

GREEN AND ENVIRONMENTAL AUDIT REPORT

Of

West Khandesh Bhagini Seva Mandal's
Arts, Commerce, and BCA College for
Women, Dhule

(May 2023)

Prepared by



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Date: 10-05-23

To

The principal

West Khandesh Bhagini Seva Mandal's Arts, Commerce, and BCA College, Dhule

Green Audit Report of West Khandesh Bhagini Seva Mandal's Arts, Commerce, and BCA College, Dhule; has been prepared by Nature Adobe Systems, and is based on the survey of the college campus, which included checking records and interactions with the teaching and non-teaching staff, and students.

The audit was conducted on 04/05/2023. The green audit report presents green initiatives taken up by the institution and provides suggestions and recommendations to improve environmental sustainability.

The data prepared for the West Khandesh Bhagini Seva Mandal's Art's, Commerce and BCA College, Dhule will be a useful tool for campus greening, resource management, planning of future projects, and a document for implementation of sustainable development of the college. Existing data will allow the college to identify areas that need improvement and prioritize the implementation of future projects.

We expect that the management will be committed to implement the green audit recommendations. We are happy to submit this green audit report to the West Khandesh Bhagini Seva Mandal's Art's, Commerce and BCA College, Dhule Authorities.

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1. About the College

The West Khandesh Bhagini Seva Mandal's Art, Commerce, and BCA College, Dhule, was established in 1983. College is a profound educational movement that has offered secondary and tertiary education for the last 40 years to rural and tribal students in this region. West Khandesh Bhagini Seva Mandal's Art, Commerce, and BCA College, Dhule, Maharashtra, is in the rural and tribal areas of Maharashtra. The college is affiliated with Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon (Maharashtra).



2. Introduction

The objective of the green audit is to assess environmental activities on and off campus that have an impact on the campus's eco-friendly ambiance.

A "Green Audit" is described as the systematic identification, quantification, recording, reporting, and analysis of environmental components of an institution. Pollution, improper use of resources, poor waste management, climate change, deterioration of ecosystems, and extinction of species have prompted organizations to adopt a systematic approach to environmental management through the implementation of environmental management systems.

Environmental auditing is the process of comparing an organization's environmental performance to the policies and goals set by the Indian government. The goal of a green audit is to find out how its practices affect the environment. As part of this practice, an internal Environmental Audit and a Green Audit are done to see how things really are on campus. Because of this, it is important for the institute to adopt the Green Campus system.

On **May 4, 2023**, an Environmental Auditor and a team from Nature Adobe Systems Audit inspected the college as part of the Green Audit. Before the Audit, the team compiled a series of questions and a list of other essential points to note.

During the audit, the team went to every part of the college campus, including classrooms, the library, bathrooms, the seminar hall, staff rooms, the administration office, departments, practical labs, etc. The institute was running normally during the audit.



The Green Auditor Team came to the location.

3. Methodology for Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a systematic process to identify, predict, and evaluate the environmental effects of proposed actions to aid decision making regarding the significant environmental consequences of a project on the environment.

To perform a green audit, the methodology included different tools such as the preparation of a questionnaire, a physical inspection of the campus, observation and review of the greenery, interviews with key persons, and recommendations. It works on several levels of "green campus," including water conservation, water management, energy conservation, tree plantation and waste management, e-waste management, green area management, paperless work, etc. The specific objectives of the audit are to evaluate the adequacy of the management control framework for environmental sustainability. It can have a tremendous impact on student health and the learning environment.

4. Scope and Goals of Green Auditing

A clean and healthy atmosphere facilitates successful learning and provides a setting conducive to learning. There are numerous initiatives worldwide to address environmental education concerns. Green Audit is the most eco-friendly and effective method for addressing environmental issues. It is a form of professional care for which all economic, financial, social, and environmental stakeholders are responsible. It is vital to conduct green audits on college campuses so that students are made aware of green audits and their benefits in preserving the environment, and so that they develop into responsible members of society. Thus, a Green Audit becomes essential for colleges. The anticipated result of an environmental management system consists of:

1. Enhancement of environmental performance
2. Fulfilment of compliance obligations
3. Achievement of environmental objectives

5. Objectives of Environmental and Green Auditing

The objectives of environmental and green auditing can be summarized as follows:

1. Assess and monitor compliance: Ensure that organizations are adhering to environmental regulations, standards, and best practices.
2. Identify environmental risks and opportunities: Identify potential hazards, risks, and areas for improvement in environmental performance.
3. Enhance resource efficiency: Promote the efficient use of resources such as energy, water, and materials to minimize waste and environmental impact.
4. Improve environmental management systems: Evaluate the effectiveness of an organization's environmental management systems and suggest improvements for better environmental performance.
5. Promote sustainability: Encourage sustainable practices and initiatives that consider the long-term environmental, social, and economic impacts.

