

ENVIRONMENT AUDIT

STUDY PERIOD (TWO YEARS) 2020 - 2021 AND 2021-2022

Sustainability study

AUDIT REPORT

Studied for

Pune District Education Association's

Waghire College of Arts,

Commerce and Science

Saswad, Taluka Purandar, Pune - 412301

Studied in the capacity of

An accredited & Certified Green Building Professional



Studied by

Valid till **December 2023**

Disclaimer

The Audit Team has prepared this report for the **Pune District Education Association's Waghire College of Arts, Commerce and Science** located at Saswad, Taluka Purandar, Pune - 412301 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 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 with the Project Head - Ar. Nahida Shaikh who is an Accredited and Certified Green Building Professional-Architect; ISO Certified I.A. (IMS). Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

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Acknowledgement

The Audit Assessment Team thanks the **Pune District Education Association's Waghire College of Arts, Commerce and Science, Saswad, Pune** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Hon. Shri. Ajitdada Pawar**, President, Pune District Education Association, Pune; **Hon. Rajendra Ghadage**, Vice-President, Pune District Education Association, Pune; **Hon. Adv. Sandeep Kadam**, Hon Secretary, Pune District Education Association, Pune and Senate Member SPPU, Pune; **Shri. Adv. Mohanrao Deshmukh**, Treasurer; **Shri L. M. Pawar**, Asst. Secretary; **Shri A. M. Jadhav**, Jt. Secretary (Administration) and everyone from the Management.

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We highly appreciate the assistance of 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

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Institution overview	7
3. Green Building Study Audit.....	9
4. Site Study.....	10
5. Ecological (Environmental) Audit	11
6. Towards a Healthy & Sustainable Institution.....	21
7. References	22

1. Introduction

1.1 About the Institution

In a span of four decades the College has made remarkable progress in the field of education. The College has received **DST-FIST-Grants from Department of Science and Technology, Govt. of India**. In order to keep up pace with time, the college has started UGC sponsored B. Voc. Degree Program in Retail Management and Tourism and Hospitality Management. **As on today, more than 5,000 students pursue their education in the College.**

1.2 Statements of the Institution

1.2.1 Mission

The College adheres and focuses "To provide an open access to learning, irrespective of caste, religion and colour to the community from rural and hilly area. The college aims at providing the higher education to the aspirants at their doorstep."

1.2.2 Aim

The College has envisioned for the students the aim "The parent institution keeps the academic atmosphere vibrant by providing adequate infrastructure to be in tune with the vision."

1.2.3 Objective

The College emphasis on the objectives such as:

- "To enrich the personality of students of the rural and hilly area
- To inculcate confidence, decision making power and better codes of conduct
- To cultivate patriotism and love for unity
- To develop national spirit and fair attitude among students"

1.3 About the Institution's Academic arena

The Institution offers the following courses:

➔ Graduation

- Bachelor of Arts
- Bachelor of Commerce
- Bachelor of Science (Computer Science, Botany, Physics, Zoology, Chemistry and Microbiology)
- Bachelor of Business Administration (Computer Application)
- B.Voc. - Tourism and Hospitality Management
- B.Voc. - Food Processing and Technology

➔ Certificate Course

- Communication skill in English
- Counselling centre
- Communication skill
- Goods and Service tax
- Basic analytical instrumentation
- Role of basic mathematics
- Instrumentation
- Advance techniques in computer
- Basic technique in gardening

➔ Diploma programs

- GST & Tally 1 year Diploma under UGC
- Diploma in Agro Tourism

The College works towards training young men and women to be competent, committed and compassionate, and lead in all walks of life.

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Saswad district of Maharashtra** with immense peace and calmness in the surroundings.

1.5 Assessment of the College

1.5.1 Affiliations

The College has all its courses approved and affiliated to the **Savitribai Phule Pune University**, formerly the University of Poona, is a collegiate public state university located in the city of Pune, India.

1.5.2 Certification

AISHE – The College has the AISHE Code C-41716.

1.5.3 Accreditation

The following are details of the accreditation of the Institute.

Cycle	First	Second	Third
CGPA	-	2.67	2.83
Grade	B+	B	B++
Year	2004	2014	2019

Table 1: NAAC Accreditation details of the Institute

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

1.6 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.

