

# ENVIRONMENT AUDIT

2019-21

## AUDIT REPORT

Studied for

**Dr. Babasaheb Ambedkar Memorial Society's**

**Dr. Ambedkar College of  
Arts, Commerce and Science**

Civil Lines, Chandrapur – 442 401

Analysed by



**21 December 2021**

# Disclaimer

Green Audit Team has prepared this report for the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** based on input data submitted by the College analysed 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 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 on-site investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm along with Ar. Nahida Shaikh as an Accredited Green Building Professional.

## Greenvio Solutions

*Developing Healthy and Sustainable Environments*

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## Acknowledgement

Green Audit Assessment Team thanks the **Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Hon'ble Arun Ghotekar, President; Hon'ble Ashok Ghotekar, Vice President; Hon'ble Waman Modak, Secretary** and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Rajesh Dahegaonkar, Principal** for his valuable inputs.

We are also thankful to College's Task force the faculty members who have collected data required for green audit **Dr. Amrut Lanje, Associate Professor; Dr. P. H. Munjankar, Associate Professor** and **Dr. Nitin D. Ghugare; Assistant Professor**.

The kind gesture for the inventory and data collection of the **Admin Staff** is quite commendable.

We highly appreciate the assistance of **the entire Teaching and Non-teaching staff** for their support while collecting the data.

### **Sustainable Academe**

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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DETAILED REPORT

# 1. Introduction

## 1.1 About the Dr. Babasaheb Ambedkar Memorial Society, Chandrapur

**It was formed on 21 June 1970 by Late Bar. Rajbhau Khobragade.** The Society has implemented the goal of educating the students in the best way possible by uplifting the academic status of the students through quality education and adopting the local village for overall community development. Meticulous joint efforts of the students and staff have made the institution one of the most sustainable premises in the locality.

## 1.2 Vision of the College

To kindle the spirit of learning among the youth, to uplift the lives of downtrodden, Minority communities, eradicate their poverty and make them lead a sustainable life, to consistently pursue excellence preserving the tradition of high reputation while meeting the challenges of globalised world.

## 1.3 Institution and the surrounding premises

The Premises is situated amidst the landscape serene of **Chandrapur district of Maharashtra State** with immense peace and calmness in the surroundings. The college is surrounded by open landscape on North and West side, whereas there are residential areas on the East and South side. There is a broad and open to sky frontal approach which provides quite a beautiful appreciation space while approaching the premise. The location of 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.

Dr. Ambedkar College of Arts, Commerce and Science was established on 21st June 1970 and is run by Dr. Babasaheb Ambedkar Memorial Society, Chandrapur. The college was accorded a Buddhist religious Minority Status in 2012. It is situated in the heart of Chandrapur, known as the city of "Black gold". The founder member of this college, Late Barrister Rajabhau Khobragade was the Vice- President of Rajya Sabha in 1960. The primary aim of establishing this college is to eradicate illiteracy among Bahunjan Samaj. The college mainly caters to SC/ST/NT and other backward category students from rural

and tribal areas. The college has a vast campus with facilities like boys hostel, girls hostel, spacious playground, gym, sports facility, canteen, auditorium, library, laboratories, Dr. Ambedkar study centre, NCC, NSS, Career Guidance Cell and Women's Cell. The college has Arts, Commerce and Science faculties and PG courses in English, Marathi, Economics, Political Science, History, Sociology, Geography and Commerce. It also successfully runs PG courses in Electronics, Botany, Zoology, Maths and Chemistry.

The Junior Wing of the college has Arts, Commerce and Science. It also runs higher secondary certificate vocational courses. The college functions efficiently under the guidance of the present Principal Dr. Rajesh Dahegaonkar. The college has efficient and scholarly teaching staff. The teaching and the non-teaching staff work for the betterment of the students.