6. Engage stakeholders: Involve various stakeholders, including employees, communities, and regulatory bodies, in environmental decision-making and actions.
7. Enhance transparency and accountability: Provide a comprehensive assessment of an organization's environmental performance to stakeholders and promote accountability for environmental actions.
8. Facilitate continuous improvement: Support organizations in implementing measures to continuously improve their environmental performance over time.

These objectives collectively aim to foster environmentally responsible practices, reduce environmental risks, and promote sustainable development.

6. Location for Green Audit

The West Khandesh Bhagini Seva Mandal's Art's, Commerce and BCA College, Dhule; is located in the state of Maharashtra, India. The approach road is busy as it is a State Highway and thus, the road has considerable traffic throughout the day. The college is located in a commercial area.



Geographical Location of the College

7. Green Audit Procedural Steps

The Green Audit Procedural Steps covered 15 major areas, which were further divided into subareas. The compliance was checked in following areas and assessment is done by using different assessment tools, like Visual inspection, Questionnaires, Check list, etc.

1. Day light Design and Ventilation
2. Water Efficiency
3. Rainwater Harvesting
4. Indoor Air Quality
5. Energy Efficiency
6. Temperature and Acoustic Control
7. Wastewater Management
8. Paper Waste Management
9. E-Waste Management
10. Solid Waste Management
11. Liquid Waste Management
12. Universal Access and Efficient Operation and Maintenance of Building
13. Green Belt
14. Botanical Garden
15. Green Programs (Green initiatives)

8. Good day light Design and Ventilation

The institute has:

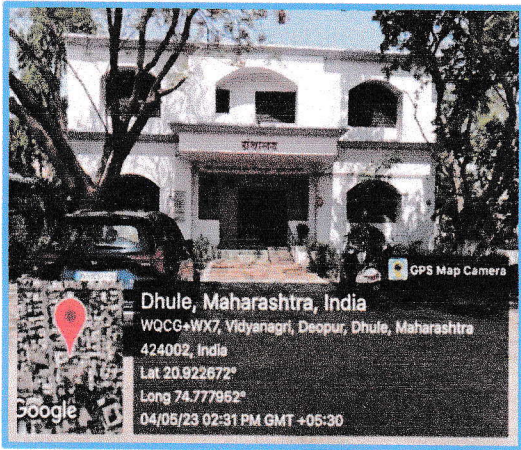
1. Well ventilated classrooms with wide doors and large glass windows.
2. Corridors are wide with high ceiling.
3. Light colored curtains are provided on the windows to avoid glare, but it allows the sunlight.
4. LED tube lights are provided in the classrooms & corridors, which save electricity.
5. Classrooms have fans, which help in ventilation.
6. Washrooms have windows to disperse heat, fumes and odors.