- ➔ **STAR DBT College Award**
- ➔ **Best NSS Award by SPPU, 2019-20 & 2020-21.**
- ➔ **Purandar Magazine Award by SPPU (2nd Rank for Best Magazine), 2019-20.**

2. Institution overview

2.1 Populace analysis for Academic year 2021-2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **1,595 Boys and 1,779 Girl students**, thus there were **a total of 3,374 students** on the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin staff	03	02	05
Teaching staff	50	45	95
Non-Teaching staff	40	8	48
Total Staff Members	93	55	148

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the premises had a total of **148** Staff Members.

2.2 Populace analysis for Academic year 2020-2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **1,600 Boys and 1,936 Girl students**, thus there were **a total of 3,536 students** on the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin staff	03	02	05
Teaching staff	50	29	79
Non-Teaching staff	40	8	48
Total Staff Members	93	39	132

Table 3: Staff data of the Institution for 2020-2021

The staff data shows the premises had a total of **132** Staff Members.

2.3 Total College Area & College Building Spread Area

The **total site area is 11 acres** and the **total Built-up area of College is 1,71,416 sq. ft.** for a **total of 3,522 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1972. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. 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 Premises 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 are provisions for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and maintenance of the premises

The interview session with the staff regarding the operation and working hours stated that the Institution is open from Monday to Saturday from 08.00 am to 05.00 pm.

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 premises 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, Air conditioners, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in 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 + hardscape of campus
- Analysis of the flora and fauna of premises
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

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

- 25 July 2022 – Allotment and Initiation by the College
- 25 July 2022 – Induction meeting
- 30 July 2022 – Survey of the Student and staff submitted
- 17 October 2022 – Submission of the Draft report
- 21 December 2022 – Site visit at the Institute
- 30 December 2022 – Submission of the Main report

On-site investigation and physical verification

Audit Team during the visit on 21 December 2022



Discussion with the Core Team



On-site review with the team for site management, green wall and other features



Group photo with the Team

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 Pune District Education Association's Waghire College of Arts, Commerce and Science located at Saswad, Taluka Purandar, Pune – 412301.
- **Neighbourhood context** - The premises is surrounding by open spaces and Residential Educational areas on the immediate surroundings of the site.
- **Natural physical features** – The premises includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major difference in the land levels (contours).
- **Manmade features** – The premises is situated in a semi-urban 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 are parked.
- **Climate** – Pune has a tropical climate. In winter, there is much less rainfall in Pune than in summer. According to Köppen and Geiger, this climate is classified as Aw. The average annual temperature in Pune is 24.3 °C | 75.7 °F. The annual rainfall is 1200 mm | 47.2 inch.

(Source: <https://en.climate-data.org/asia/india/maharashtra/pune-31/>)

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 premises. 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 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 premises.

5.1 Open Spaces

There is an open space in the premises used by students at present for sports and cultural gatherings. **There are provisions for natural plantations which have enhanced the beauty of the space.**

5.2 Flora and fauna audit

5.2.1 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 hundreds of surveyed trees in premises in the last few years as follows with detail description of each.

S. No.	Plant name	Type	Nos.	Planted by
1	<i>Polyalthia longifolia</i>	Tree	18	Staff
2	<i>Mangifera indica</i>	Tree	1	Staff
3	<i>Bauhinia purpurea</i>	Tree	1	Staff

