

ENVIRONMENT AUDIT

Study Period (TWO YEARS) 2021-22 & 2022-23

Sustainability study

AUDIT REPORT

Studied for

SUFA EDUCATIONAL AND WELFARE SOCIETY'S

D.S.R. College of Education

Gut No:17, Near Sharnapur Railway Crossing, Wanjarwadi Road, Aurangabad.
MS - 431005



Valid till June 2024

Disclaimer

The Audit Team has prepared this report for the **SUFA EDUCATIONAL AND WELFARE SOCIETY'S D S R College of Education** located at Gut No:17, Near Sharnapur Railway Crossing, Wanjarwadi Road, Aurangabad based on the data submitted by the College and analyzed by the team to the best of their abilities. The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on a comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution. These can be implemented phase-wise or as a whole depending on the decision taken by the Hon'ble Management and College. The warranty or undertaking, expressed 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.

The audit is a thorough study based on the inspection and investigation of data collected over a while and should not be used for any legal action. This is the property of and should not be copied or regenerated in any form.

Greenvio Solutions

We are an Environmental and Architectural Design Consultancy firm
Maharashtra- 401208

Acknowledgment

The Audit Assessment Team thanks the **Sufa educational and welfare society's D S R College of Education** for assigning this important work of Energy Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Dr. Shaikh Ramzan**, Chairman; **Mr. Anwar Husain** Secretary; **Mr. Shaikh Bashir**, Member; and everyone from the Management.

Our heartfelt thanks to the Chairperson of the entire process **Dr. Syed Azaz Ali**, Principal, for the valuable input.

We are also thankful to **College's Taskforce and the faculty members** who have collected data required– **Dr. Shaikh Mohammadi**. and **Dr. Syda Qudsiya, Mr. Kakasaheb Randive, Dr. Shirin Riyaz Patel (Special mention for the excellent coordination)**

We highly appreciate the assistance of **Mr. Fazel Ahmed Khan and the entire Teaching, Non-teaching, and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

1. Introduction.....	4
2. Institutionoverview	6
3. GreenBuildingStudyAudit.....	8
4. Site Study	9
5. Ecological(Environmental)Audit.....	10
6. TowardsaHealthy&SustainableInstitution	16
7. References.....	17

1. Introduction

About the Institution

D S R College of Education has always been a hub of innovative activity and is continuously on the lookout for opportunities to collaborate with the industry as well as other academic institutions the world over.

Innovation and research at the Institute has been given a fillip with the establishment of Centers of Excellence in various areas ranging from Public Policy and Corporate Governance to Insurance to Financial Markets and Risk Management. The D S R College of Education was conceptualized as the University's response to the manpower needs of labor market that was rapidly overtaken by advances in the field of Managements.

A feature that sets apart D S R College of Education from other T-colleges is the carefully selected mix of students with diversity as a stated objective so that students can leverage from each other's experience in addition to theoretical studies in the classroom, thereby creating a truly enriching learning experience.

As the global business scenario gets increasingly complex and dynamic, D S R College of Education prepares students to manage and lead in such dynamic business situations by providing a diverse and challenging environment where they can learn and grow and finally walk out, ready to lead and inspire.

The College has a motto of ***“Quality teacher Education for Minority Community”***. It provides the Teacher Training program. The College works towards training young men and women to be competent, committed, and compassionate, and lead in all walks of life.

Statements of the Institution

Vision

The institute envisions to *The vision of the College states, 'No Profit No Loss Bases Quality Education for minority community'.*

Mission

The College seeks to realize its Vision with a Mission to:

The mission of Our College is to be a better future for all and to provide innovative educational environment, opportunity and experiences individuals from minority communities

The surrounding premises around the Institution

The Premises is situated amidst the landscape serene **Aurangabad region of Maharashtra state** with immense peace and calmness in the surroundings as there are residential areas around the premises. The location of the College is feasible to the nearby essential amenities such as Public Health

Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens, and Police Station which are not too close but nearby.