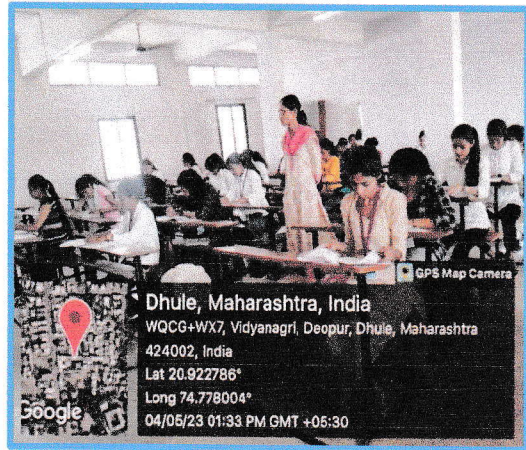
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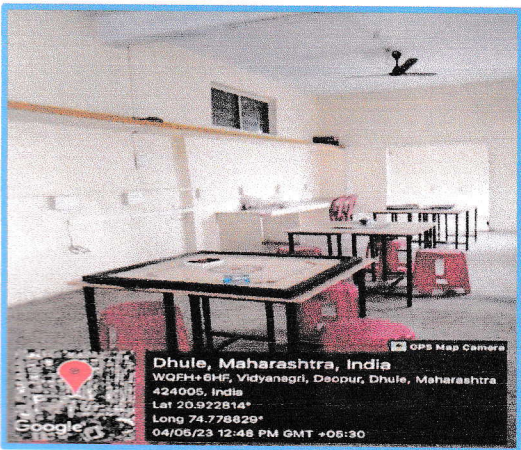
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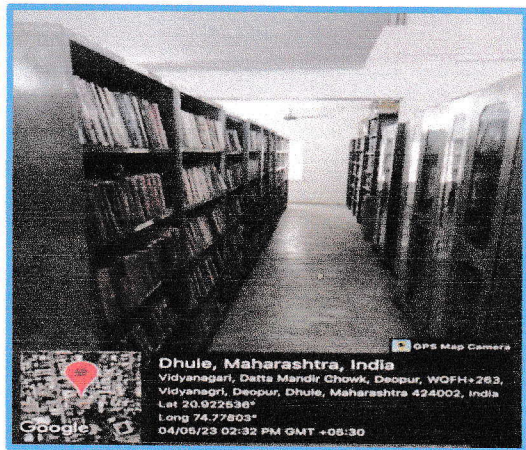
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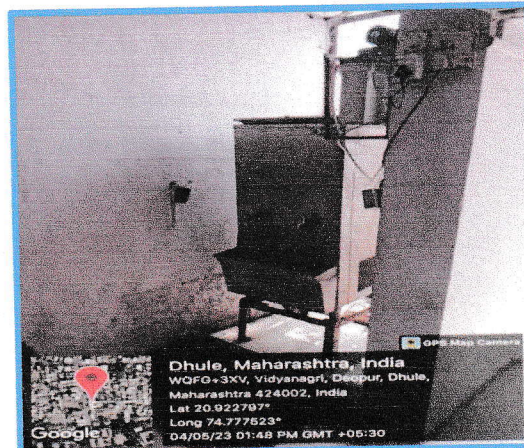
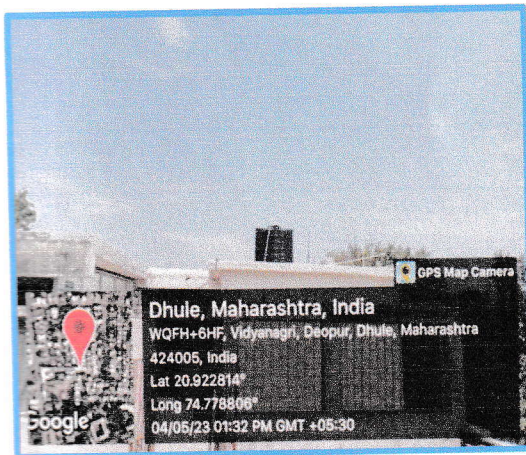
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9. Water Efficiency

The main source of water is Boar Well to the institute. Water used in institute for many purposes like drinking, flushing, cleaning the toilets etc.

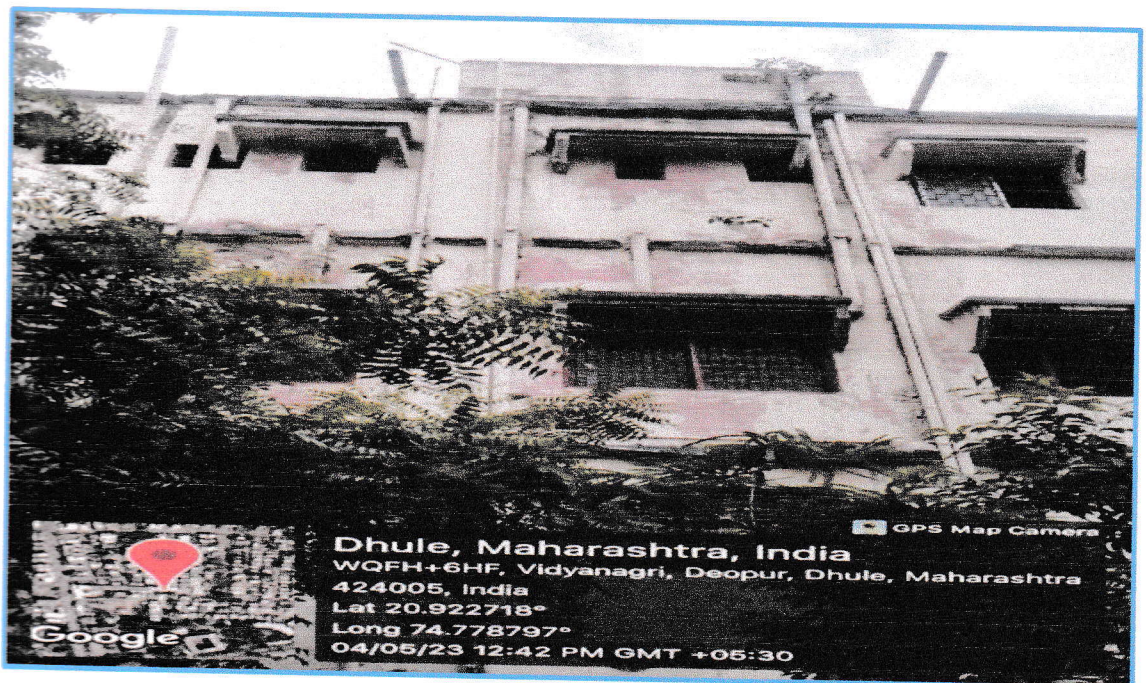
Major observation during the audit is listed below:

1. Each floor has drinking water facility.
2. Water is used for toilet flushing.
3. Water is used for floor cleaning.
4. Wash basins are provided with well working conditions.
5. No leaking faucets were seen anywhere. If water leakage is observed, maintenance department is called immediately to attend to the complaints.
6. Rainwater harvesting, a sustainable source of water, is practiced.



10. Rainwater Harvesting

A rainwater harvesting facility is available for the recharge of groundwater. The college building design has provision for the collection of rainwater. The building design includes PVC piping at various points. The rainwater is carried through the pipeline and discharged into the concealed underground soil. The rainwater is discharged into a big soak pit at the side of the college building. It is filled with pebbles and stones and fully covered. The percolation rate of a recharge pit is much lower than that of an open well. The water percolates slowly because there is no hydrostatic pressure in the pit. The rainwater harvested thus helps recharge the groundwater. A groundwater recharge pit allows the rainwater to replenish the bore well and groundwater by recharging the underground aquifers.

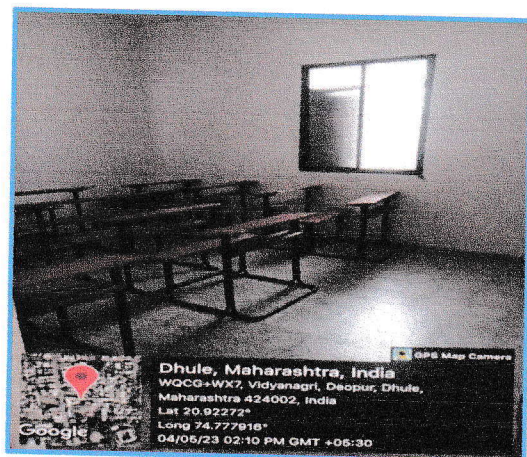


11. Indoor Air Quality

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, which directly impacts the health and comfort of building occupants. ⁴

Some common indoor pollutants include:

1. Carbon monoxide: This is primarily emitted through incomplete combustion of fossil fuels.
2. Carbon dioxide: The main source of carbon dioxide indoors is human respiration.
3. Particulate matter: Due to construction and maintenance activities, the institute has observed the following issues:
 - a) Washrooms without exhaust fans.
 - b) Insufficient indoor plants compared to the recommended amount for the entire campus.



12. Energy Efficiency

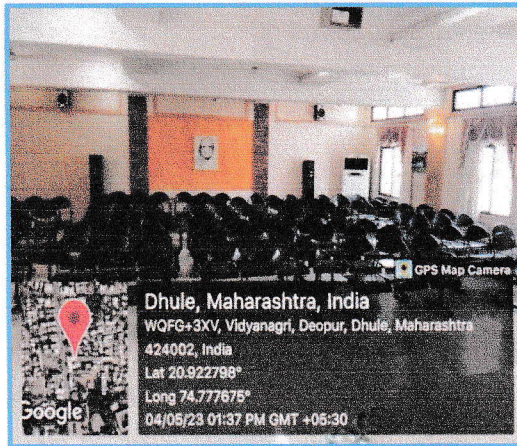
The areas of major electricity consumption in the institute are as follows:

1. Computers: The College has a total of 98 working computers.
2. Lighting: The institute has the following lighting fixtures:
 - a) LED Lights: 42
 - b) Tube lights: 155
 - c) Bulbs: 6
 - d) Fans: 142
 - e) Table fans: 6
 - f) Coolers: 2
 - g) Exhaust fans: 1
3. Air Conditioners: There are 10 air conditioners in use.