**The college which started with just 420 students has now over 4500 students studying in various courses. The dream of founder members seems to have been fulfilled.**

- **Bachelors Programme**

- Arts (B.A.)
- Commerce (B. Com)
- Science (B. Sc)

- **Master Programme**

- Arts (M.A. in the following programmes)
  - Economics
  - English
  - Geography
  - History
  - Marathi
  - Political Science
  - Sociology
- Commerce (M. Com)
- Science (M. Sc)
  - Botany
  - Chemistry
  - Electronics
  - Mathematics
  - Zoology

- **Ph.D Programme**

**The College aspires at training young women and men to be competent, committed and compassionate and lead in all walks of life. It has the following aim and objectives.**

- To preserve human values of equality, freedom, fraternity, amity, compassion and tolerance among students.
- To provide opportunities to promising students from Minority communities who have been denied progress and prestige by religious, social system for many years.
- To create opportunities of education for the poor students of rural areas.
- To develop the overall personality of students alongwith their educational, physical, mental and intellectual development.
- To inculcate the spirit of service, sense of sacrifice and social commitment among students.
- To exhort the students regularly to give utmost importance to moral principal in their personal and social life.
- To educate the students in order to make them realize the significance of parliamentary democracy, secularism, socialism and supremacy of Indian constitution and the rule of law.
- To enable the students to accept the change in every walk of life and face the challenges that come along with it.
- To develop analytical, intellectual and logical thinking among students.
- To awaken the students to believe it is not caste, religion, sect, language, region or creed but nationalism which is the supreme loyalty of all.

## **1.4 Assessment of the College**

**Affiliations** - The Institute is affiliated to Gondwana University, Gadchiroli.

**Recognitions** - University Grant Commission (UGC) by 2(f) 12(b)

**Certification** – The Institute has received the following Certifications

- ISO 9001:2015
- NIRF

- AISHE

## Accreditation

The following are details of the reaccreditation of the Institute.

Cycle	First	Second
<b>CGPA</b>	63	2.76
<b>Grade</b>	C+	B++
<b>Year</b>	2004	2017

*Table 1: NAAC Accreditation details of the Institute*

The college is due to enter its Third cycle of NAAC soon.

## 1.5 Achievements of the College

The college has a tremendous track record of excellence in Built form and educational services provided, below are some of the achievements of the prestigious Institute.

S.No.	Faculty name	Award	Year
1.	Dr. Rajesh R. Dahegaonkar (Principal)	Adarsha Shikshak award	2003
		Chatrapati Shiwaji Maharaj award	2003
		Best Educationist Award by International Institute of Education and Management	2018
2.	Dr. V. Y. Gedam (Professor)	State Level Shikshak Ratna award by Samta Sahitya Academy, Pune Shikshak Ratna award	2015
		State Level Best Programme Officer Award as per notification by Government of Maharashtra.	2016
		University Level Best NSS Programme Officer Award during the session 2015-2016 by Gondwana University, Gadchiroli	2016
		Shikshak Ratna award	2015
		Best N.S.S. officer award by Gondwana University, Gadchiroli	2016
		Global Teacher Role Model Award by Manushybal Vikas Lokseva Academy	2019
		Gondwana University Covid Worrier Award by Youth and Sports ministry, Govt. of India	2021
3.	Dr. A. S. Lanje (Asso. Professor)	F.I.P. award by U.G.C.	2007
		Bharat Vidya Rattan Award by Indian Solidarity Council, New Delhi	2018
		Young scientist award	2008



