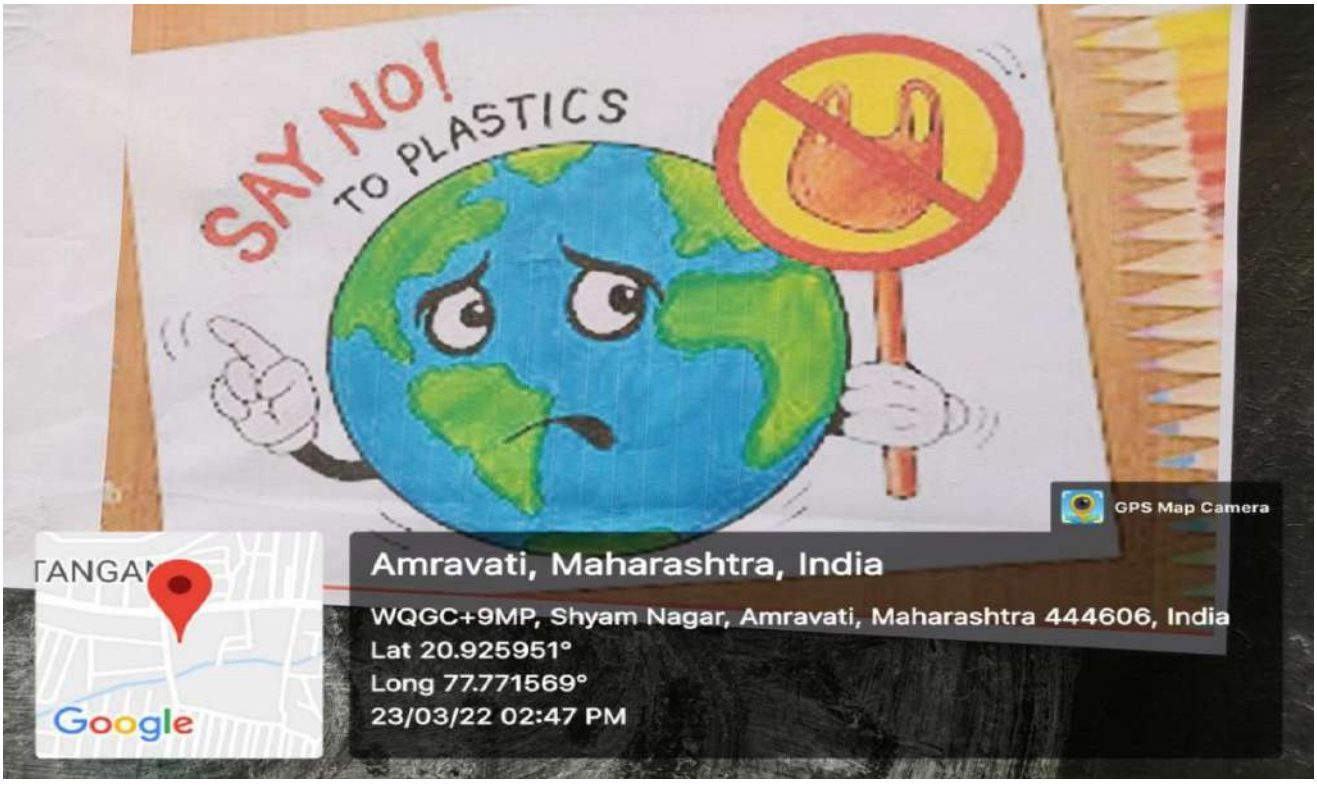
Landscaping with trees and plants







Ban on use of Plastic



Green Oath Programme

GREEN AUDIT REPORT

of

TAKSHASHILA MAHAVIDYALAYA,

Amravati 444606

Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,
Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with *MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)* under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/TMA/21-22/02

Date: 23/6/2022

CERTIFICATE

This is to certify that we have conducted Green Audit at Takshashila Mahavidyalaya, Amravati in the year 2021-22.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Fittings
- Maximum Usage of Day Lighting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Segregation of Waste at Source
- Bio Composting Arrangement for conversion of Organic Waste
- Usage of Sanitary Waste Incinerator
- Implementation of Rain Water Management Project
- Good Internal Roads
- Tree Plantation in the campus
- Creation of Awareness by Display of Posters on Nature Conservation

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

A Y Mehendale,
Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788

INDEX

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Takshashila Mahavidyalaya, Amravati for awarding us the assignment of Green Audit of their Amravati (Shyam Nagar) campus for the Year: 2021-22.

We are thankful to all staff members for helping us during the field measurements.

EXECUTIVE SUMMARY

1. **Takshashila Mahavidyalaya, Amravati** consumes Energy in the form of Electrical Energy; used for various gadgets & office equipment

2. **Present Energy Consumption & CO_2 Emissions:**

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	20446	18.40
2	Maximum	5000	4.50
3	Minimum	49	0.04
4	Average	1704	1.53

3. **Initiatives for Energy Conservation:**

- Usage of Energy Efficient LED Fittings
- Usage of BEE STAR Rated Equipment
- Maximum usage of Day Lighting

4. **Usage of Renewable Energy:**

The College has yet to install Roof Top Solar PV Plant. It is recommended to install Roof Top Solar PV Plant.

5. **Waste Management:**

5.1 Segregation of Waste at Source:
The Waste is segregated at source. There are Waste Collection Bins for Dry & Wet Waste.

5.2 Organic Waste Management:

For Bio degradable Waste, the College has a Bio composting Arrangement, wherein, the bio-degradable waste is composted & is used as fertilizer for the Garden.

5.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator to dispose of the Sanitary Waste.

5.4 E Waste Management:

It s recommended to dispose of the E Waste through Authorized Agency.

6. **Rain Water Management:**

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase underground water table.

7. Green & Sustainable Initiatives:

- The Institute has well maintained Internal Road.
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of Awareness on Nature Conservation by Display of Posters

8. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO_2into atmosphere.

10. Reference:

- For CO_2 Emissions: www.tatapower.com

ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable, Trust
TMA	:	Takshashila Mahavidyalaya, Amravati
A C	:	Air Conditioner
MSEDCL	:	Maharashtra State Distribution Company Limited
MEDA	:	Maharashtra Energy Development Agency
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
CFL	:	Compact Fluorescent Light
FTL	:	Fluorescent Tube Light
W	:	Watt

CHAPTER-I
INTRODUCTION

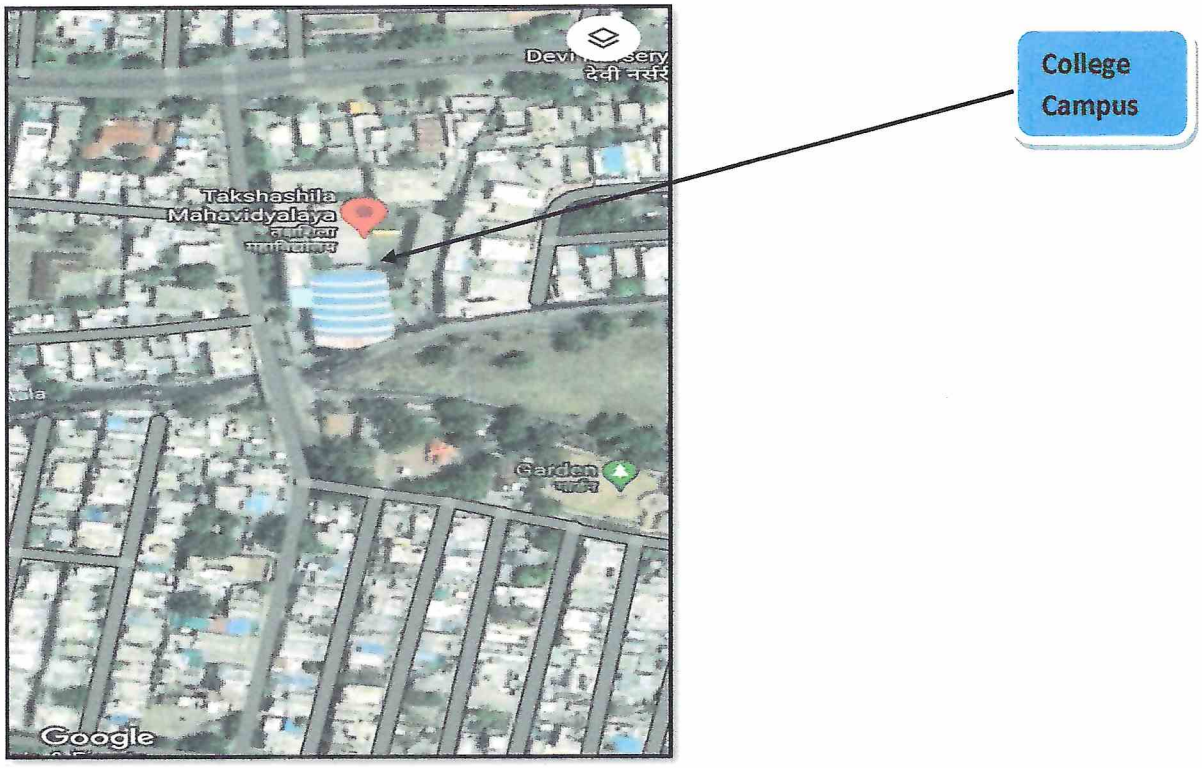
1.1 Objectives:

1. To study present Energy Consumption
2. To compute CO_2 emissions
3. To study usage of Renewable Energy
4. To study Waste Management Practices
5. To study Green & Sustainable Initiatives

1.2 General Details of College: Table No: 1

No	Head	Particulars
1	Name of Institution	Takshashila Mahavidyalaya, Amravati
2	Address	Shyam Nagar, Amravati
3	Year of Establishment	1984
4	Affiliation	Sant Gadge Baba Amravati University, Amravati

1.3 Google Earth Image:



CHAPTER-II
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No. 2: Electrical Energy Consumption- 2021-22:

No	Month	Energy Consumed, kWh
1	Apr-21	1322
2	May-21	3422
3	Jun-21	1122
4	Jul-21	901
5	Aug-21	49
6	Sep-21	1267
7	Oct-21	5000
8	Nov-21	1211
9	Dec-21	1337
10	Jan-22	1823
11	Feb-22	1255
12	Mar-22	1737
13	Total	20446
14	Maximum	5000
15	Minimum	49
16	Average	1704

Chart No: 1: To study the variation of Monthly Energy Consumption:

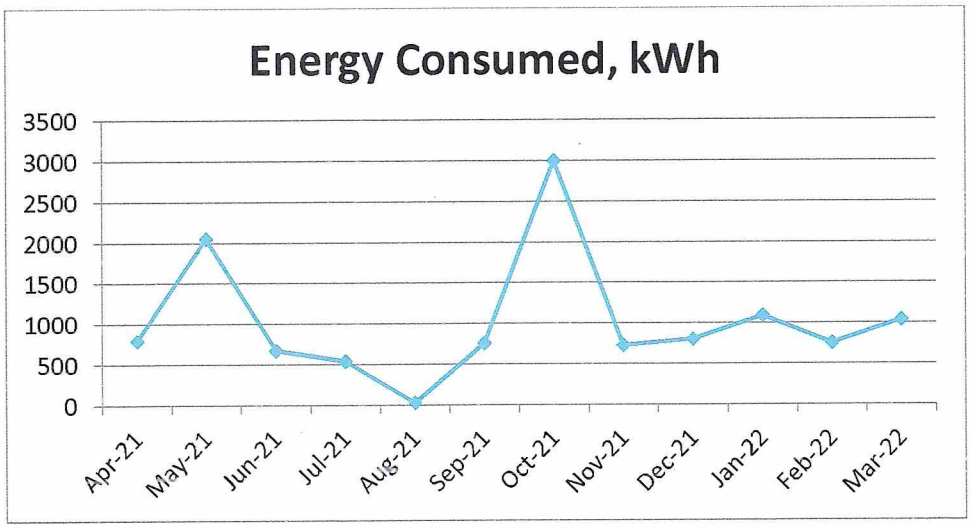


Table No 3: Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	20446
2	Maximum	5000
3	Minimum	49
4	Average	1704

CHAPTER-III
CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO_2 emissions), emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the College for performing its day to day activities

Basis for computation of CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- **1 Unit (kWh)** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere

Based on the above Data we compute the CO_2 emissions which are being released in to the atmosphere by the College due to its Day to Day operations.