The design of the buildings incorporates measures to save electricity through the utilization of natural light and air. Some observations include:

1. Classrooms, labs, faculty rooms, and seminar halls are equipped with windows and curtains that allow natural sunlight, leading to electricity conservation.
2. The spacious classrooms have large windows that facilitate the flow of fresh air, reducing the need for electricity.
3. LED lights are installed throughout the campus, which are eco-friendly and energy-efficient. LED lights can save up to 75% of energy and are 25 times more durable than incandescent lights.
4. The college buildings are designed to be naturally ventilated, further reducing the reliance on electricity.
5. The institute ensures the avoidance of electricity wastage by conducting checks after classes/lectures and office hours end.
6. Signage is used to encourage users to switch off lights and fans to save electricity.

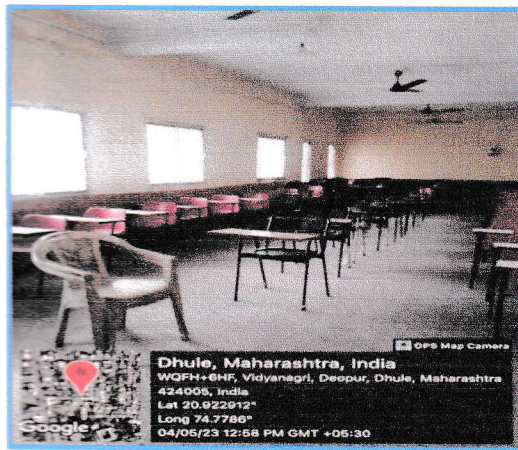
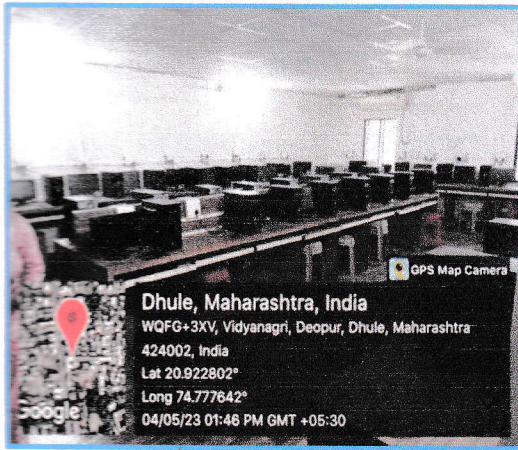
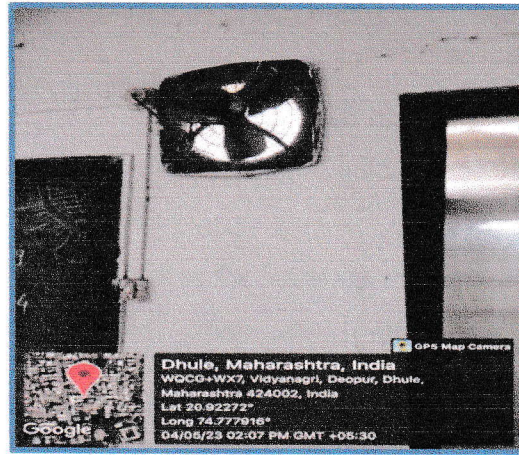
By implementing these measures, the institute aims to minimize electricity consumption and promote energy efficiency.



13. Temperature and Acoustic Control

It is observed that the institute has:

1. The institute has white-washed rooms and passages, which improve the lighting conditions by enhancing the reflection of light.
2. Acoustic control walls are installed in the seminar hall and meeting rooms. These walls are designed to minimize sound exposure and improve the acoustics in these spaces.



14. Wastewater Management

Major observations under wastewater management are listed below:

1. Sanitary wastewater generated from washrooms is typically connected to the Municipal Corporation's sewerage system.
2. Wastewater generated from the canteen is also directed to the sewerage system.
3. Additionally, wastewater generated from wash basins is connected to the sewerage system.