4	<i>Terminalia cattappa</i>	Tree	1	Staff
5	<i>Cycas spp</i>	Tree	3	Staff
6	<i>Crinum asiaticum</i>	Herb	26	Staff
7	<i>Plumeria alba</i>	Tree	2	Staff
8	<i>Caryota urens</i>	Tree	8	Staff
9	<i>Thuja occidentalis</i>	Tree	6	Staff
10	<i>Jacobeia vulgaris</i>	Herb		Staff
11	<i>Asparagus spp</i>	Herb	5	Staff
12	<i>Citrus limon</i>	Tree	8	Staff
13	<i>Portulaca oleraceae</i>	Herb	30	Staff
14	<i>Tradescantia spathacea</i>	Herb	5	Staff
15	<i>Impatiens balsamina</i>	Herb	1	Staff
16	<i>Tecoma capensis</i>	Shrub	10	Staff
17	<i>Laurus nobilis</i>	Tree	1	Staff
18	<i>Cordyline fruticosa</i>	Shrub	40	Staff
19	<i>Dyopsis lutescens</i>	Tree	8	Staff
20	<i>Euphorbia continifolia</i>	Shrub	1	Staff
21	<i>Pentas lanceolatus</i>	Shrub	1	Staff
22	<i>Lantana spp</i>	Shrub	2	Staff
23	<i>Nephrolepis exaltata</i>	Bushy	2	Staff
24	<i>Ficus lutea</i>	Tree	1	Staff
25	<i>Euphorbia mili</i>	Shrub	2	Staff
26	<i>Jatropha integerrima</i>	Shrub	61	Staff
27	<i>Ficus elastica</i>	Tree	3	Staff
28	<i>Diffenbachia amoena</i>	Herb	7	Staff
29	<i>Asparagus spp</i>	Herb	7	Staff
30	<i>Coleus scutellarioides</i>	Bushy	4	Staff
31	<i>Dyopsis lutescens</i>	Tree	19	Staff
32	<i>Jatropha integerrima</i>	Shrub	56	Staff
33	<i>Thuja occidentalis</i>	Tree	6	Staff
34	<i>Dracaena spp</i>	Shrub	7	Staff
35	<i>Crinum asiaticum</i>	Herb	23	Staff
36	<i>Plumeria alba</i>	Tree	2	Staff
37	<i>Euphorbia spp</i>	Shrub	3	Staff

38	<i>Hibiscus rosa chinensis</i>	Shrub	4	Staff
39	<i>Sansiveria trifasciata</i>	Creeping	6	Staff
40	<i>Euphorbia mili</i>	Shrub	3	Staff
41	<i>Tradescantia spathacea</i>	Herb	3	Staff
42	<i>Pentas lanceolatus</i>	Shrub	5	Staff
43	<i>Aloe vera</i>	Succulent herb	5	Staff
44	<i>Cissus quadrangularis</i>	Succulent herb	1	Staff
45	<i>Polanthes tuberosa</i>	Herb	1	Staff
46	<i>Ficus benamina</i>	Tree	1	Staff
47	<i>Nephrolepis exaltata</i>		2	Staff
48	<i>Hamelia patens</i>	Shrub	6	Staff
49	<i>Combretum indicum</i>	Creeper	1	Staff
50	<i>Cordyline fruiticosa</i>	Shrub	8	Staff
51	<i>Crinum asiaticum</i>	Herb	13	Staff
52	<i>Catharanthus roseus</i>	Herb	11	Staff
53	<i>Diffenbechia amoena</i>	Herb	8	Staff
54	<i>Rosa chinensis</i>	Herb	3	Staff
55	<i>Jatropha integerrima</i>	Shrub	19	Staff
56	<i>Magnolia champaka</i>	Tree	2	Staff
57	<i>Coleus scutellarioides</i>	Bushy	5	Staff
58	<i>Araucaria heterophylla</i>	Tree	1	Staff
59	<i>Eucalyptus</i>	Tree	10	Staff
60	<i>Tamarindus indica</i>	Tree	20	Staff
61	<i>Lucaena lucocephala</i>	Tree	10	Staff
62	<i>Polyalthia longifolia</i>	Tree	20	Staff
63	<i>Bougainvillea spectabilis</i>	Woody climber	4	Staff
64	<i>Ficus benghalensis</i>	Tree	5	Staff
65	<i>Gliricidia sepium</i>	Tree	5	Staff
66	<i>Delonix regia</i>	Tree	6	Staff
67	<i>Azadirachta indica</i>	Tree	10	Staff
68	<i>Tinospora cordifolia</i>	Woody climber	2	Staff
69	<i>Cymbopogon</i>	Herb	2	Staff
70	<i>Tecomia capensis</i>	Shrub	1	Staff
71	<i>Clematis gouriana</i>	Climber	1	Staff