		Best paper award for poster presentation	2009
		<b>I2OR National Elite Teacher Award 2021</b> On 5 September, 2021, by , instituted by the International Institute of organized Research (I2OR) which is a registered MSME with the Ministry of Micro, Small and Medium Enterprises, Government of India	2021
		International Scientist Award on Engineering, Science and Medicine <b>Best Researcher Award</b> By VDGGOOD Professional Association India September- 2021	2021
		<b>Best Paper Award</b> on best oral Presentation for the paper "Dielectric Measurements of Tin Oxide (SnO <sub>2</sub> ) nanoparticles at low Temperature" <b>A. S. Lanje</b> , R. B. Pode, S. J. Sharma, R. S. Ningthoujam and R. K. Vatsa Presented at National Conference on Recent Trends in Basic and Applied Materials Organized by Institute of Science, Nagpur. On 11 & 12 <sup>th</sup> Jan 2009	2009
4.	Dr. P. M. Shende (Asso. Professor)	F.I.P. award by UGC	2007
5.	Dr. S. R. Gawali (Asst. Professor)	Distinguished Fellow Award (FVMS) given by Vishwashanti Multipurpose Society, Nagpur for exceptional Skill Devotion Dedication and Professionalism and Innovative Ideas in Science.	2014
6	Dr. N. S. Ramteke (Asst. Professor)	Mahatma Jyotiba Fule Samta Puraskar given by Samta Sahitya Academy, Yeotmal	2012
7	Shri. M. T. Sontakke (Associate Professor)	Shri Shivchatrapati Shivaji Maharaj Samta Puraskar by Samta Sahitya Academy, Yeotmal.	2012
8	Dr. M. N. Raipure (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Nari Ratna award	2011
9	Ku. B. D. Ratnaparkhi (Asst. Professor)	Krantijyoti Savitribai Fule Samata award	2011
		Dr. Babasaheb Ambedkar Samaj Ratna award	2011
10	Shri. J. R. Chimurkar (Asst. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2012
11	Shri. D. J. Ramteke (Asso. Professor)	Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2011
		Shikshk Ratna Samata Praskar	2012
12	Ku.V. M. Dhadade (Asso. Professor)	Maniratna Shikshak Gaurav Puraskar (Best Teacher award)	2011

<b>13</b>	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
<b>14</b>	Dr. D. M. Pimpalshende (Asst. Professor)	Dr. Panjabrao Deshmukh Samajbhushan Puraskar, Nagpur	2014
<b>15</b>	Shri V. K. Kale (Asst. Professor)	Dr. Babasaheb Ambedkar Teacher award	2009
		Mahatma Jyotiba Fule Samaj Gaurav Puraskar	2013
<b>16</b>	Dr. M. B. Bhagat (Asst. Professor)	Rajiv Gandhi National Research Fellowship award by UGC, Delhi	2006
		Gold medal for Ph.D. Thesis	2012
		Three Gold medal for first University merit	2004
<b>17</b>	Shri. S. G. Petkar (Asst. Professor)	Dr. Babasaheb Ambedkar Shikshak Puraskar	2009
<b>18</b>	Dr. B. M. Moon (Asst. Professor)	Dr. Babasaheb Ambedkar Samaj Ratna Samman	2013
		Matoshri Ramabai Tarun Sanghatna Puraskar	2012
<b>19</b>	Dr. V. P. Dakhane (Asst. Professor)	F.I.P. award	2007
		Second award for poster presentation	2008
		University Level Research Festival	2019
		AVISHKAR -2019 First Award in Category "Medicine and Pharmacy by Gondwana University, Gadchiroli	
<b>20</b>	Shri S. W. Patil (Asst. Professor)	University Level Research Festival AVISHKAR -2019 First Award in Category Pure Science (Post PG Level) by Gondwana university	2019

*Table 2: Details of the various Awards received by the Institution*

## 2. Institution overview

### 2.1 Populace analysis for Academic year 2019-20

#### 2.1.1 Students data

The student data (shared by the College) shows there are total of **1,413 Girl and 1,054 Boys** students.

#### 2.1.2 Staff data

Type	Male	Female	Total
<b>Admin staff</b>	1	0	<b>1</b>
<b>Teaching staff</b>	27	8	<b>35</b>
<b>Non-Teaching staff</b>	12	2	<b>14</b>
<b>Total</b>	<b>40</b>	<b>10</b>	<b>50</b>

*Table 3: Staff data of the Institution for 2019-20*

The staff data shows the premise has a total of **50** staff members.

### 2.2 Populace analysis for Academic year 2020-21

#### 2.2.1 Students data

The student data (shared by the College) shows there are total of **1,566 Girl and 1,197 Boys** students.

#### 2.2.2 Staff data

Type	Male	Female	Total
<b>Admin staff</b>	1	0	<b>1</b>
<b>Teaching staff</b>	28	6	<b>34</b>
<b>Non-Teaching staff</b>	11	2	<b>13</b>
<b>Total</b>	<b>40</b>	<b>8</b>	<b>48</b>

*Table 4: Staff data of the Institution for 2020-21*

The staff data shows the premise has a total of **48** staff members.