We herewith furnish the details of various forms of Energy consumption as under

Table No 4: Month wise Consumption of Electrical Energy & CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Apr-21	1322	1.19
2	May-21	3422	3.08
3	Jun-21	1122	1.01
4	Jul-21	901	0.81
5	Aug-21	49	0.04
6	Sep-21	1267	1.14
7	Oct-21	5000	4.50
8	Nov-21	1211	1.09
9	Dec-21	1337	1.20
10	Jan-22	1823	1.64
11	Feb-22	1255	1.13
12	Mar-22	1737	1.56
13	Total	20446	18.40
14	Maximum	5000	4.50
15	Minimum	49	0.04
16	Average	1704	1.53

Chart No 2: Representation of Month wise CO_2 emissions:

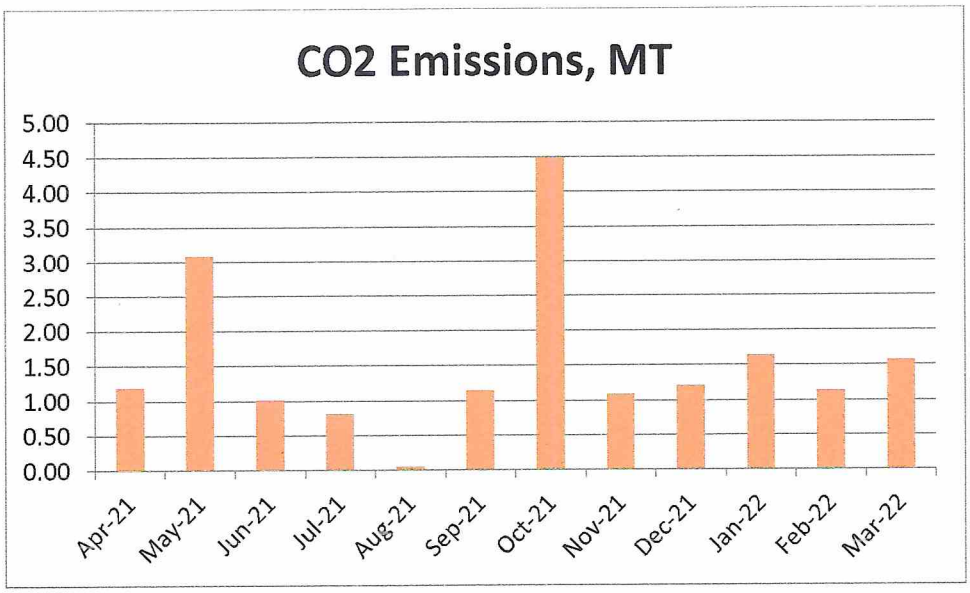


Table No 5: Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	20446	18.40
2	Maximum	5000	4.50
3	Minimum	49	0.04
4	Average	1704	1.53

CHAPTER-IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant.

It is recommended to install Solar PV Plant.

CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Segregation of Waste at Source:

The Waste is segregated at source. There are separate Bins for collection of Dry & Wet Waste.

Photograph of Waste Collection Bin:

5.2 Organic Waste Management:

For Bio degradable Waste, the College has a Bio composting Arrangement, wherein, the bio-degradable waste is composted & is used as fertilizer for the Garden.

Photograph of Bio Composting Arrangement:

5.3 Sanitary Waste Incinerator:

The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste.

Photograph of Sanitary Incinerator:

5.4 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency.

CHAPTER-VI
STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

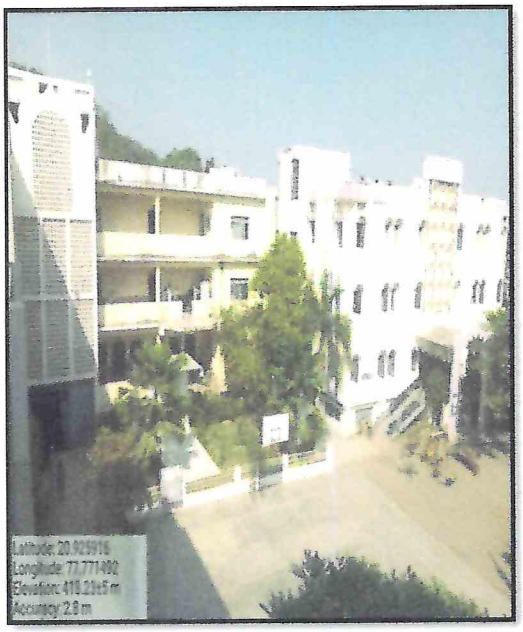
Photograph of Rain Water Pipe:

CHAPTER-VII
STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Roads:

The College has well defined pedestrian foot paths as to facilitate the easy movement of the students within the campus.

Photograph of Road within campus:



7.2 Tree Plantation in the campus:

The College has done internal Tree Plantation.

Photograph of Tree plantation in the campus:

7.3 Provision of Ramp for Divyangajan:

The College has constructed Ramp for easy movement of Divyanga students.

Photograph of Ramp:

7.4 Creation of Awareness on Resource Conservation:

The College has displayed Posters on Conservation of Resources like Energy, Water.

Photograph of Posters on Energy & Water Conservation:

ANNEXURE:
DETAILS OF TREES IN THE CAMPUS

1. List of Trees:

No.	Common Name of Tree
1	Codiaeun
2	Dypsislutescene
3	Ficusmacrocarpa
4	Tamarixgallica
5	Plumeriarubra
6	Allium tuberosum
7	Acacia farnesiana
8	Bryophyllumpunnatum
9	Jatrophaintegerrima
10	Ficusreligiosa
11	Syzygiumcumini
12	Punicagranatum
13	Thevetiaperuviana
14	Polyalthiyalongifolia
15	Terminaliacatappa
16	Aloe vera
17	Lawsoniainermis
18	Caesalpiniadecapetala
19	Calatropisgiganeta
20	Costusspiralis
21	Asperagusofficinalis
22	Ocimumtenuflorum
23	Livistonachineisis
24	Acalyphawikesiana
25	Cupressussemperviens
26	Agapanthus praecox
27	Yucca aloifolia
28	Dianthus barbatus
29	Metrosideros excels
30	Lxoracoccinea
31	Hubiscusrosa-sinensis
32	Leucophyllumcandidum
33	Gladiolus communis
34	Rosa sp.
35	Alstoniascholaris
36	Jacaranda mimosofolia

ENVIRONMENTAL AUDIT REPORT

of

TAKSHASHILA MAHAVIDYALAYA

AMRAVATI 444606

Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com

ENGRESS SERVICES PUNE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,
Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 — 10th May, 2022

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with *MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)* under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune - 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and cancelling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

ASSOCHAM
Make Innovate Impact

GEM Certificate

ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the

Green and Eco-friendly Movement Certified Professional Test (GEM CP)

with

"Excellent Performance"

on

06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects.
ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar
Chairman, GEM

GEM CP 22/786

Deepak Sood
Secretary General, ASSOCHAM

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/TMA/21-22/03

Date: 23/6/2022

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Takshashila Mahavidyalaya Amravati in the year 2021-22.

The College has adopted following Environment Friendly Initiatives:

- Usage of Energy Efficient LED Fittings
- Maximum Usage of Day Lighting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Segregation of Waste at Source
- Bio Composting Arrangement for conversion of Organic Waste
- Usage of Sanitary Waste Incinerator
- Implementation of Rain Water Management Project
- Tree Plantation in the campus
- Creation of Awareness by Display of Posters on Nature Conservation

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

A Y Mehendale,
Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788

INDEX

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Takshashila Mahavidyalaya, Amravati for awarding us the assignment of Environmental Audit of their Amravati (Shyam Nagar) campus for the Year: 2021-22.

We are thankful to all staff members for helping us during the field measurements.

EXECUTIVE SUMMARY

1. **Takshashila Mahavidyalaya, Amravati** consumes various resources for day to day operations, namely: Air, Water, Electrical Energy & LPG.

2. **Pollution due to College Activities:**

- **Air pollution:** Mainly CO_2 on account of Electricity & LPG Consumption
- **Solid Waste:** Bio degradable Kitchen Waste, Garden Waste
- **Liquid Waste:** Human liquid waste

3. **Present Energy Consumption &CO_2 Emissions:**

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	20446	13.43
2	Maximum	5000	2.95
3	Minimum	49	0.13
4	Average	1704	1.12

4. **The various projects already implemented for Environmental Conservation:**

- Usage of Energy Efficient LED Light Fittings
- Implementation of Bio Composting pit for disposal of Bio degradable waste
- Implementation of Rain Water Management Project

5. **Usage of Renewable Energy:**

The College has yet to install Roof Top Solar PV Plant. It is recommended to install Roof Top Solar PV Plant.

6. **Indoor Air Quality Parameters:**

No	Parameter/Range	AQI	PM-2.5	PM-10
1	Maximum	99	67	78
2	Minimum	90	59	63

7. **Study of Indoor Comfort Parameters:**

No	Parameter/ Range	Temperature, ^0C	Humidity, %	Lux Level	Noise Level Range, dB
1	Maximum	32.4	35.6	198	49
2	Minimum	29	33.9	90	40

8. Waste Management:

8.1 Segregation of Waste at Source:

The Waste is segregated at source. There are Waste Collection Bins for Dry & Wet Waste.

8.2 Organic Waste Management:

For Bio degradable Waste, the College has already installed a Bio composting Arrangement, wherein, the bio-degradable waste is composted & is used as fertilizer for the Garden.

8.3 Sanitary Waste Management:

The College has installed Sanitary Waste Incinerator to dispose of the Sanitary Waste.

8.4 E-Waste Management:

The E-Waste generated is disposed of by Authorized Agency.

9. Rain Water Management:

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

10. Environment Friendly Initiatives:

- Trees plantation in the campus.
- Creation of Awareness on Nature Conservation by Display of Posters

11. Assumption:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO_2 into atmosphere.

12. References:

- For CO_2 Emission computation: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI &Water Quality Standards: www.cpcb.com

ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable Trust
TMA	:	Takshashila Mahavidyalaya, Amravati
MSEDCL	:	Maharashtra State Distribution Company Limited
MEDA	:	Maharashtra Energy Development Agency
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM	:	Particulate Matter
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I

INTRODUCTION

1.1Important Definitions:

1.1.1Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules

2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

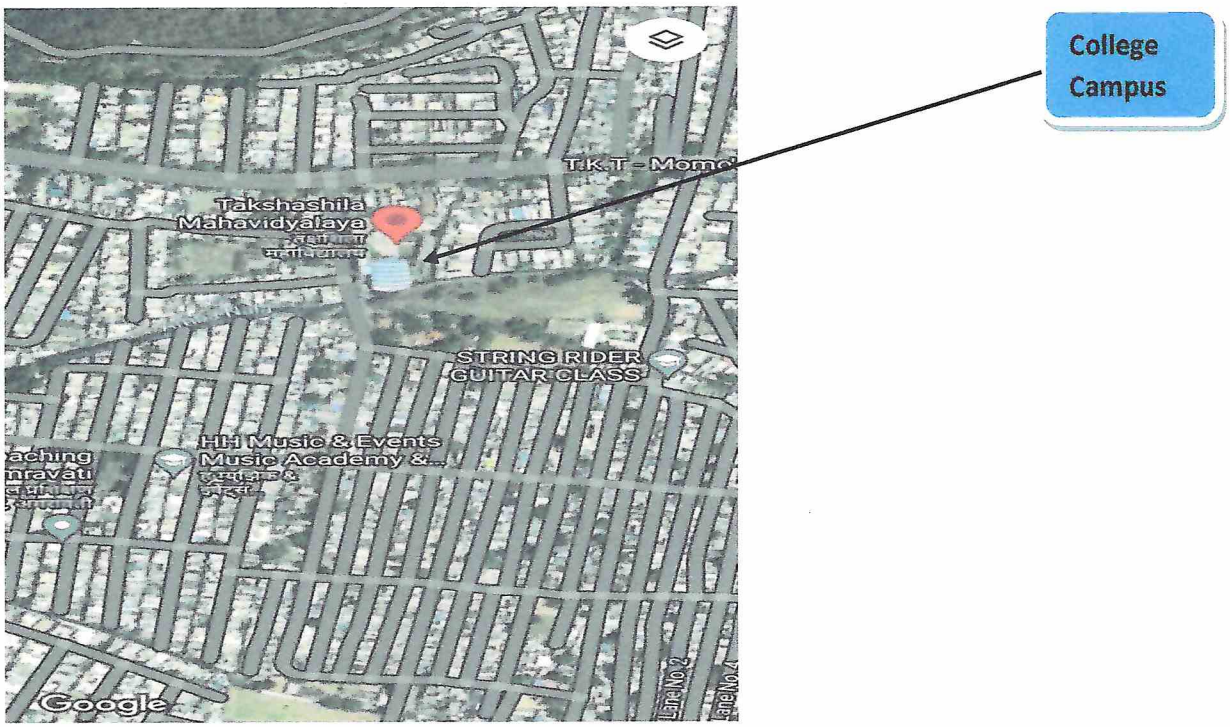
1.1.6 National Environmental Plans & Policy Documents: Table No-3:

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency
10	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

1.2 Objectives:

1. To study Resource Consumption & CO_2 Emission
2. To study CO2 Emission Reduction
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Parameters
5. To study Waste Management Practices
6. To Study Rain Water Management
7. To Study Eco Friendly Initiatives