Assessment of the College

Affiliations and approvals

The College has all its courses **approved by NCTE, recognized by Government of Maharashtra & Affiliated to Dr. Babasaheb Ambedkar Marathwada University.**

Certification

- **AISHE** – The code is c-34380

2. Institution overview

Populace analysis for the Academic year 2021-22

Students data

The student data (shared by the College) shows there were a total of **67 Boys and 46 Girls students**, thus there were **a total of 123 students** on the premises.

Staff data

Type	Male	Female	Total
Admin Staff	2	0	2
Teaching Staff	4	6	10
Non-Teaching Staff	5	2	7
Total Staff Members	11	8	14

The staff data shows the premises had a total of **19** Staff Members.

Populace analysis for the Academic year 2022-23

Students data

The student data (shared by the College) shows there were a total of **57 Boys and 54 Girl students**, thus there were **a total of 111 students** on the premises.

Staff data

Type	Male	Female	Total
Admin Staff	2	0	2
Teaching Staff	13	8	21
Non-Teaching Staff	7	1	8
Total Staff Members	22	9	31

The staff data shows the premises had a total of **31** Staff Members.

Total College Area & College Building Spread Area

The **total site area is 3 acres** and the **total Built-up area of the College is 37,997 sq. ft.** for a **total of 159 footfalls.**

College Infrastructure

Establishment

The college is established in 2003. The college is located pretty close to nature and hence has a very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building.

Spatial Organization

The overall ambiance of the College is warm and inviting. The classrooms and other Spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The color palette not just helps the building to stand out but also provides an Institutional arena. There are provisions for lifts and a staircase for accessibility on the premises, whereas there are amenities such as CCTV, Fire extinguishers, smoke detectors, a first aid box, etc.

Operation and Maintenance of the premises

The interview session was held with the staff regarding the operation and working hours. The Institution is open from Monday to Saturday. The first and third Saturdays are off. The schedule is mentioned below.

S. No.	Section	Spaces	Time	Hours/ day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	10:00 a.m. to 05:00 p.m.	6	280
2	General areas	Admin areas and library, Passage, staircase, toilet	09:30 a.m. to 05:00 p.m.	7.5	300

3.Green Building Study Audit

About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a sustainable and healthy premises for its inhabitants.

Analysis of the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rainwater harvesting and Wastewater treatment on the premises.
- Waste Audit - Current waste produced, its segregation, and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape of the premises
- Analysis of the flora and fauna of the premises
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

Timeline of the activities for the Green Building Study Audit

- | | |
|----------------|---|
| • 02 May 2022 | – Allotment and Initiation by the College |
| • 23 May 2022 | – Induction Meeting |
| • 31 May 2022 | – Data submitted by College |
| • 09 June 2022 | – Submission of the Report |

4. Site Study

The following listed are some of the positive site elements which are beneficial to the college in terms of tangible and intangible benefits.

- **Location** - The DSR College of Education is located at Gut no 17, Sharnapur Railway Crossing, Wanjarwadi Aurangabad Maharashtra 431005.
- **Neighborhood context** - The premises are surrounded by open spaces and Residential, Commercial, and Educational areas in the immediate surroundings of the site.
- **Natural physical features** – The premises includes rich biodiversity and a good number of plants in the adjacent open space. The site does not have a major difference in the land levels (contours).
- **Manmade features** – The premises are situated in an Rural area amidst areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for the entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation** – There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff are parked.
- **Climate** – Aurangabad has a tropical climate. In winter, there is much less rainfall than in summer. According to Köppen and Geiger, this climate is classified as Aw. The average annual temperature in Aurangabad is 24.3 °C | 75.7 °F. The annual rainfall is 1200 mm | 47.2 inches.