## 2.3 Total Institute Area & College Building Spread Area

The **total site area is 5 Acres** and the **total Built-up area of College is 1,09,550 sq. ft.** for a **total of 2,811 footfalls.**

## 2.4 Institute Infrastructure

### 2.4.1 Establishment

The College is run by **Dr. Babasaheb Ambedkar Memorial Society, Chandrapur.** It was established in 1970. The Society has rich tradition of Quality education of over 50+ years. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premise covers quite a few of the requirements for a Green Habitat.**

### 2.4.2 Spatial Organisation

The overall ambience 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 colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premise, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box. The premise houses the following areas:

- Educational Building
- Science Building
- Administrative Office
- Sports Building
- NCC Building

### 2.4.4 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

S. No.	Section	Spaces	Time	Hours / day	Days in a year
1	Degree College	Student areas and Teaching faculty	8:30 a.m. to 5 p.m.	8.5	210
2	General areas	Admin areas and library, Passage, staircase, toilet	8:30 a.m. to 5 p.m.	8.5	210

*Table 5: Schedule of the timings of the premises*

## 3. Green Building Study Audit

### 3.1 About the Green Building Study Audit

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

### 3.2 Analysis for 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 Rain water harvesting and Waste water treatment in campus
- 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 + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of campus

### 3.3 Strategy adopted for Green Building Study Audit

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

### 3.4 Timeline of the activities for Green Building Study Audit

- |                    |                               |
|--------------------|-------------------------------|
| • 9 September 2021 | – Discussion with the College |
| • 30 November 2021 | – Data submitted by College   |
| • 21 December 2021 | – Submission of draft 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 Dr. Babasaheb Ambedkar Memorial Society's Dr. Ambedkar College of Arts, Commerce and Science, Civil Lines, Chandrapur – 442 401 and falls under the Chandrapur district, Nagpur division of the Maharashtra State.
- **Neighbourhood context** - The premise is surrounding by open spaces and Residential and Educational spaces on the immediate surroundings of the site.
- **Natural physical features** – The premise includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major different in the land levels (contours).
- **Manmade features** – The premise is situated in a rural area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for 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 is parked.
- **Climate** – The climate is tropical in Chandrapur. In winter, there is much less rainfall than in summer. The Köppen-Geiger climate classification is Aw. The average temperature is 27.7 °C | 81.8 °F. The annual rainfall is 1245 mm | 49.0 inch. The driest month is December. There is 3 mm | 0.1 inch of precipitation in December. Most precipitation falls in July, with an average of 376 mm | 14.8 inch. With an average of 35.8 °C | 96.4 °F, May is the warmest month. In December, the average temperature is 22.3 °C | 72.1 °F. It is the lowest average temperature of the whole year. The precipitation varies 373 mm | 15 inch between the driest month and the wettest month. The average temperatures vary during the year by 13.5 °C | 24.3 °F. The month with the highest relative humidity is August (81.25 %) and with lowest relative humidity is May (27.93 %) The month with the highest number of rainy days is July (22.33 days) and with the lowest number of rainy days is December (0.87 days).

(Source: <https://en.climate-data.org/asia/india/maharashtra/chandrapur-24355/>)

# Ecological (Environment) Audit



*Background reference image Yugal Shrivastava on pexels*



## 5. Ecological (Environmental) Audit

Environment is an essential part for 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, 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 premise. Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt 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.

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

### 5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premise and the open/vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are a few Maintenance staff allotted for the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the college has taken special provisions for the same. The spaces are watered daily in summer. **The efforts to maintain the existing space are commendable.**