1.3 Google Earth Image:



1.4 Table No 4: General Details of College:

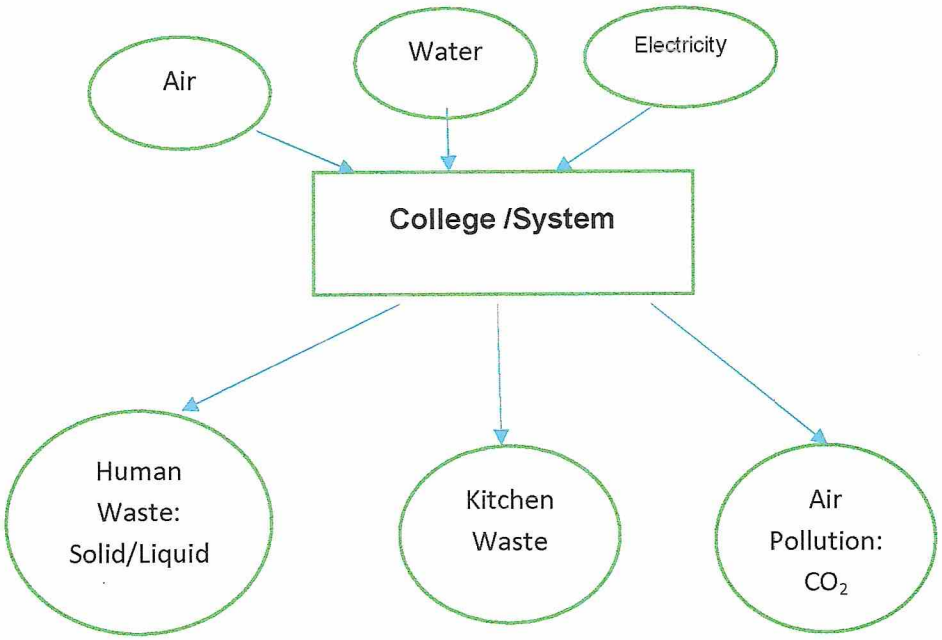
No	Head	Particulars
1	Name of Institution	Takshashila Mahavidyalaya, Amravati
2	Address	Shyam Nagar, Amravati
3	Year of Establishment	1984
4	Affiliation	Sant Gadge Baba Amravati University, Amravati

CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.



Now we compute the Generation of CO_2 on account of consumption of Electrical Energy as under.
The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- **1 Unit (kWh)** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere

Table No 5: Electrical Energy Consumption & CO_2 Emission: 2021-22:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Apr-21	1322	0.97
2	May-21	3422	2.05
3	Jun-21	1122	0.86
4	Jul-21	901	0.54
5	Aug-21	49	0.13
6	Sep-21	1267	0.89
7	Oct-21	5000	2.95

8	Nov-21	1211	0.96
9	Dec-21	1337	0.98
10	Jan-22	1823	1.19
11	Feb-22	1255	0.78
12	Mar-22	1737	1.14
13	Total	20446	13.43
14	Maximum	5000	2.95
15	Minimum	49	0.13
16	Average	1704	1.12

Chart No 2: To study the CO_2 Emission:

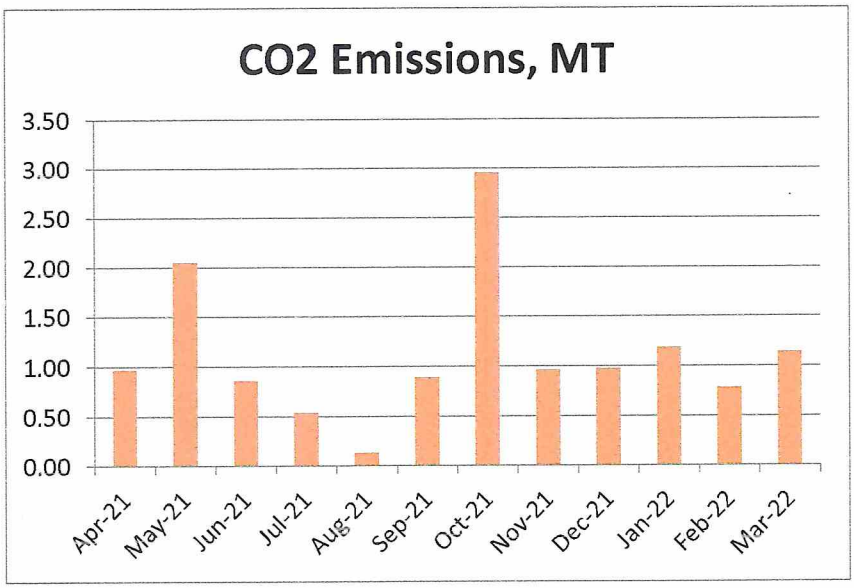


Table No 6: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	20446
2	Maximum	5000
3	Minimum	49
4	Average	1704

CHAPTER-III
STUDY OF CO_2 EMISSION REDUCTION

The College has yet to install Roof Top Solar PV Plant.

It is recommended to install Solar PV Plant.

CHAPTER IV
STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 liters** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

Air quality is a measure of the suitability of air for breathing by people, plants and animals.

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 '**air pollution**' has been defined as **'the presence in the atmosphere of any air pollutant**.'

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 '**air pollutant**' has been defined as **'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment**

4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the **AQI** requires an **air monitor** and an **air pollutant** concentration over a specified **averaging period**.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM 2.5- Particulate Matter of Size 2.5
3. PM 2.5- Particulate Matter of Size 2.5

Table No7: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
1	Examination Section	99	67	72
2	Auditorium Hall	98	66	71

3	Restaurant	95	65	69
4	NSS Office	97	66	78
5	IQAC Cell	94	67	72
6	Chemistry Lab	93	64	69
7	Library	90	60	72
8	Class Room-F8	97	67	77
9	Computer Centre	92	59	64
10	Admin Office	90	60	69
11	Class Room-S8	91	64	63
	Maximum	99	67	78
	Minimum	90	59	63

CHAPTER V
STUDY OF INDOOR COMFORT CONDITION

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit.
The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No8: Study of Indoor Comfort Parameters:

No	Location	Temperature, ^0C	Humidity, %	Lux Level	Noise Level, dB
1	Examination Section	32	35	150	42
2	Auditorium Hall	32.1	35.1	171	43
3	Restaurant	32.3	34.9	169	45
4	NSS Office	32.4	35	119	47
5	IQAC Cell	31.9	35.3	125	41
6	Chemistry Lab	32	34.8	110	40
7	Library	31	35	99	45
8	Class Room-F8	32.1	35.6	167	47
9	Computer Centre	29	34.8	90	49
10	Admin Office	29.8	34	115	42
11	Class Room-S8	29.7	33.9	198	40
	Maximum	32.4	35.6	198	49
	Minimum	29	33.9	90	40

CHAPTER VI
STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

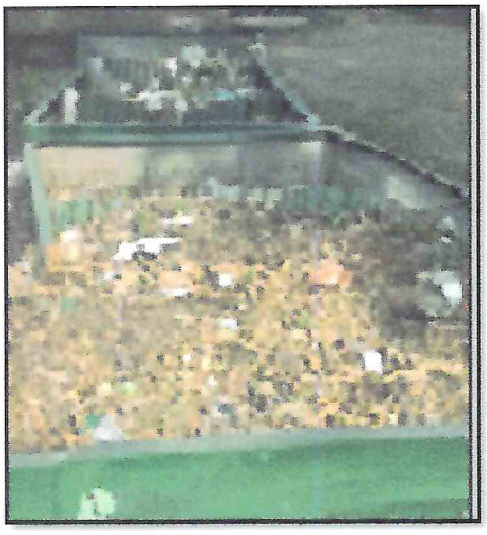
The Waste is segregated at source. There are separate Bins for collection of Dry & Wet Waste.

Photograph of Waste Collection Bins :

6.2 Organic Waste Management:

The College has a Bio composting Arrangement, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

Photograph of Bio Composting Arrangement:



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The College has installed Sanitary Waste Incinerator, for disposal of Sanitary Waste.

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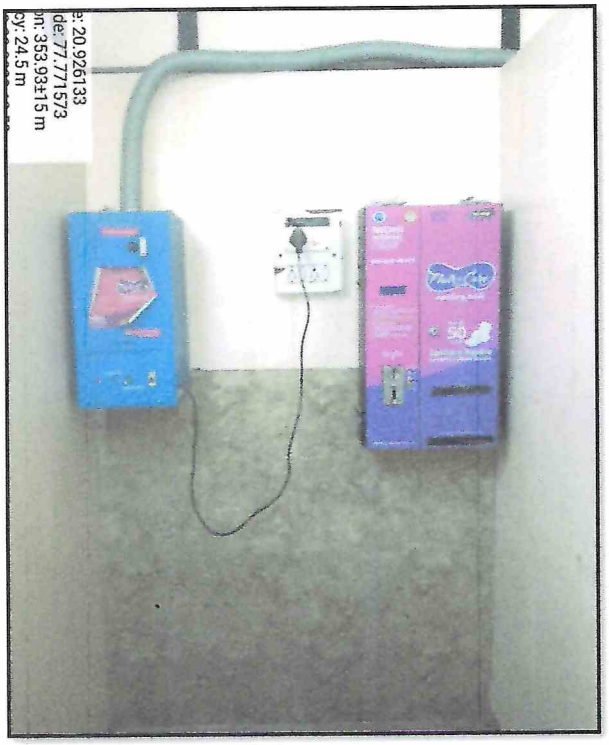

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STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management project, wherein the rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

Photograph of Rain Water Management Pipe:

CHAPTER-VIII
STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

8.1 Internal Tree Plantation:

The College has beautiful maintained Garden.

Photograph of Garden/Tree plantation in the campus:

8.2 Creation of Awareness on Nature Conservation:

The College has displayed Posters on Conservation of Resources like Trees.

Photograph of Posters on Nature Conservation:

ANNEXURE-I: VARIOUS AIR QUALITY, WATER QUALITY, NOISE & INDOOR COMFORT STANDARDS:

1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

2. Recommended Water Quality Standards:

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between **6.5 to 8.5** Dissolved Oxygen **6 mg/l or more**
2	Drinking water source after conventional treatment and disinfection	pH between **6 to 9** Dissolved Oxygen **4 mg/l or more**
3	Outdoor Bathing (Organized)	pH between **6.5 to 8.5** Dissolved Oxygen **5 mg/l or more**
4	Controlled Waste Disposal	pH between **6 to 8.5**

3. Recommended Noise Level Standards:

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

4. Thermal Comfort Conditions: For Non-conditioned Buildings:

No	Parameter	Value
1	Temperature	Less Than 33^0C
2	Humidity	Less Than 70%

ENERGY AUDIT REPORT

of

TAKSHASHILA MAHAVIDYALAYA,

Amravati 444606

Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
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Phone: 09890444795, Email: engress123@gmail.com

ENGRESS SERVICES * PUNE *

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency

(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,
Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 — 10th May, 2022

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General Manager (EC)

ENGRESS SERVICES PUNE

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/TMA/21-22/01

Date: 23/06/2022

CERTIFICATE

This is to certify that we have conducted Energy Audit at Takshashila Mahavidyalaya, Amravati in the year 2021-22.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENGRESS SERVICES * PUNE *

INDEX

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Takshashila Mahavidyalaya, Amravati for awarding us the assignment of Energy Audit of their Amravati campus for the Year: 2021-22.

We are thankful to all staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Takshashila Mahavidyalaya, Amravati consumes Energy in forms, namely Electrical Energy used for various gadgets & office equipment.

2. Present Energy Consumption& CO_2 Emissions:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	20446	18.40
2	Maximum	5000	4.50
3	Minimum	49	0.04
4	Average	1704	1.53

3. The various projects already implemented for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment
- Usage of LED Lighting
- Maximum usage of Day Lighting

4. Usage of Alternate Energy:

- The College has yet to install Roof Top Solar PV Plant. Hence the percentage of Total Energy Demand met by Alternate Energy works out to be nil percent.