15. Paper Waste Management

The institution has implemented various measures to minimize and reduce paper usage because waste paper constitutes a significant portion of the solid waste generated on the premises. The following observations were made:

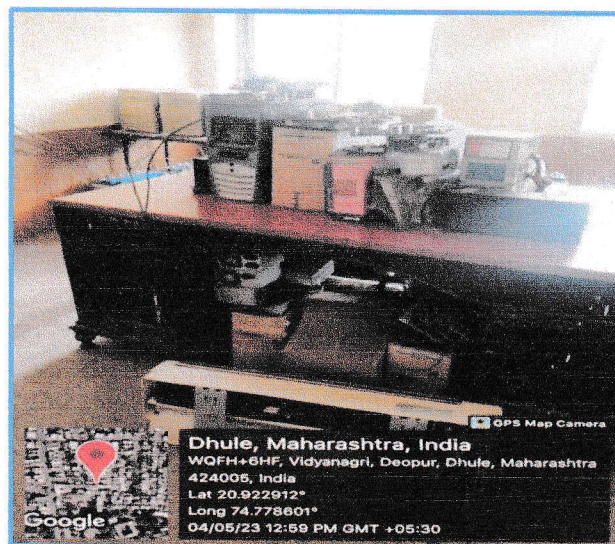
1. Official processes such as official work, accounting, etc., have been transitioned to paperless systems, in accordance with the Government of Maharashtra's policy.
2. Communication with all departments and internal notices primarily utilize email and SMS.
3. Prints and photocopies are made on both sides of the pages to minimize paper consumption.
4. Important paper notices are displayed on notice boards and also communicated through bulk SMS services available within the institution, ensuring that all students and faculty members receive the information.
5. The library utilizes Microsoft software, which includes a comprehensive database of library books, significantly reducing the need for paper-based records.

16. E-Waste Management

E-waste refers to electronic equipment that is either nearing or at the end of its useful life.

It was observed that:

1. The e-waste and defective items from the computer laboratory are being stored properly.
2. The institution has decided to engage an approved e-waste management and disposal facility to ensure the proper disposal of e-waste in a scientific manner.
3. It has been observed that e-waste is collected and then resold to retailers who are in contact with the college. This process ensures that the college promotes recycling.



17. Solid Waste Management

It was observed that:

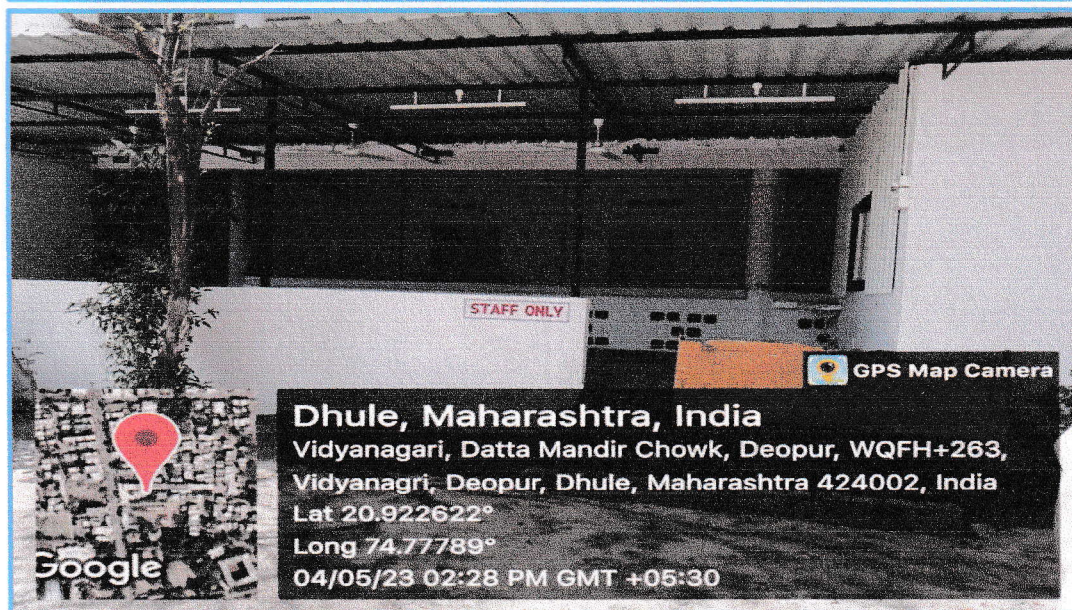
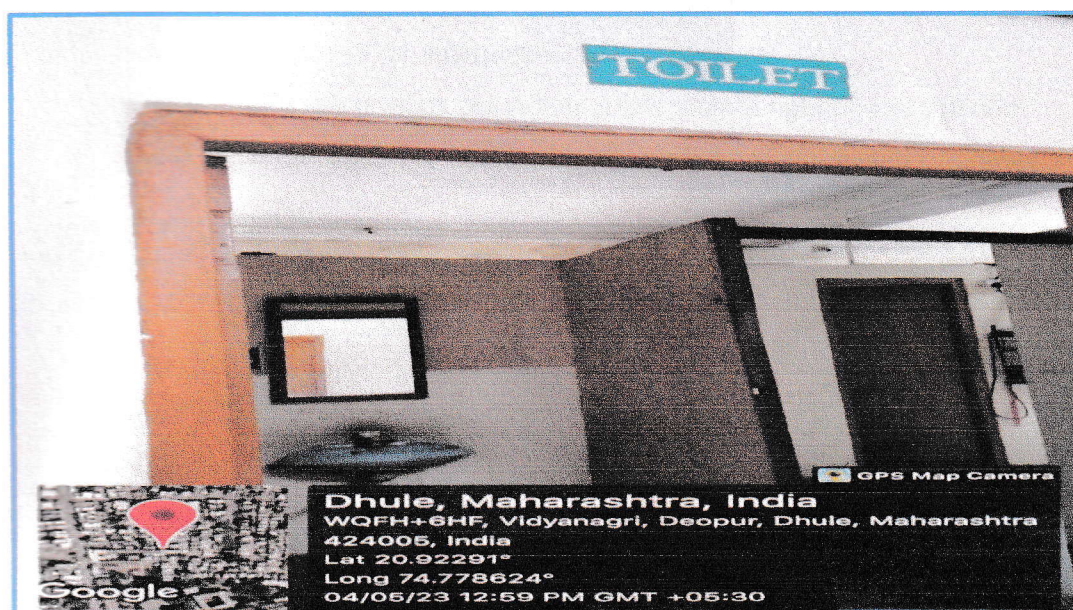
1. The combined waste is directly handed over to the waste collector van of the Municipal Corporation.
2. The biodegradable waste is processed in a waste pit.
3. Students, teaching staff, and non-teaching staff all participate in the Swachh Bharat Abhiyan.
4. Separate bins are not provided for wet biodegradable and dry recyclable waste.
5. The canteen generates a significant amount of biodegradable and non-biodegradable waste, which is disposed of properly.
6. Dripping and leaking taps are repaired periodically to ensure effective water use.
7. Processed water is used for gardening and maintaining the campus area.