72	<i>Alstonia scholaris</i>	Tree	1	Staff
73	<i>Mimosa pudica</i>	Creeper	1	Staff
74	<i>Jatropha curcus</i>		1	Staff
75	<i>Bambusa vulgaris</i>		1	Staff
76	<i>Lantana spp</i>	Shrub	1	Staff
77	<i>Hibiscus rosa chinensis</i>	Shrub	1	Staff
78	<i>Bixa orellana</i>	Shrub	1	Staff
79	<i>Moringa oleifera</i>	Tree	1	Staff
80	<i>Delonix regia</i>	Tree	1	Staff
81	<i>Calotropis procera</i>	Shrub	1	Staff
82	<i>Jatropha curcus</i>	Shrub	1	Staff
83	<i>Nerium oleander</i>	Shrub	1	Staff
84	<i>Thunbergia grandiflora</i>	Shrub	1	Staff
85	<i>Ficus benjamina</i>	Tree	1	Staff
86	<i>Caesalpinia pulcherimma</i>	Tree	1	Staff
87	<i>Ipomea tiliacea</i>	Climber	1	Staff
88	<i>Acer pseudoplatanus</i>	Tree	1	Staff
89	<i>Leucaena leucophala</i>	Tree	1	Staff
90	<i>Magnolia spp</i>	Tree	1	Staff
91	<i>Agave spp</i>		1	Staff
92	<i>Bougainvillea spectabilis</i>	Climber	1	Staff
93	<i>Adhathoda vasica</i>	Shrub	1	Staff
94	<i>Dracaena spp</i>	Shrub	1	Staff
95	<i>Butea monosperma</i>	Tree	1	Staff
96	<i>Eucalyptus globulus</i>	Tree	1	Staff
97	<i>Hamelia patens</i>	Shrub	1	Staff
98	<i>Clitoria ternaea</i>	Climber	1	Staff
99	<i>Neolamarckia cadamba</i>	Tree	2	Staff
100	<i>Caryota urens</i>	Tree	1	Staff
101	<i>Callistemon lanceolatus</i>	Tree	4	Staff
102	<i>Cassia fistula</i>	Tree	1	Staff
103	<i>Xanthoxylem spp</i>	Tree	1	Staff
104	<i>Lagerstromia speciosa</i>	Tree	1	Staff
105	<i>Juglans nigra</i>	Tree		Staff

106	<i>Plumeria alba</i>	Tree	2	Staff
107	<i>Dyopsis lutescens</i>	Tree	13	Staff
108	<i>Spathodea companulata</i>	Tree	1	Staff
109	<i>Nerium</i>		4	Staff
110	<i>Acalypha wilkesiana</i>	Shrub	14	Staff
111	<i>Acalypha hispida</i>	Shrub	19	Staff
112	<i>Azadirachta indica</i>	Tree	1	Naturally
113	<i>Pseuderanthemum carruthersii</i>	Shrub		Staff
114	<i>Crinum asiaticum</i>	Herb	1	Staff
115	<i>Euhorbia mili</i>	Shrub	2	Staff
116	<i>Roystonea regia</i>	Tree	13	Staff
117	<i>Plumbago acriculata</i>	Shrub	1	Staff
118	<i>Tamarindus indica</i>	Tree	22	Staff
119	<i>Bauhinia</i>	Tree	2	Staff
120	<i>Ficus benghalensis</i>	Tree	4	Staff
121	<i>Ficus spp</i>	Tree	10	Staff
122	<i>Azadirachta indica</i>	Tree	11	Staff
123	<i>Polyalthia longifolia</i>	Tree	2	Staff
124	<i>Cassia fistula</i>	Tree	11	Staff
125	<i>Caryota urens</i>	Tree	6	Staff
126	<i>Catharanthus roseus</i>	Herb	3	Staff
127	<i>Crinum asiaticum</i>	Herb	4	Staff
128	<i>Eucalyptus globulus</i>	Tree	4	Staff
129	<i>Lantana spp</i>	Shrub	34	Naturally
130	<i>Leucaena leucophala</i>	Tree	10	Naturally
131	<i>Agave spp</i>		5	Student
132	<i>Ficus religiosa</i>	Tree	6	Student
133	<i>Delonix regia</i>	Tree	10	Student
134	<i>Bauhinia racemosa</i>	Tree	1	Student
135	<i>Duranta spp</i>	Shrub	5	Student
136	<i>Crossandra infundibuliformis</i>	Shrub	4	Student
137	<i>Crinum asiaticum</i>	Herb	8	Student
138	<i>Hibiscus rosa sinensis</i>	Shrub	5	Student