5. Study of Usage of LED Lighting:

- The Total Lighting Load is **4.19 kW**
- The Total LED Lighting Load is **2.93 kW**
- Percentage of LED Lighting to Total Lighting Load is **70 %**

6. Assumption:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere

8. Reference:

- For CO_2 Emissions: www.tatapower.com

ABBREVIATIONS

SDGCT	:	Shri. Dadasaheb Charitable Trust
TMA	:	Takshashila Mahavidyalaya, Amravati
A C	:	Air Conditioner
MSEDCL	:	Maharashtra State Distribution Company Limited
MEDA	:	Maharashtra Energy Development Agency
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
CFL	:	Compact Fluorescent Light
FTL	:	Fluorescent Tube Light
W	:	Watt

CHAPTER-I

INTRODUCTION

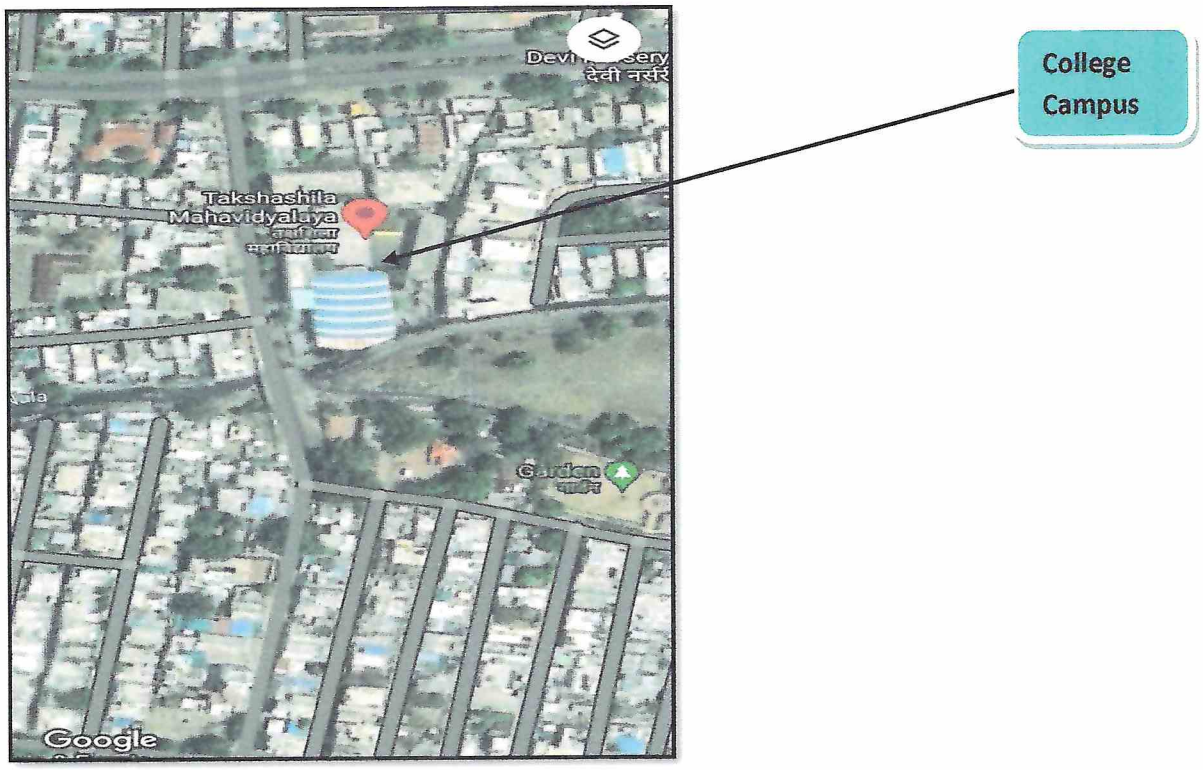
Objectives:

1. To study the connected load
2. To study the present Energy Consumption
3. To Study the present CO_2 emissions
4. To study usage of Renewable Energy
5. To study usage of LEDs

1.2 General Details of College: Table No:1

No	Head	Particulars
1	Name of Institution	Takshashila Mahavidyalaya, Amravati
2	Address	Shyam Nagar, Amravati
3	Year of Establishment	1984
4	Affiliation	Sant Gadge Baba Amravati University, Amravati

1.3 Google Earth Image:



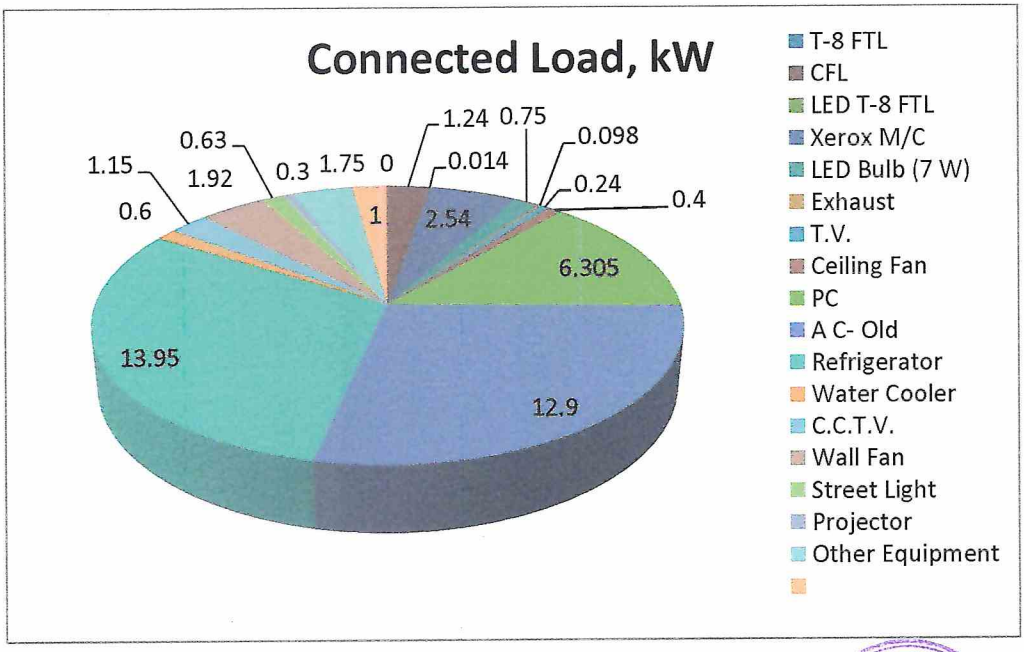
CHAPTER-II
STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No-2: Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	T-8 FTL	31	40	1.24
2	CFL	1	14	0.014
3	LED T-8 FTL	127	20	2.54
4	Xerox M/C	3	250	0.75
5	LED Bulb (7 W)	14	7	0.098
6	Exhaust	4	60	0.24
7	T.V.	2	200	0.4
8	Ceiling Fan	97	65	6.305
9	PC	86	150	12.9
10	A C- Old	9	1550	13.95
11	Refrigerator	2	300	0.6
12	Water Cooler	2	575	1.15
13	C.C.T.V.	16	120	1.92
14	Wall Fan	14	45	0.63
15	Street Light	6	50	0.3
16	Projector	5	350	1.75
17	Other Equipment	5	200	1
17	**Total**			**46**

Chart No-1: Connected Load:



CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Energy Consumption- 2021-22:

No	Month	Energy Consumed, kWh
1	Apr-21	1322
2	May-21	3422
3	Jun-21	1122
4	Jul-21	901
5	Aug-21	49
6	Sep-21	1267
7	Oct-21	5000
8	Nov-21	1211
9	Dec-21	1337
10	Jan-22	1823
11	Feb-22	1255
12	Mar-22	1737
13	Total	20446
14	Maximum	5000
15	Minimum	49
16	Average	1704

Chart No 2: To study the variation of Monthly Electrical Energy Consumption:

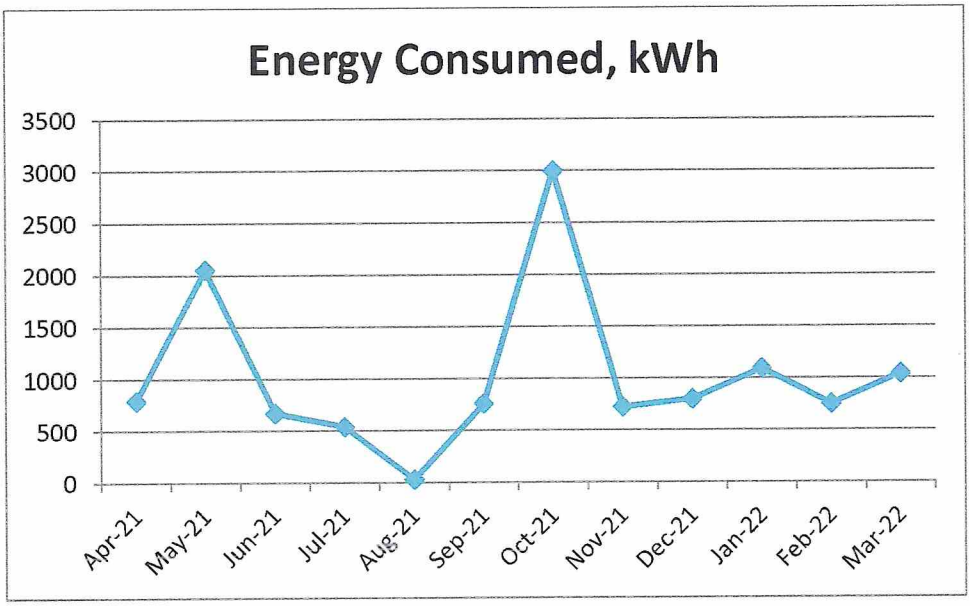


Table No 4: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	20446
2	Maximum	5000
3	Minimum	49
4	Average	1704

CHAPTER-IV

CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO_2 emissions), emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the College for performing its day to day activities

Basis for computation of CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- **1 kWh** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere

Based on the above Data we compute the CO_2 emissions which are being released in to the atmosphere by the College due to its Day to Day operations
We herewith furnish the details of various forms of Energy consumption as under

Table No 5: Month wise Consumption of Electrical Energy & CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Apr-21	1322	1.19
2	May-21	3422	3.08
3	Jun-21	1122	1.01
4	Jul-21	901	0.81
5	Aug-21	49	0.04
6	Sep-21	1267	1.14
7	Oct-21	5000	4.50
8	Nov-21	1211	1.09
9	Dec-21	1337	1.20
10	Jan-22	1823	1.64
11	Feb-22	1255	1.13
12	Mar-22	1737	1.56
13	Total	20446	18.40
14	Maximum	5000	4.50
15	Minimum	49	0.04
16	Average	1704	1.53

Chart No 4: Month wise CO_2 emissions:

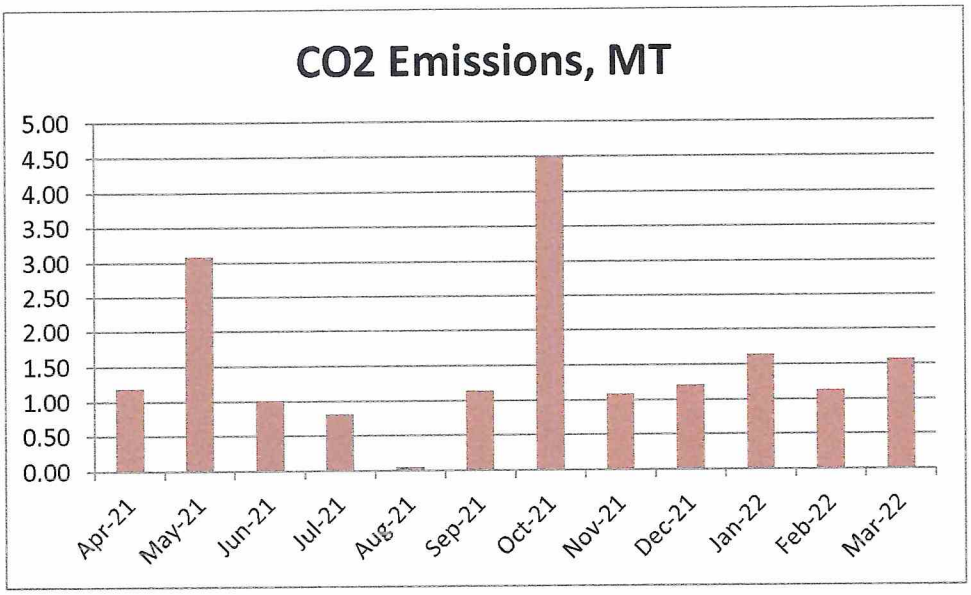


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	20446	18.40
2	Maximum	5000	4.50
3	Minimum	49	0.04
4	Average	1704	1.53

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College has yet to install Roof Top Solar PV Plant. The percentage of usage of Alternate Energy to Annual Energy Demand works out to be Nil.

It is recommended to install Solar PV Plant.

CHAPTER-VI
STUDY OF USAGE OF LED LIGHTING

In this Chapter, we present the study of LEDs on Annual basis.