Ecological (Environment) Audit



5. Ecological (Environmental) Audit

The environment is an essential part of human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, and fauna that exists and steps that can be taken to improve the same. To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint, it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premises. Health today is the topmost priority and a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. The universal design applies to all built and inbuilt spaces.

As part of our study, we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

Open Space

The college has an open space used by all. The students use it as a leisure place for study and the college ground is used for sports activities. There are ample resting spaces as part of the building design which provides a resting and warm welcoming approach on the premises.

Flora audit

A flora survey was carried out to identify the total number of plants and trees.

The landscape area has a variety of plantations constituting hundreds in numbers. Most of the trees have been planted by students, staff, management, Principal non-teaching staff, and office staff on several occasions and also during the plantation drives. **A few trees have grown naturally and have been conserved at their respective locations to maintain the beauty of the premises.** The detailed study of each type of plantation is as follows.

S. No.	Plant Name	Type	Nos.	Planted by
1	Coconut	Tree	04	Chairman
2	Guava	Tree	03	Chairman

3	Badam	Tree	10	Chairman
4	Jambhul	Tree	01	Chairman
5	Gulmohor	Tree	02	Chairman
6	Ashoka	Tree	02	Chairman
7	Raintree	Tree	07	Chairman
8	Tamarind	Tree	01	Chairman
9	Mango	Plant	17	Chairman
10	Neem (Azadirachta Indica)	Tree	05	Chairman
11	Nilgiri	Tree	01	Chairman
12	Peepal- Ficus	Tree	01	Chairman
13	Saptharni	Tree	11	Chairman
14	Ficus bush	Shrubs	07	Chairman
15	Golden Duranta	Shrubs	12	Chairman
16	Banana	Shrubs	01	Chairman
17	Papaya	Shrubs	03	Chairman
18	Sagwan	Tree	12	Chairman
19	Bamboo	Tree	14	Chairman
20	Olive	Tree	02	Chairman

Table 4: Details of the Trees on the premises

At present, there are 20 types and 109 numbers of plantations on the premises. The benefits of having trees on the premises are innumerable, some of the key benefits are providing shade, reduction in noise pollution by acting as noise barriers and maintaining the silence zones, interactive outdoor learning spaces, lowering the stress levels by staying connected with the nature, and the use of dried leaves to for organic composting.

Noise Audit

Macro level

On a macro level, there are open grounds on the site. The approach road however has some traffic. As the college is oriented amidst the residential areas with sufficient vegetation the noise levels do not affect the students and staff in their day-to-day functioning. The approach road is pretty away. **Overall the noise level in terms of bad effects is moderate and there are positive outcomes as per our analysis on a macro level.**

Micro-level

The college has an adequate open space covered with huge trees prevailing naturally on the premises which act as a noise barrier; in addition, the Institution building is surrounded by Residential Buildings which further act as a benefit in reducing any noise pollution. There is no particular equipment that causes any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

Carbon Footprint Audit

Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting** – Owing to the proximity to public transport the access is very feasible and walkable.
- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 40-60%
- **Commute details** – The students and staff commute from multiple places. The details are summarised below.

Distance from College	Student	Staff
Within 5Km	40	10
Beyond 5Km	13	0

Table 5: Details of the places students and staff commute from

Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of the Urban Heat Island Effect which refers to an increase in temperature of the surroundings because of ineffective strategies.

- **Exposed roof areas** – The terrace is a flat roof that is absolutely clean and well maintained. There was no weathering of the roof observed. The current practices are well maintained.
- **Exposed non-roof hard scape areas** - There are pathways with natural and potted plantations which act as a buffer and help keep the harmful effects due of the urban heat island effect under control.

There are adequate measures adopted on the premises to reduce the heat island effect of Building roofs and on the site.

Outdoor Light Pollution Study

The college compound lights are not upward-looking thus, these do not cause light pollution.

Universally accessible premises

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities make it 15% of the total population of India.

There are ramps, handrails along the staircase, and low height risers in the staircases as part of universally accessible premise initiatives. The design of the premises is appropriate for access with corridors being wide enough in size. The doubly and singly loaded corridors are safe from the fire safety aspect.