## 5.2 Flora Audit

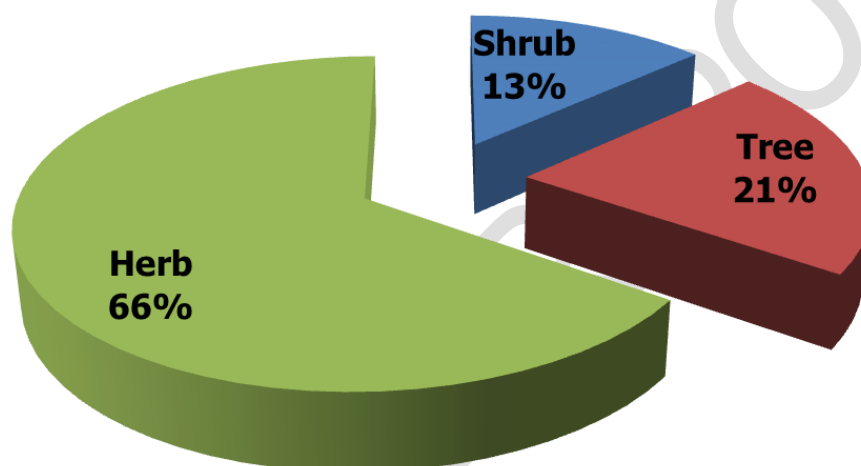
A flora survey was carried out to identify the total numbers of plants and trees. The landscape area has a variety of plantations constituting thousands of surveyed trees in premise in the last few years as follows with detail description of each.

S. No.	Scientific Name	Type	Nos.	Grown by
1	Neem	Tree	08	Students
2	Gulmohar	Tree	12	Staff
3	Ashok (Saraca Asoca)	Tree	25	Staff & Students
4	Jujubes	Shrub	01	Students
5	Peepal	Tree	03	Staff
6	Palm (Aerica)	Shrub	27	Staff and students
7	Coleus	Herb	10	Students
8	Jatropha Species (Red)	Herb	10	Staff
9	Ixora (Pink) And Red (Ixora Coccinia)	Shrub	05	Staff and students
10	Spider Plant (Chlorophytum Comosum)	Herb	60	Staff and students
11	Royal Palm	Tree	14	Students
12	Duranta Erecta	Herb	20	Staff and students
13	Thymus Vulgars	Herb	04	students
14	Chrysanthemum Spp	Herb	10	Staff
15	Indian Jasmine (Jasminum Sambac)	Herb	20	Staff and students
16	Garden Croton (Red Border)	Herb	06	Staff and students
17	Hibiscus Spp Violet	Shrub	02	Staff
18	Thymus Vulgaris	Herb	04	Students
19	Asystasia Gangatia	Herb	01	Staff
20	Euphorbia Tithymaloyides	Herb	08	Staff
21	Penta Lanceolate (White)	Herb	01	Staff
22	Penta Lanceolate (Pink)	Herb	01	Staff
23	Hibiscus (White)	Shrub	01	Staff
24	Croton (Green)	Herb	03	Students
25	Snake Plants	Herb	04	Students
26	Aloe Vera	Herb	08	Students
27	Cordyline	Herb	03	Students
28	Thuja	Shrub	01	Students
29	Alocasia Plumbea	Herb	04	Students
30	Asystasia (Chinese Violet Plant)	Herb	02	Staff and students
31	Hygrophila Araguaion	Herb	05	Staff and students

<b>32</b>	Dieffenbachia Amoena	Herb	03	Staff and students
<b>33</b>	Amaryllis Leaf Plant	Herb	01	Staff and students
<b>34</b>	Polyscias Fructicosa	Herb	01	Staff
<b>35</b>	Acalypha Wilkensiana	Herb	01	Staff
<b>36</b>	Adulsa (Adathoda Zeylanica)	Shrub	01	Staff
<b>37</b>	Champa (Plumeria)	Shrub	01	Staff
<b>38</b>	Araucaria Spp	Herb	01	Staff

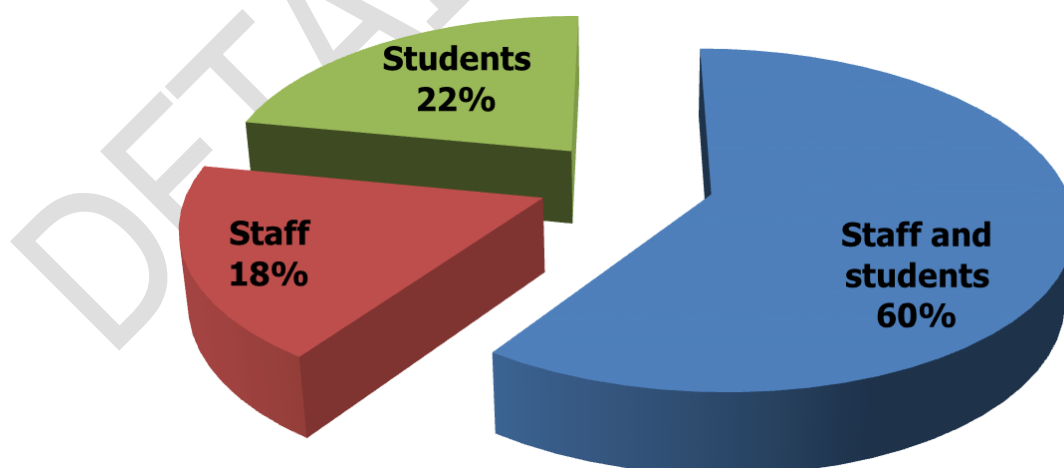
*Table 6: Details of the Flora in the premise*