Table No7: Computation of % of LED Lighting Load to Total Lighting Load:

No	Particulars	Value	Unit
1	No of T-8 FTL fittings	31	Nos
2	Load/per Fitting	40	W/Unit
3	Total Load of T-8 Fittings	**1.24**	kW
4	No of CFL fittings	1	Nos
5	Load/per Fitting	14	W/Unit
6	Total Load of CFL Fittings	**0.014**	kW
7	No of 20 W LED fittings	127	Nos
8	Load/per Fitting	20	W/Unit
9	Total Load of 20 W LED Fittings	**2.54**	kW
10	No of 07 W LED fittings	14	Nos
11	Load/per Fitting	7	W/Unit
12	Total Load of 70 W LED Fittings	**0.098**	kW
13	No of 50 W LED fittings	6	Nos
14	Load/per Fitting	50	W/Unit
15	Total Load of 40 W Square LED Fittings	**0.3**	kW
16	Total LED Lighting Load =9+12+15+18+21	**2.93**	kW
17	Total Lighting Load = 3+6+9+12+15+18+21	**4.19**	kW
18	**% of Lighting Load met by LEDs = 16*100/17**	**70**	%

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/TMA /22-23/01 **Date: 10/7/2023**

This is to certify that we have conducted Energy Audit at, Takshashila Mahavidyalaya, Amravati, in the Academic year 2022-23.

.The College has adopted following Energy Efficientpractices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Engress Services,

Mehendale

A Y Mehendale,
B E-Mechanical, M Tech- Energy
BEE Certified Energy Auditor, EA-8192

ENGRESS SERVICES PUNE

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/TMA/22-23/02 **Date: 10/7/2023**

This is to certify that we have conducted Green Audit at Takshashila Mahavidyalaya, Amravati, in the Year 2022-23.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Sanitary Waste Incinerator for disposal of Sanitary Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about Water Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Engress Services,

A Y Mehendale.
B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/TMA/22-23/03 **Date: 10/7/2023**

This is to certify that we have conducted Environmental Audit at Takshashila Mahavidyalaya, Amravati, in the Year 2022-23.

The College has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Segregation of Waste at source
- Provision of Sanitary Waste incinerator for disposal of Sanitary Waste
- Implementation of Rain Water Management Project
- Tree Plantation in the campus
- Creation of Awareness on Water Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Eco Friendly.

For Engress Services,

A Y Mehendale,
B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788

ENGRESS SERVICES PUNE

GREEN AUDIT REPORT

Shri. Dadasaheb Gavai Charitable Trust, Amravati,

TAKSHASHILA MAHAVIDYALAYA,

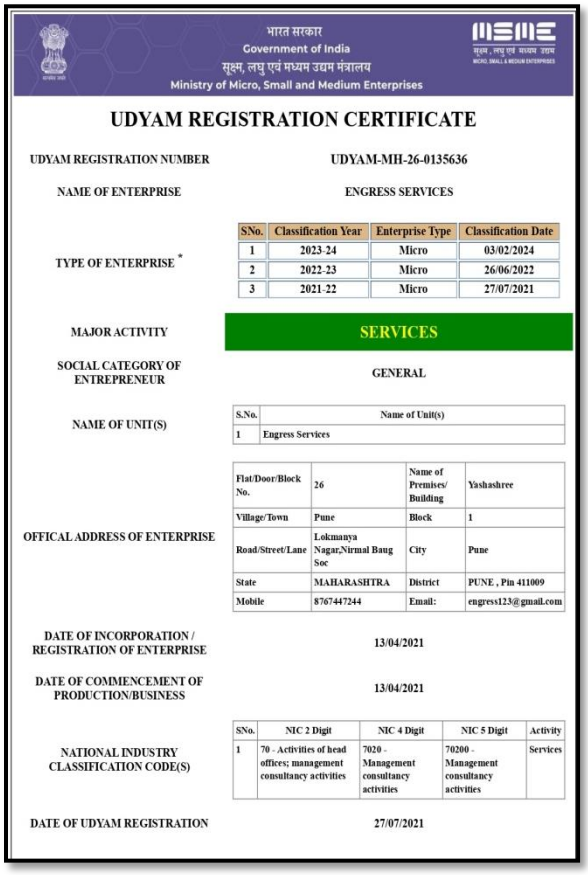
Shyam Nagar, Amravati - 444606

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:



भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-MH-26-0135636
NAME OF ENTERPRISE	ENGRESS SERVICES

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY	SERVICES
SOCIAL CATEGORY OF ENTREPRENEUR	GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	Engress Services

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	13/04/2021
DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS	13/04/2021

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION 27/07/2021

ASSOCHAM

GEM Certificate

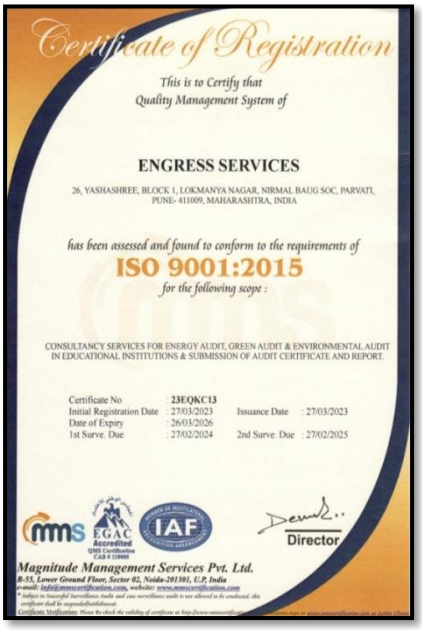
ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects. ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar, Chairman, GEM
GEM CP 22/788
Deepak Sood, Secretary General, ASSOCHAM



Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No	: 23EQKC13		
Initial Registration Date	: 27/03/2023	Issuance Date	: 27/03/2023
Date of Expiry	: 26/03/2026		
1st Surve. Due	: 27/02/2024	2nd Surve. Due	: 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with *MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)* under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 14001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No	: 23EEKW20		
Initial Registration Date	: 29/03/2023	Issuance Date	: 29/03/2023
Date of Expiry	: 28/03/2026		
1st Surve. Due	: 29/02/2024	2nd Surve. Due	: 28/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

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ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Shri. Dadasaheb Gavai Charitable Trust, Amravati of Education, Takshashila Mahavidyalaya, Shyam Nagar, Amravati for awarding us the assignment of Green Audit of their campus for the Academic Year: 2023-24.

We are thankful to all the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Dr. Babasaheb Ambedkar Mahavidyalaya, Amravati consumes Energy in the form of **Electrical Energy;** used for various equipment.

2. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	**41778**	kWh
2	Annual CO_2 Emissions	**38.85**	MT

3. Usage of Renewable Energy:

- The College has yet to install Roof Top Solar PV Plant.

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Bio Composting Bed
3	E Waste	Disposed of by the Parent Society

5. Rain Water Management:

The College has installed Rain Water Management Project; the Rain Water from the terrace is collected through Pipes and is used to increase the underground Water Table.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Plastic Free Campus by Display of Posters

7. Assumption:

- **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere

8. Reference:

- For CO_2 Emissions: www.ccd.gujarat.gov.in

ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO_2	Carbon Di Oxide
Qty	Quantity

CHAPTER-I
INTRODUCTION

1.1 Introduction:

A Green Audit is conducted at Shri. Dadasaheb Gavai Charitable Trust, Amravati of Education, Takshashila Mahavidyalaya, Shyam Nagar, Amravati.

1.2 Key Study Points:

No	Particulars
1	Study of Present Energy Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Waste Management Practices
4	Study of Rain Water Management
5	Study of Green & Sustainable Initiatives

1.3 College Location Image:

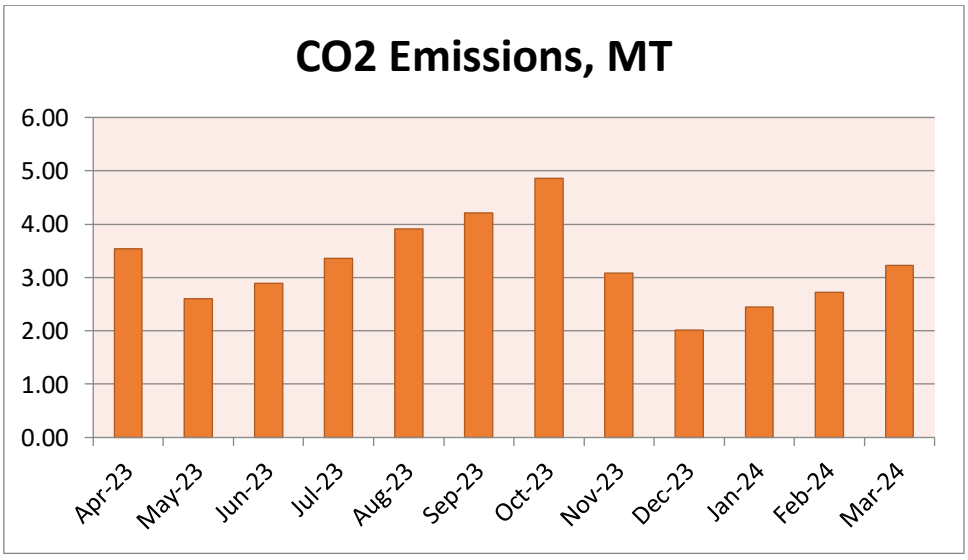
CHAPTER-II
STUDY OF ENERGY CONSUMPTION & CO_2 EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO_2 Emissions: 1 kWh** of Electrical Energy releases **0.93 Kg of CO_2** into atmosphere.

Table No 1: Month wise Energy Consumption & CO_2 Emissions:

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-23	3804	3.54
2	May-23	2803	2.61
3	Jun-23	3109	2.89
4	Jul-23	3608	3.36
5	Aug-23	4206	3.91
6	Sep-23	4530	4.21
7	Oct-23	5220	4.85
8	Nov-23	3314	3.08
9	Dec-23	2166	2.01
10	Jan-24	2627	2.44
11	Feb-24	2924	2.72
12	Mar-24	3467	3.22
13	Total	41778	38.85
14	Maximum	5220	4.85
15	Minimum	2166	2.01
16	Average	3481.50	3.24

Chart No 1: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant.

CHAPTER IV
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

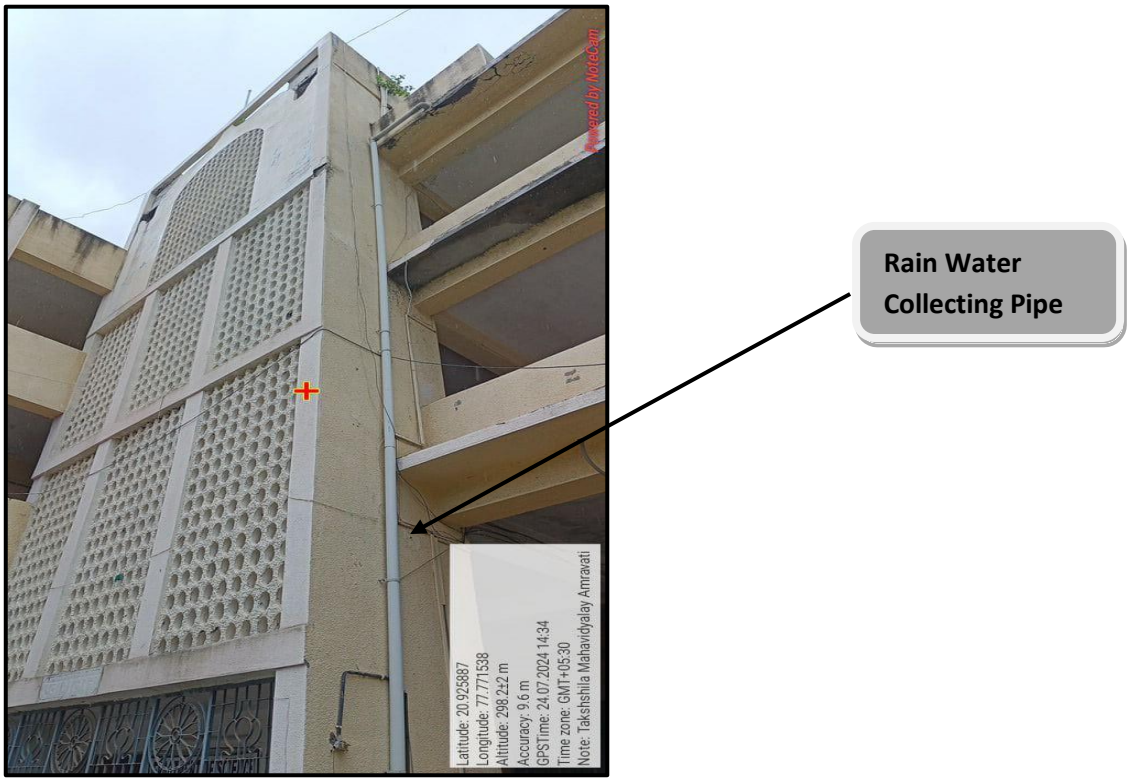
Details of Waste Management Practices:

No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source: Provision of Waste Collection Bins	**Waste Collection Bin:** 
2	**Organic Waste**	Provision of Bio Composting Bed: For conversion into Bio Compost	**Bio Composting Bed:** 
3	**E Waste**	Provision of E Waste Collection Bin & disposal through Parent Society	**Waste Collection Bin** 

CHAPTER-V
STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management Project; the Rain Water from the terrace is collected through Pipes and is used to increase the Underground Water Table.