Fire Safety

The Institution has undertaken adequate fire safety measures. Each floor has an open staircase without any barriers and fire extinguishers for fire safety measures. These staircases are free of any kind of storage or combustible material. **Our observation was that there are good measures adopted, however, measures such as sprinkler system, smoke detector, hydrant system, and fire safety specific signages should be present on the premises.**

Positive site features as per our study

a) Avoid using plastic on-premises

There are provisions for a ban on the use of plastic bags or products on the Premises.

b) Paperless technologies

The college has gone technology-friendly and paperless in the functioning of the Premises.

c) Avoid using plastic in premise

There are provisions for a ban on the use of plastic bags or products on the Premise.

d) Ample greenery

There are provisions for the garden and plenty of traditional trees on the premises.

e) User-friendly mobility on-premises

There are provisions for Ramp near the main entrance of the Building premises, also low height handrail for ease of access.

Recommendations for a Sustainable Habitat

Site beautification

a) Low VOC Paints and Adhesives

Whenever the College undergoes repairs or renovations there should be the use of materials with low emissions to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

b) Additional facilities for birds

There can be provision for drinking water and food facility for birds visiting the College premise.

c) Nutrition pits

Certain pits can be demarcated as 'Nutrition pits' where the organic food from the kitchen and Canteen fruit peels and fruits or vegetables can be degraded for making nutrition-rich soil

Heat island reduction

a) Cool rooftops

It is suggested that the College gets the Terrace roofs painted with Cooltop as it will help reduce the temperature of the spaces.

b) Grass pavers in the setback areas

The college can have grass pavers in replacement to existing paving for further heat island reduction on exposed non-roof areas

Universally accessible premises

a) Universal Toilet

There should be a minimum of 1 toilet for the specially-abled people as per guidelines prescribed by the National Building Code 2016 with size being a minimum of more than 1.5m x 1.5m

b) Resting places

There should be increased provision for resting places on-premises outdoor and indoors.

Pollution Control

a) Promote the use of Eco-friendly vehicles

There can be provision for battery-operated vehicles/ low emission vehicles such as electrically driven vehicles parking in open spaces along with battery charge points, this would inspire students to change their mode of transportation and adopt sustainable practices.

b) Bicycles as a gift

As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.

Smart and responsible environment systems

a) Smart Gardening System

The College can undertake a Smart Gardening system using Technology such as an automated watering system. This will result in saving time by scheduling time for watering; Saving money and water as smart irrigation systems have automated water schedules in addition to tracking dampness of soil which helps the irrigation system know when and how much the garden needs. It also helps in healthier plants as with the help of apps, smart irrigation systems, or even smart growing containers, these tasks can be provided evenly and allow the plants to be healthier and more productive.



On-site investigation and physical verification

The ecologically friendly ambience with facilities such as parking, greenhouses and gardens



2. Towards a Healthy & Sustainable Institution

Recommendations based on the study

In addition to the recommendations provided in each section; the College can adopt the following strategies for Healthy and Sustainable Institution practices.

- a) **Cutlery in the Canteen** – The regular plastic and steel plates, and spoons used in the Canteen can be replaced with eco-friendly/ organic leaves, paper straws, disposable plates, and edible spoons made out of sugarcane waste or bamboo.
- b) **Eco clubs** – There can be an eco-club with students working on pilot projects toward the environment and surrounding up-gradation.
- c) **Terrace farming** - There can be a provision for terrace farming; this would enhance the biodiversity, increase awareness, and food grown can be used in Canteen.
- d) **Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially-abled students.



3. References

1. Uniform Plumbing Code – India, 2008
 2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
 3. IGBC Green Landscape Rating system, March 2013
 4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
 5. Used only for understanding Universal design - Universal Accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National center for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.
 6. U.S. Energy Information Administration
-