At present there are more than 290 trees and plants in the premise. However, the data submitted to use is studied further in detail as follows:



*Figure 1: Study of the plantations in the premise*

The above study shows among the surveyed plantations there are 66% Herbs, 21% Trees and 13% Shrubs in the premise.



*Figure 2: Study of the plantations in the premise*

The above study shows 60% are jointly planted by both Staff & students; 22% by the Students & 18% by the Staff members.

## 5.3 Noise Audit

### 5.3.1 Macro level

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

### 5.3.2 Micro level

The college has an adequate open space covered with huge trees prevailing naturally in the premise. There are bare minimum parking provisions provided in the premise which causes bare minimum noise as they are situated near the entrance which is a bit away. The college does not have generator thus there is no inconvenience or sound problem caused due to the same. There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

## 5.4 Carbon Footprint Audit

### 5.4.1 Eco-friendly Commuting Practices

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

- **Ease of commuting** – Owing to close proximity to public transport the access is very feasible and walk able.
- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 60%

### 5.4.2 Heat Island Reduction

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

- **Exposed roof areas** – The terrace is flat roof, it is absolutely clean and well maintained. The Buildings are covered with white paint. With time the paint is

withering but the College shall take necessary steps to maintain it. The current practices are well maintained.

- **Exposed non-roof hardscape areas** - There is a pathway on all sides of the premises. These include some natural and potted plantations. However, the trees are wide and the canopy is wide spread providing ample shade to this space. Hence, there is no direct sunrays or similar effect. In addition there are provisions for grass pavers in the premise. The college an open space in the form of lush green carpet.

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

### 5.4.3 Outdoor Light Pollution Study

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

## 5.5 Universal Campus

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

**There are Ramps, Handrails along staircase, low height risers in the Staircases as part of universal campus initiatives.** The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect. The college has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the specially abled students. **The college can plan to have lifts in the future depending on the situation and facilities.**

## 5.6 Fire Safety

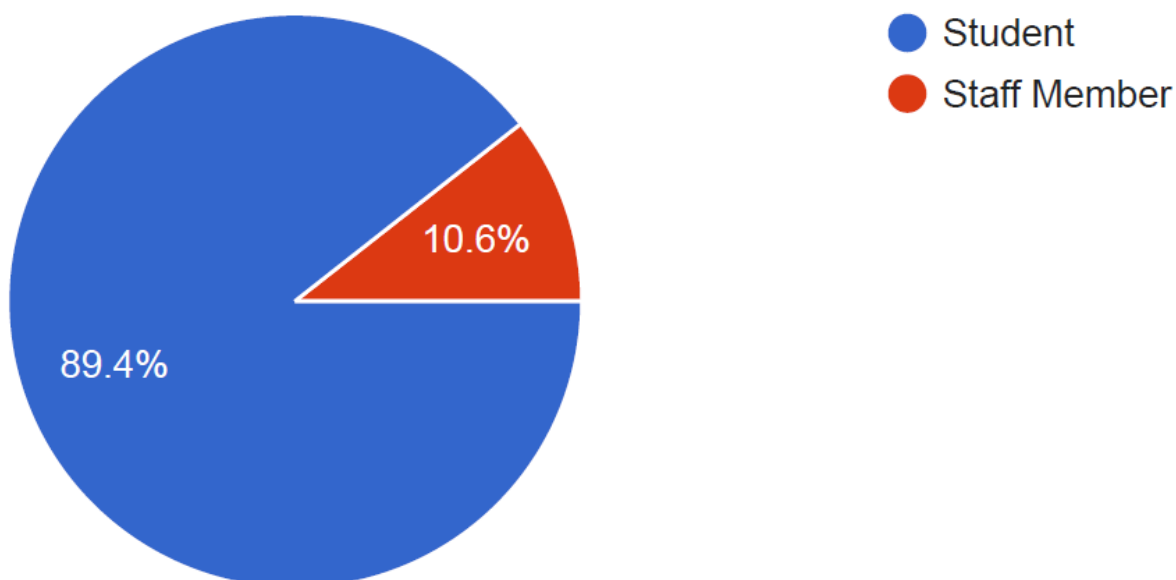
When the building was constructed Fire fighting norms and permission from Chief Fire Officer was not in practice. However, the Institution has taken care for adequate fire safety measures to be adopted. Each floor has an open staircase without any barriers for fire safety measures. These staircases are free of any kind of storage or combustible