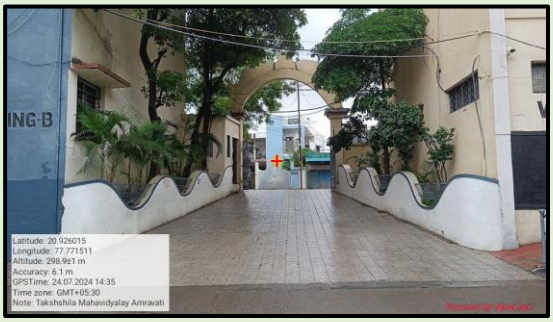
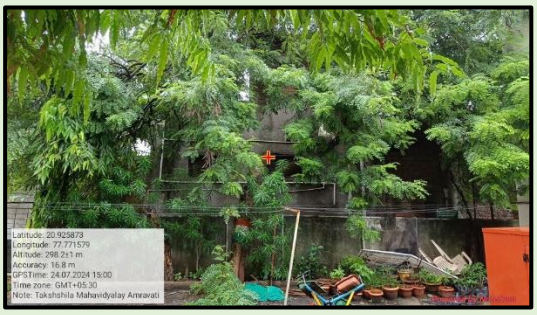
Photograph of Rain Water Collecting Pipe Section:



CHAPTER-VI
STUDY OF GREEN & SUSTAINABLE PRACTICES

In this Chapter, we present the Green & Sustainable Practices followed by the College.

Green & Sustainable Practices:

No	Head	Observation	Photograph
1	**Easy Movement of Stake Holders**	Provision of Good Internal Road within the Campus	**Internal Road:** 
2	**Tree Plantation**	Internal Tree Plantation in the Campus	**Internal Tree Plantation:** 
3	**Facilities for Divyangajan**	Provision of Ramp for Divyangajan	**Ramp for Divyangajan:** 
4	**Creation of Awareness among Stake Holders**	Display of Poster on Plastic Free Campus	**Poster on Plastic Free Campus:** 

ANNEXURE-I
DETAILS OF TREES IN THE CAMPUS

1. List of Trees:

No	Botanical Name	No	Botanical Name
1	Codiaeun	31	Hubiscus rosa-sinensis
2	Dypsis lutescene	32	Leucophyllum candidum
3	Ficus macrocarpa	33	Gladiolus communis
4	Tamarix gallica	34	Rosa sp.
5	Plumeria rubra	35	Alstonia scholaris
6	Allium tuberosum	36	Holy family Parish
7	Acacia farnesiana	37	Ficus exasperata
8	Bryophyllum punnatum	38	Polyscias fruticosa
9	Jatropha integerrima	39	Codiaeum veriegatum
10	Ficus religiosa	40	Hibiscus plant
11	Syzygium cumini	41	Tradescantia spathacae
12	Punica granatum	42	Mahogany Plant
13	Thevetia peruviana	43	Seissa Japonica
14	Polyalthiya longifolia	44	Hydrangea anomola subsp
15	Terminalia catappa	45	Ixora chinensis lam
16	Aloe vera	46	Garden Terrace
17	Lawsonia inermis	47	Jatropha Intergerima
18	Caesalpinia decapetala	48	Hymenocallis speciosa
19	Calatropis giganeta	49	Medicinal Plant
20	Costus spiralis	50	Yucca aloifolia
21	Asperagus officinalis	51	Podocorpus neriifolius
22	Ocimum tenuflorum	52	Iphegenia
23	Livistona chineisis		
24	Acalypha wikesiana		
25	Cupressus semperviens		
26	Agapanthus praecox		
27	Yucca aloifolia		
28	Dianthus barbatus		
29	Metrosideros excels		
30	Lxora coccinea		

ENERGY AUDIT REPORT

Shri. Dadasaheb Gavai Charitable Trust, Amravati,

TAKSHASHILA MAHAVIDYALAYA,

Shyam Nagar, Amravati - 444606

Year: 2023-24

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com

REGISTRATION CERTIFICATES: BEE, UDYAM, MEDA, ISO-9001 & 14001:

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 — 10th May, 2022

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with *MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)* under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

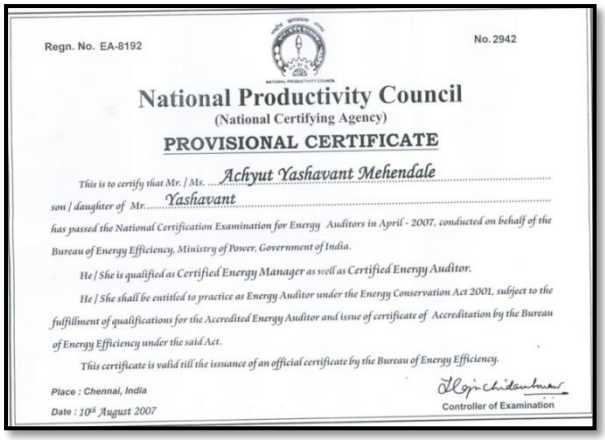
Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



Regn. No. EA-8192 — No. 2942

National Productivity Council
(National Certifying Agency)
PROVISIONAL CERTIFICATE

This is to certify that Mr. / Ms. *Achyut Yashavant Mehendale*
son / daughter of Mr. *Yashavant*
has passed the National Certification Examination for Energy Auditors in April - 2007, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India.

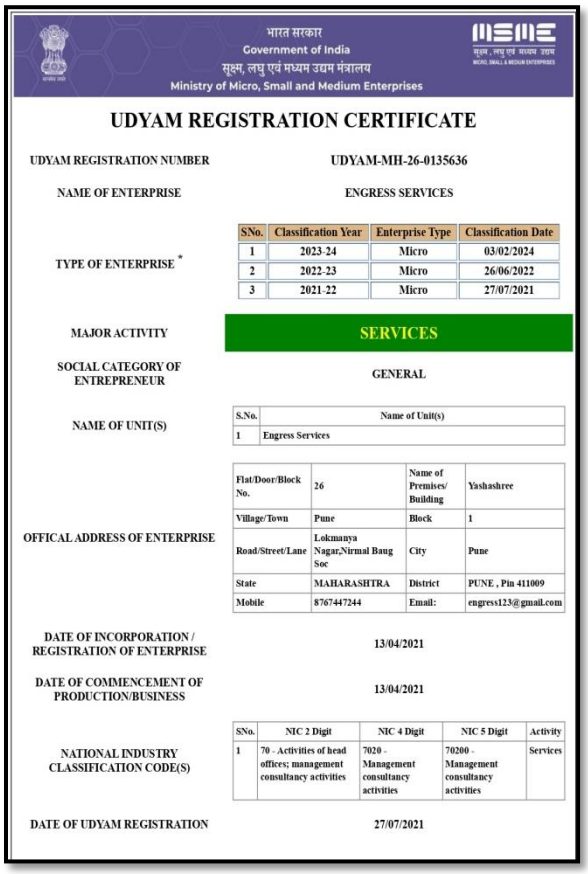
He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor.

He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act.

This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.

Place : Chennai, India
Date : 10st August 2007

Controller of Examination



भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-MH-26-0135636
NAME OF ENTERPRISE	ENGRESS SERVICES

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	Engress Services

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

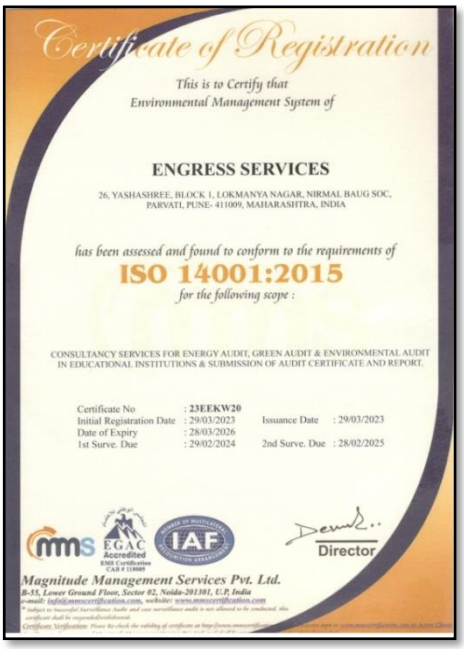
DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION: 27/07/2021



Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 14001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EEKW20
Initial Registration Date : 29/03/2023 — Issuance Date : 29/03/2023
Date of Expiry : 28/03/2026
1st Surve. Due : 29/02/2024 — 2nd Surve. Due : 28/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P. India

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for the following scope :

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Certificate No : 23EQKC13
Initial Registration Date : 27/03/2023 — Issuance Date : 27/03/2023
Date of Expiry : 26/03/2026
1st Surve. Due : 27/02/2024 — 2nd Surve. Due : 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P. India

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ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Shri. Dadasaheb Gavai Charitable Trust, Amravati Education of Takshashila Mahavidyalaya, Shyam Nagar, Amravati for awarding us the assignment of Energy Audit of their campus for the Academic Year: 2023-24.

We are thankful to all the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Takshashila Mahavidyalaya, Amravati consumes Energy in the form of **Electrical Energy;** used for various equipment.

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	**46**	kW
2	Annual Energy Consumed	**41778**	kWh

3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	41778	kWh
2	Total No of Students	2350	Nos
3	Energy Performance Index **=(1) / (2)**	**17.77**	kWh/Annum

4. Study of % Usage of LED Lighting:

No	Particulars	Value	Unit
1	% of Usage of LED Lighting to Total Lighting Load	**97.77**	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings

6. Assumptions:

- **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO_2 Emissions: www.ccd.gujarat.gov.in

ABBREVIATIONS

AC	:	Air conditioner
LED	:	Light Emitting Diode
PL	:	Pin Type Light Fitting
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
D/L	:	Down Lighter
PC	:	Personal Computer
MT	:	Metric Ton

CHAPTER-I
INTRODUCTION

1.1 Introduction:

An Energy Audit is conducted at Shri. Dadasaheb Gavai Charitable Trust, Education of Takshashila Mahavidyalaya, Uttam Nagar, Amravati.

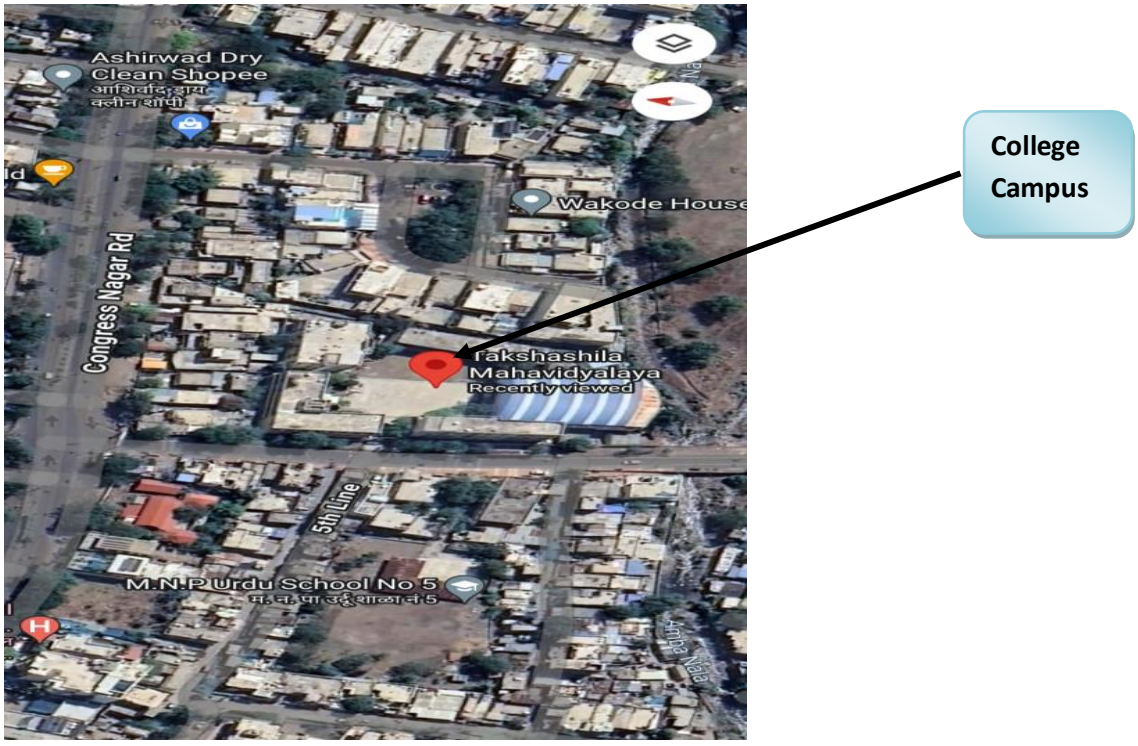
The guidelines followed for conducting the Energy Audit are:

- BEE India's Energy Conservation Building Code: ECBC-2017
- Maharashtra Energy Development Agency (www.mahaurja.com)
- Tata Power: www.tatapower.com