18. Liquid Waste Management

It is observed that:

1. Liquid waste from the Chemistry, Microbiology and Biotechnology laboratories is processed as per the guidelines.
2. Dripping and leaking taps are repaired time to time for effective use of water.
3. Processed water is used for garden and maintenance of lawn.



19. Universal Access and Efficient Operation and Maintenance of Building

For ensuring universal access and efficient operation and maintenance of building:

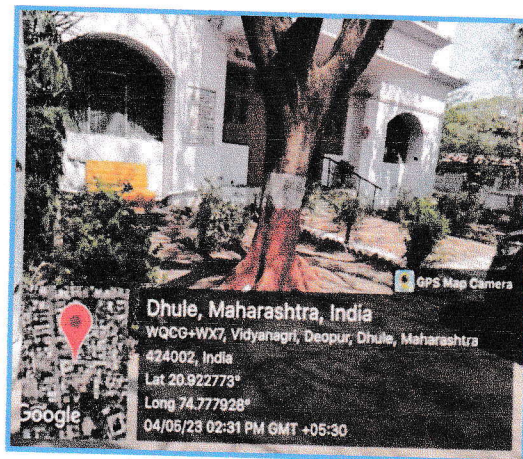
1. Ramp facilities are available for differently-abled individuals, ensuring safe and accessible movement.
2. The access and staircases are wide and free from clutter, allowing for a safe evacuation in case of an emergency.
3. Wide windows are present, providing ample natural light and ventilation.
4. Fire extinguishers and fire hydrants are provided for emergency situations.

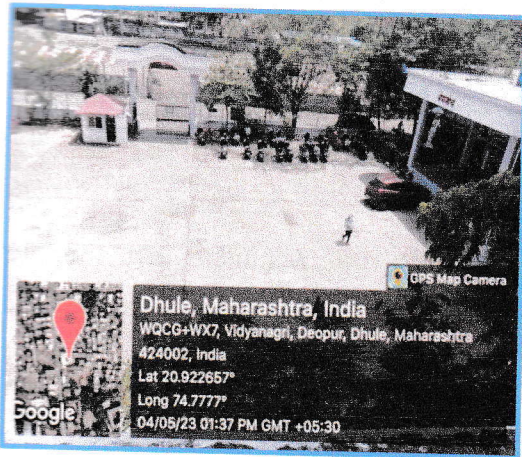


20. Green Belt

Following are the observations made during the audit:

1. The college has a spacious campus with ample space available for landscaping, including areas other than just the vicinity of the compound walls.
2. Both the faculty and students actively participate in the Swachh Bharat Abhiyan.
3. Students organize various activities such as rallies, media campaigns, and clean campus drives.
4. Green Campus: The campus features a partial green cover, surrounded by evergreen trees. A dedicated staff is recruited for the maintenance of the garden.