material. The windows in each classroom are at a low height with fresh air and natural light thereby adding to ample ventilation throughout the day. The college should adopt additional fire safety practices such as fire hydrant and others. The current facilities are quite well maintained. There are adequate Fire extinguishers in the premise and these are present on each floor. There can also be provision for additional fire safety signages as well.

## 5.7 Survey Results

An online survey was conducted to analyse the views about the premise, following are some of the reviews.

### 5.7.1 Participation



*Figure 3: Participation analysis in the survey*

A total of **85 responses** were received out of which 89% were students.

### 5.7.2 What according to you are the positive steps taken by the Institute towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- Cleanliness awareness and tree plantation programs organized by the college.
- Planted number of plants in the college premises.

- Planting trees, a neat and clean classroom and keep grounds wet so that no dust can make problem.
- **In my opinion, the College has taken a very good step. They have done a lot of activities like planting trees.**

## **5.8 Positive site features a per our study**

### **a) Cool rooftops**

The College has the Terrace roofs painted with white cover it helps reduce the temperature of the spaces.

### **b) User friendly movability in premises**

There are provisions of Kerb Ramp in the Building premises, also low height hand rail for ease of access.

### **c) Resting places**

There are provisions for resting places in premises in outdoor and indoor.

### **d) Avoid using plastic in premise**

There should be a provision for ban on the use of plastic bags or products in the Premise.

## 5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

### Site beautification

#### a) Low VOC Paints and Adhesives

Whenever the College undergoes repairs or renovations there should be use of materials with low emissions so as 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 in the College premise.

### Universal Campus

#### a) Universal Toilet

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

### Pollution Control

#### a) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

#### b) Paperless technologies

The college can go technology friendly and go paperless in the functioning of the Premise to a certain extent may be not fully.

#### c) OPAC system

The system is beneficial for the students.

#### c) Tree adoption scheme

The college can adopt One Faculty – One tree adoption scheme which is one of its kind practice, this can be very beneficial especially during the summer season.



# TREES AT VERIOUS POINT



# RAMP IN VERIOUS POINTS



## 6. Towards a Healthy & Sustainable Institution

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

- a) **Kitchen garden** - There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building. The smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.
- b) **Cutlery in the Canteen** – The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.
- c) **Waste vio** – College can tie up with an organisation and students can be encouraged to collect dry waste and electronic waste such as newspapers, old computers and others and hand over to organisation on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, eco-friendly habits in becoming a responsible citizen.
- d) **Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.

## 6.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premise and activity, some of the key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- Everything is better in our college so don't change any thing.
- Nothing

**Some of the suggestions by the Students and staff are listed below:**

- According to me we should plant trees.
- Water harvesting should be improved.
- Beautiful Flowering garden and botanical garden should be made available in the college premises.
- Every students and teachers should participate equally and apart from campus should take care of local surrounding.
- To focus on maintenance
- All staff member should plant one plant every year.

**However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.**

## 7. 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. Climate data <https://en.climate-data.org/asia/india/maharashtra/chandrapur-24355/>
6. Used only for understanding Universal design - Universal accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.

DETAILED REPORT