1.2 Key Study Points:

No	Particulars
1	Study of Present Connected Load
2	Study of Present Energy Consumption
3	Study of Per Capita Energy Consumption
4	Study of Lighting
5	Study of Energy Efficiency & Renewable Energy

1.3 College Location Image:



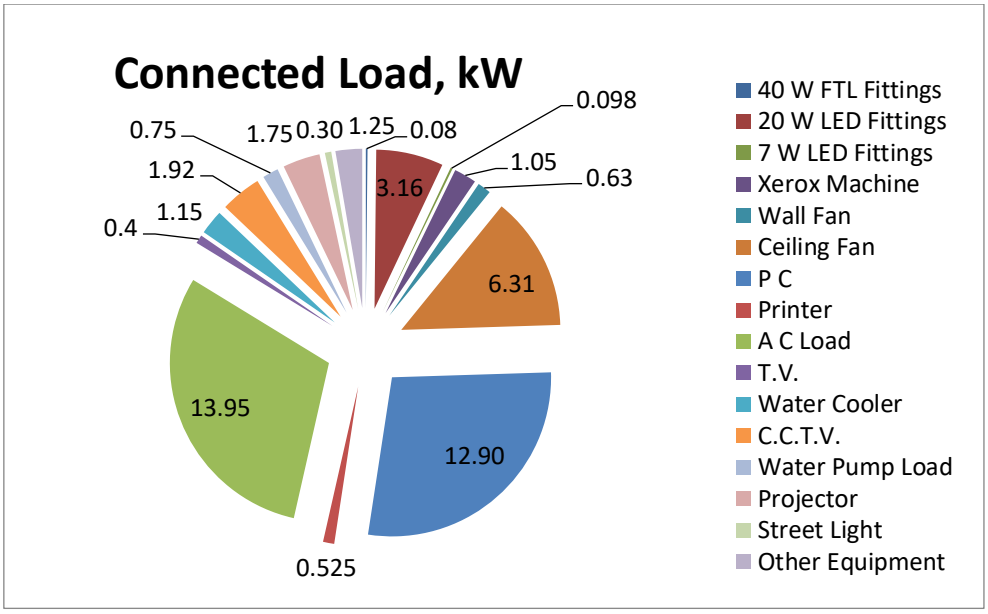
CHAPTER-II
STUDY OF CONNECTED LOAD

The major contributors to the connected load of the College include:

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	40 W FTL Fittings	2	40	0.08
2	20 W LED Fittings	158	20	3.16
3	7 W LED Fittings	14	7	0.098
4	Xerox Machine	3	350	1.05
5	Wall Fan	14	45	0.63
6	Ceiling Fan	97	65	6.31
7	P C	86	150	12.90
8	Printer	3	175	0.525
9	A C Load	9	1550	13.95
10	T.V.	2	200	0.4
11	Water Cooler	2	575	1.15
12	C.C.T.V.	16	120	1.92
13	Water Pump Load	1	746	0.75
14	Projector	5	350	1.75
16	Street Light	6	50	0.30
17	Other Equipment	5	250	1.25
18	**Total**			**46**

Chart No 1: Study of Connected Load:



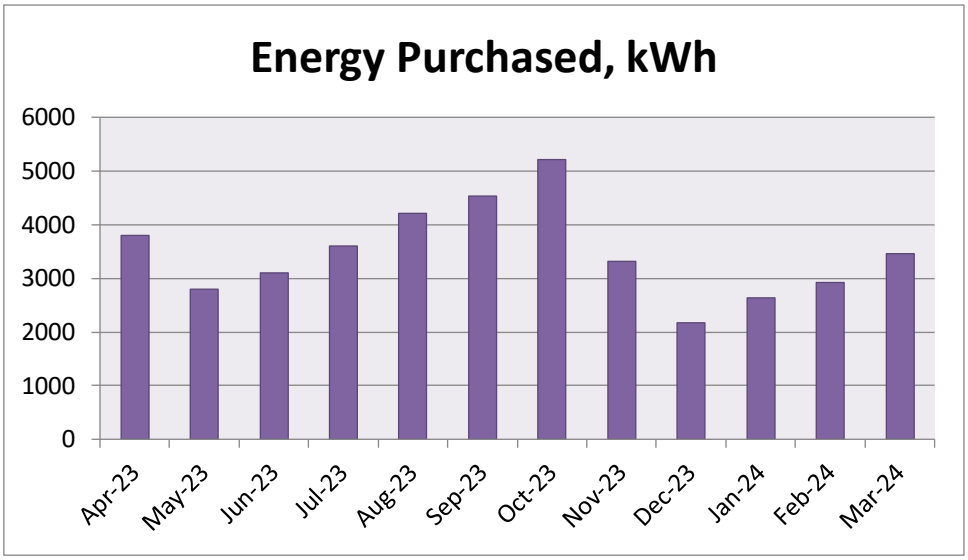
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy Consumption.

Table No 2: Electrical Energy Consumption Analysis- 2023-24:

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-23	3804	3.54
2	May-23	2803	2.61
3	Jun-23	3109	2.89
4	Jul-23	3608	3.36
5	Aug-23	4206	3.91
6	Sep-23	4530	4.21
7	Oct-23	5220	4.85
8	Nov-23	3314	3.08
9	Dec-23	2166	2.01
10	Jan-24	2627	2.44
11	Feb-24	2924	2.72
12	Mar-24	3467	3.22
13	Total	41778	38.85
14	Maximum	5220	4.85
15	Minimum	2166	2.01
16	Average	3481.50	3.24

Chart No 2: Variation in Monthly Energy Purchased, kWh:



CHAPTER-IV
STUDY OF PER CAPITA ENERGY CONSUMPTION

Per Capita Energy Consumption Index: Per Capita Energy Consumption Index of an educational Institute/College is its Annual Energy Consumption in Kilo Watt Hours per student studying in the Institute/College.

It is determined by:

$$\text{Per Capita Energy Consumption Index} = \frac{\text{(Annual Energy Consumption in kWh)}}{\text{(Total No of students studying)}}$$

Now we compute the EPI for the College as under:

Table No 3: Computation of Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	41778	kWh
2	Total No of Students	2350	Nos
3	Energy Performance Index **=(1) / (2)**	**17.77**	kWh/Annum

CHAPTER-V
STUDY OF LIGHTING

Terminology:

1. Lumen is a unit of light flow or luminous flux. The lumen rating of a lamp is a measure of the total light output of the lamp. The most common measurement of light output (or luminous flux) is the lumen. Light sources are labeled with an output rating in lumens.

2. Lux is the metric unit of measure for illuminance of a surface. One lux is equal to one lumen per square meter.

3. Circuit Watts is the total power drawn by lamps and ballasts in a lighting circuit under assessment.

4. Installed Load Efficacy is the average maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m²)

5. Lamp Circuit Efficacy is the amount of light (lumens) emitted by a lamp for each watt of power consumed by the lamp circuit, i.e. including control gear losses. This is a more meaningful measure for those lamps that require control gear. Unit: lumens per circuit watt (lm/W) In this Chapter we compute the percentage usage of LED Lighting to total Lighting Load of the College.

Table No 4: Percentage Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	2	Nos
2	Load/Unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fitting	**0.08**	kW
4	No of 20 W LED Fittings	158	Nos
5	Load/Unit of 20 W LEDL Fitting	20	W/unit
6	Total Load of 20 W LED Fitting	**3.16**	kW
7	No of 7 W LED Fittings	14	Nos
8	Load/Unit of 16 W LEDL Fitting	7	W/unit
9	Total Load of 16 W LED Fitting	**0.098**	kW
10	No of 50 W LED Fittings	5	Nos
11	Load/Unit of 50 W LEDL Fitting	50	W/unit
12	Total Load of 50 W LED Fitting	**0.25**	kW
13	Total LED Lighting Load=6+9+12	**3.51**	kW
14	Total Lighting Load= 3+6+9+12	**3.59**	kW
15	% of LED to Total Lighting Load = 13*100/14	**97.77**	%

CHAPTER-VI
STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

6.1 Usage of Renewable Energy:

The College has yet to install Roof Top Solar PV Plant.

6.2 Energy Efficiency Measures adopted:

- The College has Energy Efficient LED Fittings.

Photographs of LED Lighting:

ENVIRONMENTAL AUDIT REPORT

Shri. Dadasaheb Gavai Charitable Trust, Amravati,

TAKSHASHILA MAHAVIDYALAYA,

Shyam Nagar, Amravati - 444606

Year: 2023-24

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
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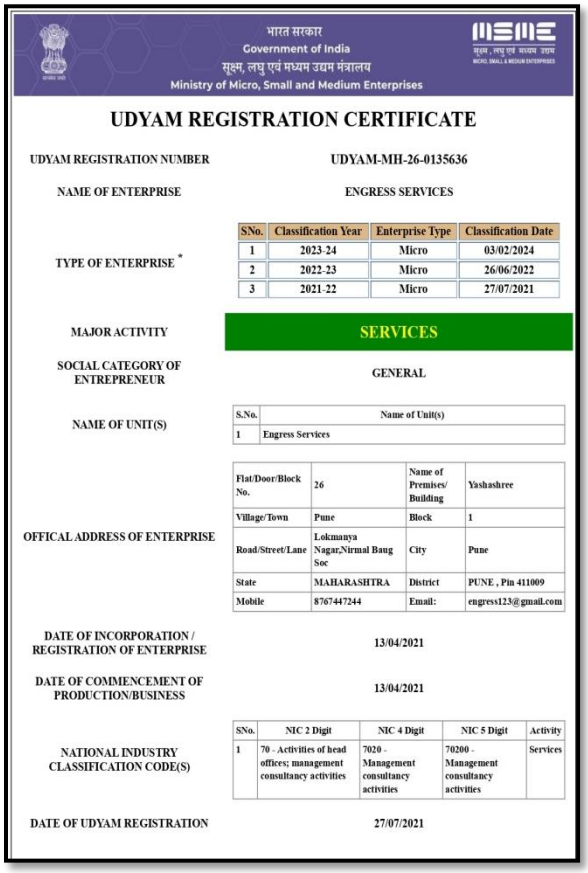
Phone: 09890444795 Email: engress123@gmail.com

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:



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Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-MH-26-0135636
NAME OF ENTERPRISE	ENGRESS SERVICES

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	Engress Services

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION: 27/07/2021

ASSOCHAM

GEM Certificate

ASSOCHAM hereby certifies that

Mr. A Y Mehendale

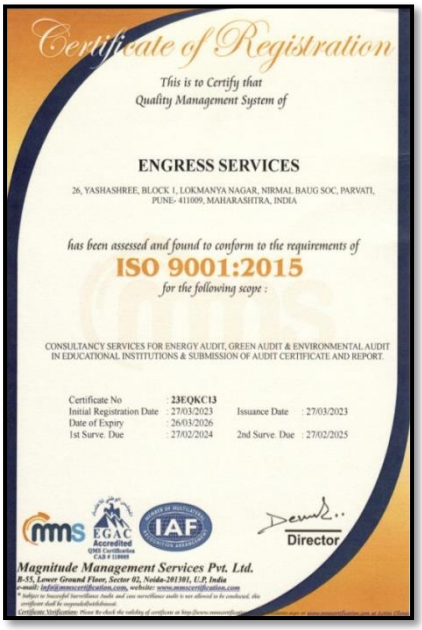
has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects.
ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar
Chairman, GEM

GEM CP 22/788

Deepak Sood
Secretary General, ASSOCHAM



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1st Surve. Due : 27/02/2024
Issuance Date : 27/03/2023
2nd Surve. Due : 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eec@mahaurja.com, Web: www.mahaurja.com

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We are thankful to all the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Takshashila Mahavidyalaya, Amravati consumes Energy in the form of **Electrical Energy;** used for various equipment.

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO_2 on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste, Paper & Plastic Waste
- **Liquid Waste:** Human liquid waste

3. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	**41778**	kWh
2	Annual CO_2 Emissions	**38.85**	MT

4. Usage of Renewable Energy:

- The College has yet to installed Roof Top Solar PV Plant.