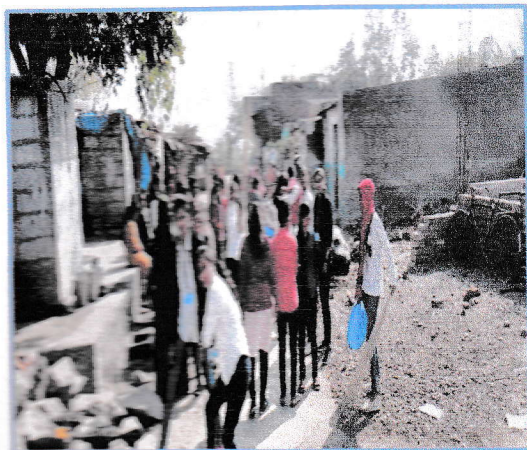




21. Green Programs (Green initiatives)

1. **Plastic-Free Campus:**
 - a) The use of plastic is strictly prohibited on the campus, and as a result, the college has implemented various green initiatives, leading to the declaration of the campus as a plastic-free zone.
 - b) The college educates students about the harmful effects of plastic through environmental courses and counseling sessions.
 - c) Students willingly participate in the "No to Plastic" campaign.
2. **Use of Bicycles:** There is a growing environmental consciousness among students, resulting in an increasing number of students who prefer using bicycles.
3. **Pedestrian-Friendly Roads:** Both students and staff utilize pedestrian roads, promoting a pedestrian-friendly environment.
4. **National Service Scheme (NSS):**
 - a) The NSS aims to foster social welfare among students and provide service to society without bias.
 - b) NSS volunteers actively engage in various activities, including organizing blood donation camps, promoting cleanliness and health awareness, and participating in the Swachh Bharat Abhiyan.
 - c) They also actively participate in cleaning activities at bus stands and other public places.
 - d) NSS conducts student rallies to raise awareness about cleanliness in public areas.





22. Recommendations/Suggestions

22.1 Improving Energy Consumption:

1. Every classroom and lab with a central switchboard should have a diagram linking the placement of tube lights, fans, etc., with their corresponding switches. This will ensure that the correct fixtures are switched on/off, saving time and avoiding unnecessary operations.
2. Conduct awareness programs for students and staff to promote energy conservation.
3. Display notices or signage near switches and on notice boards, reminding students and staff to switch off all electrical appliances when not in use.

22.2 Water Conservation:

1. Implement a system for small-scale, medium-scale, and large-scale reuse and recycling of water within the campus.
2. Reduce water usage by installing water-saving faucets, such as tap aerators, and implementing dual-flushing systems in toilets.
3. Consider installing waterless urinals to minimize water consumption.
4. Promote efficient water use by providing information on water usage and savings through notices and screen savers in computer labs.
5. Conserve and recycle wastewater through a filtration process.

22.3 Paper and Solid Waste Reduction:

1. Create awareness among students and staff (teaching and non-teaching) about proper management of solid waste generated on the premises.
2. Encourage recycling by establishing a group where students can recycle books, personal clothes, and other materials for needy students. This can be part of a green initiative.
3. Organize training and awareness programs on the segregation of biodegradable waste and waste recycling.
4. Utilize biodegradable waste from the canteen for composting purposes.

22.4 Other Measures:

1. Establish an environmental advisory committee.
2. Incorporate environmental awareness as part of the coursework in various subjects.
3. Implement research projects and community service initiatives related to the environment.
4. Adopt an environmentally responsible purchasing policy and work towards reducing the environmental impact of purchasing decisions.
5. Consider implementing a small-scale bio-gas project to treat biodegradable waste from the canteen.
6. Conduct an annual audit and take action based on the audit report, recommendations, and findings.
7. Establish a College Environmental Committee responsible for enacting, enforcing, and reviewing the Environmental Policy.
8. Celebrate June 5th as "Environment Day" every year and organize tree-planting activities to make the campus greener.

Annexure

1. Institute Layout