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**45**	**19**	**45**
2	Minimum	**32**	**14**	**32**

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	**220**	**45.8**
2	Minimum	**206**	**42.1**

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Bio Composting Bed
3	E Waste	Disposed of by the Parent Society

8. Rain Water Management:

The Rain water falling on terrace is collected through Pipe and is used to increase the underground water table.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on Plastic Free Campus by Display of Posters

10. Assumptions:

- **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere

11. References:

- For CO_2 Emissions: www.ccd.gujarat.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI & Water Quality Standards: www.cpcb.com

ABBREVIATIONS

kWh	:	kilo-Watt Hour
Qty	:	Quantity
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
kWp	:	Kilo Watt Peak
AQI	:	Air Quality Index
PM2.5	:	Particulate Matter of Size 2.5 microns
PM 10	:	Particulate Matter of Size 10 microns
CPCB	:	Central Pollution Control Board
ISHARE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I
INTRODUCTION

1. Important Definitions:

1.1. Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.2. Environmental Audit: Definition:

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.2 Key Study Points:

No	Particulars
1	Study of Present Resource Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Indoor Air Quality
4	Study of Indoor Lux & Noise Level
5	Study of Water Management
6	Study of Waste Management Practices
7	Study of Environment Friendly Practices

1.3 College Location Image:

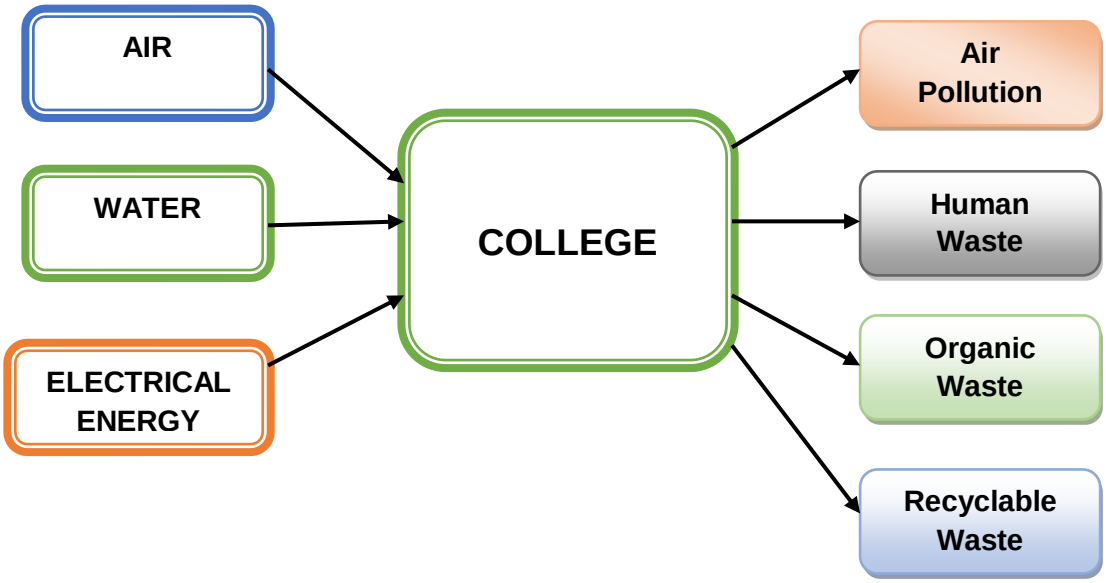
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of Resource Requirement & Waste of a College:



Now we compute the Generation of CO_2 on account of consumption of Electrical Energy. The basis of Calculation for CO_2 emissions due to Electrical Energy is as under.

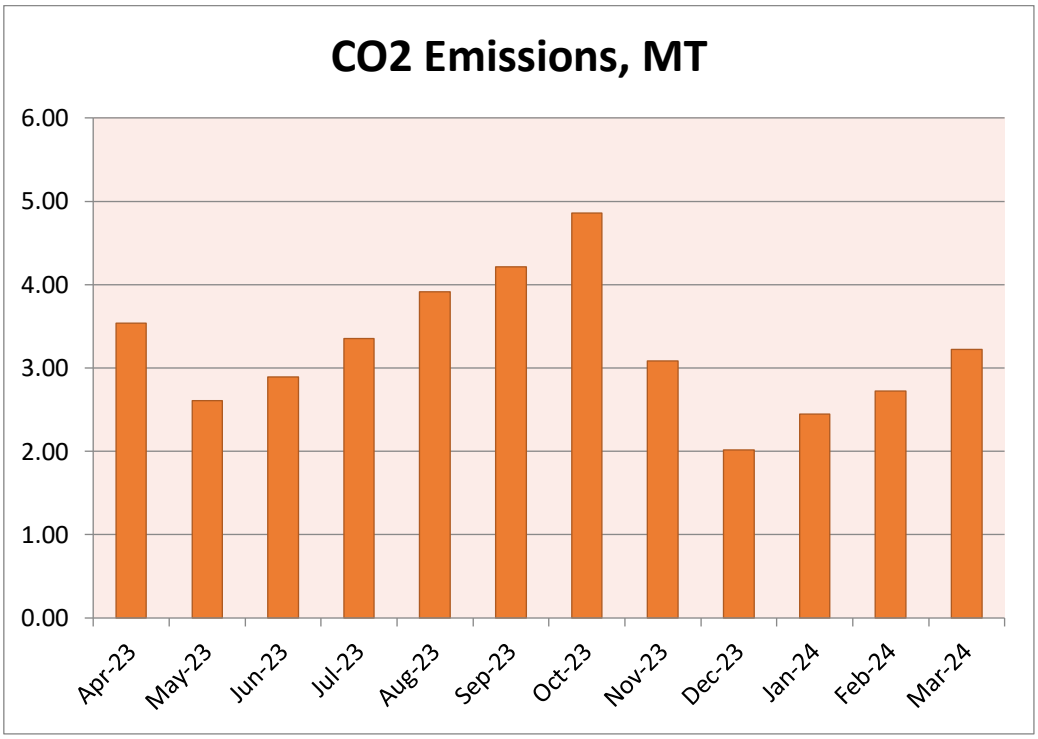
- **1 kWh** of Electrical Energy releases **0.93 Kg of CO_2** into atmosphere

Table No 1: Study of Purchase of Energy & CO_2 Emissions: 2023-24:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Apr-23	3804	3.54
2	May-23	2803	2.61
3	Jun-23	3109	2.89
4	Jul-23	3608	3.36
5	Aug-23	4206	3.91
6	Sep-23	4530	4.21
7	Oct-23	5220	4.85

8	Nov-23	3314	3.08
9	Dec-23	2166	2.01
10	Jan-24	2627	2.44
11	Feb-24	2924	2.72
12	Mar-24	3467	3.22
13	Total	41778	38.85
14	Maximum	5220	4.85
15	Minimum	2166	2.01
16	Average	3481.50	3.24

Chart No 2: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install a Roof Top Solar PV Plant.

CHAPTER IV
STUDY OF INDOOR AIR QUALITY

1. Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

2. Air quality is a measure of the suitability of air for breathing by people, plants and animals.

3. Air Quality Index: Air Quality Index (AQI) is a number used by government agencies to measure the **Air Pollution** levels and communicate it to the population.

In this Chapter, we present three important Parameters: **AQI**- Air Quality Index, **PM-2.5**- Particulate Matter of Size 2.5 micron and **PM-10**- Particulate Matter of Size 10 micron

Table No 2: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Principal Cabin	45	19	45
2	Admin Office	45	19	45
3	Class Room	32	14	32
4	Staff Room	45	19	45
5	Library	32	14	32
	Maximum	**45**	**19**	**45**
	Minimum	**32**	**14**	**32**

Table No 3: Air Quality Index Values & Concentration of PM 2.5 & PM10: (By CPCB):

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

Conclusion:

From the above measured values, we conclude that the observed values of AQI, PM-2.5 & PM-10 are in the **Good Range**, as per the guidelines given by Central Pollution Control Board.

CHAPTER V
STUDY OF INDOOR LUX & NOISE PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include: **Lux Level and Noise Level.**

Table No 4: Study of Indoor Comfort Condition Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Principal Cabin	206	45.8
2	Admin Office	214	44.2
3	Class Room	220	45.1
4	Staff Room	218	43.6
5	Library	226	42.1
	Maximum	**220**	**45.8**
	Minimum	**206**	**42.1**

Recommended Lux & Noise Level: As per BEE & ISHRAE Guidelines:

A) Noise Level Reference:		
No	**Location**	**Noise Level Range, dB**
1	Offices	45-50
2	Occupied Class Room	40-45
3	Libraries	35-40
B) Reference Lux Level, Lumens:		
1	For Class Rooms	**200 Plus**
2	For Reading Rooms	**200 Plus**

Conclusion:

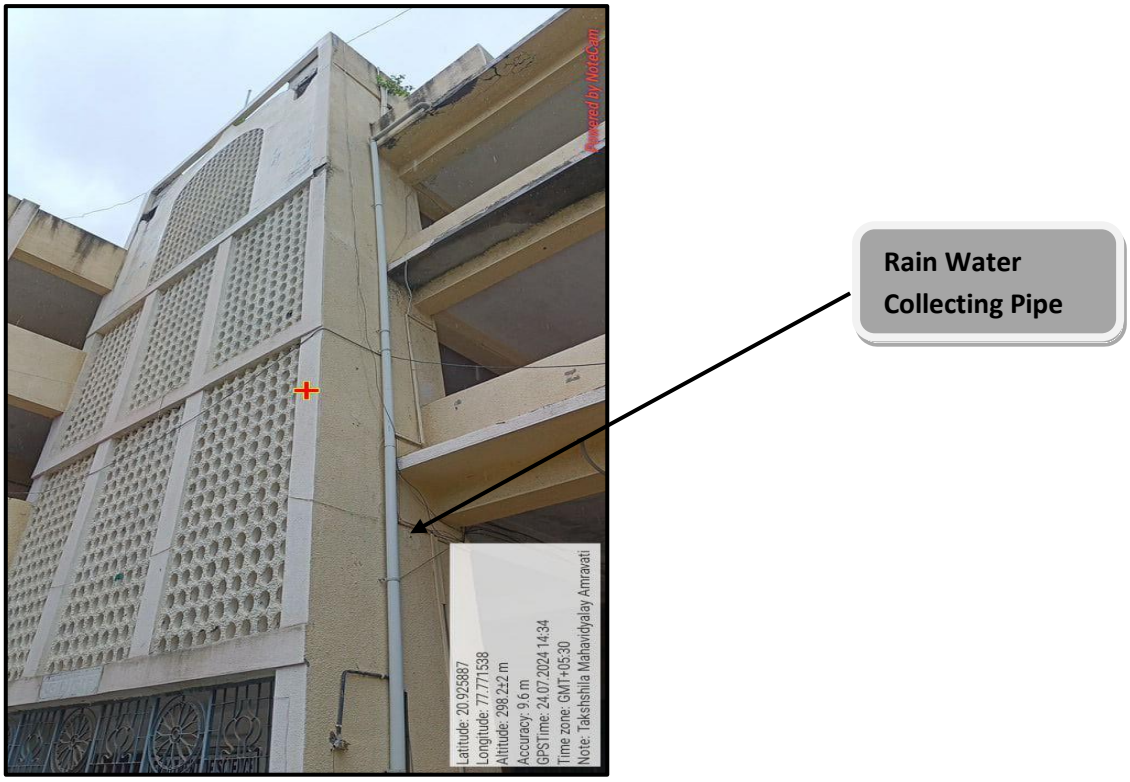
From the above measured values, we conclude that:

- The Noise Level is within the prescribed Limit
- The Lux Level at various locations is Okay

CHAPTER VI
STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Management Project; the Rain Water from the terrace is collected through Pipes and is used to increase the Underground Water Table.

Photograph of Rain Water Collecting Pipe Section:



CHAPTER-VII
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

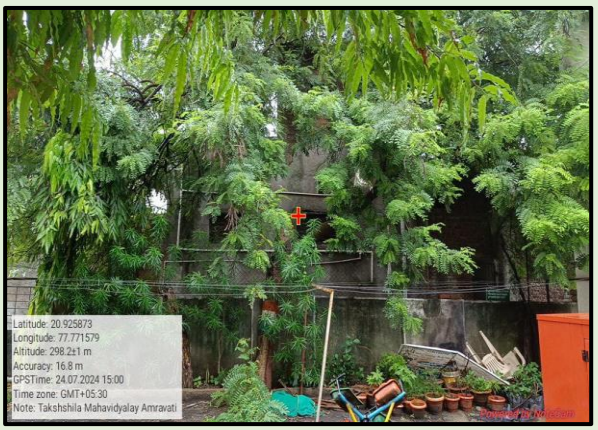
Details of Waste Management Practices:

No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source: Provision of Waste Collection Bins	**Photo of Waste Collection Bin:** 
2	**Organic Waste**	Provision of Bio Composting Bed: For conversion into Bio Compost	**Photo of Bio Composting Bed:** 
3	**E Waste**	Provision of E Waste Collection Bin & disposal through Parent Society	**Photograph of E Waste Collection Bin** 

CHAPTER-VIII
STUDY OF ENVIRONMENT FRIENDLY PRACTICES

In this Chapter, we present the Eco Friendly Practices, followed by the College.

Details of Eco Friendly Practices:

No	Head	Observation	Photograph
1	**Tree Plantation**	Tree Plantation in the Campus	**Internal Tree Plantation:** 
2	**Creation of Awareness among Stake Holders**	Display of Poster on Plastic Free Campus	**Poster on Plastic Free Campus:**