139	<i>Sausuurea obvallata</i>	Cacti habit	1	Student
140	<i>Jasminum sambac</i>	Shrub	2	Student
141	<i>Mangifera indica</i>	Tree	1	Student
142	<i>Jasminum officinale</i>	Shrub	1	Student
143	<i>Colocasia esculenta</i>	Herb	2	Student
144	<i>Cymbopogon citratus</i>	Clumping	1	Student
145	<i>Murraya koenigii</i>	Small tree	2	Student
146	<i>Tamarindus indica</i>	Tree	3	Student
147	<i>Nyctanthus arbortristis</i>	Tree	1	Student
148	<i>Annona squamosa</i>	Tree	1	Student
149	<i>Magnolia champaka</i>	Tree	3	Student
150	<i>Lucaena lucocephala</i>	Tree	1	Student
151	<i>Trichilia spp</i>	Tree	1	Student
152	<i>Aloe vera</i>	Herb	7	Student
153	<i>Psidium guajava</i>	Tree	2	Student
154	<i>Eucalyptus globulus</i>	Tree	1	Student
155	<i>Thuja occidentalis</i>	Shrub	2	Student
156	<i>Dracaena spp</i>	Bushy shrub	1	Student
157	<i>Ipomoea spp</i>	Climber	1	Student
158	<i>Cycas spp</i>	Tree	1	Student
159	<i>Polianthes tuberosa</i>	Herb	1	Student
160	<i>Catharanthus roseus</i>	Herb	1	Student
161	<i>Rosa spp</i>	shrub	1	Student
162	<i>Bauhinia purpurea</i>	Tree	1	Student
163	<i>Oscimum tenuiflorum</i>	Herb	1	Student

Table 4: Details of the Flora in the premises

At present there are 163 types and 900+ plantations comprising of plants, trees, shrubs. All of these are planted on various occasions while some have grown naturally. Timely maintenance with sufficient care has resulted in positive benefits for the surroundings.

5.2.2 Fauna Audit

It is a beautiful site to have the birds chirping around the College premises. It highlights the ecological co-existence concept in the most beautiful way.

5.3 Noise Audit

5.3.1 Macro level

On a macro level the College being an educational institute falls under silent zone and thus **there is no negative effect related to noise felt by the students / staff in the premises.**

5.3.2 Micro level

The College has ample vegetation trees. These act as a noise barriers. There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low that 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. The major locations from the Institute from where the commute takes place are Dive, Sonori, Hivare, Chambali, Vanpuri, Ambodi, Bhivadi, Supe, Kumbharwalan, Saswad City.
- ➔ **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 20-25%

5.4.2 Heat Island Reduction

The Institution is geographically located in a semi-urban area with appropriate climatic and architectural design parameters in place; the Institute does not face any 'Urban heat island effect'

5.4.3 Outdoor Light Pollution Study

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

5.5 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. The following facilities are available for the specially-abled as part of universally accessible premises initiatives.

- ➔ **Ramps at the entrance area.**
- ➔ **Handrails along the staircase and Low height risers in the staircases.**
- ➔ **Availability of wheelchair.**

The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated and are safe from the fire safety aspect.

5.6 Fire Safety

Our observation states that measures such as refill the existing fire extinguishers, sprinkler system, smoke detector, hydrant system, and fire safety specific signages should be present on the premises.

5.7 Positive site features

5.7.1 Based on our study

- a) User friendly movability in premises** - There are provisions of Kerb Ramp in the Building premises, also low height hand rail for ease of access.
- b) OPAC system** - The system in the library is beneficial for the students.
- c) Resting places** - There are provisions for resting places on-premises outdoor and indoors.
- d) Ample greenery** - There are provisions for the garden and plenty of traditional trees on the premises.
- e) Avoid using plastic in premises** - There are provisions for ban on the use of plastic bags or products in the Premises for office purpose as well eco-friendly materials area used.
- f) Provision of wheelchair** - There is provision of wheelchair in the premises for specially abled, senior citizens it is very beneficial facility.

5.7.2 Based on survey study

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in College, following is the result received.

5.7.2.1 Survey participation

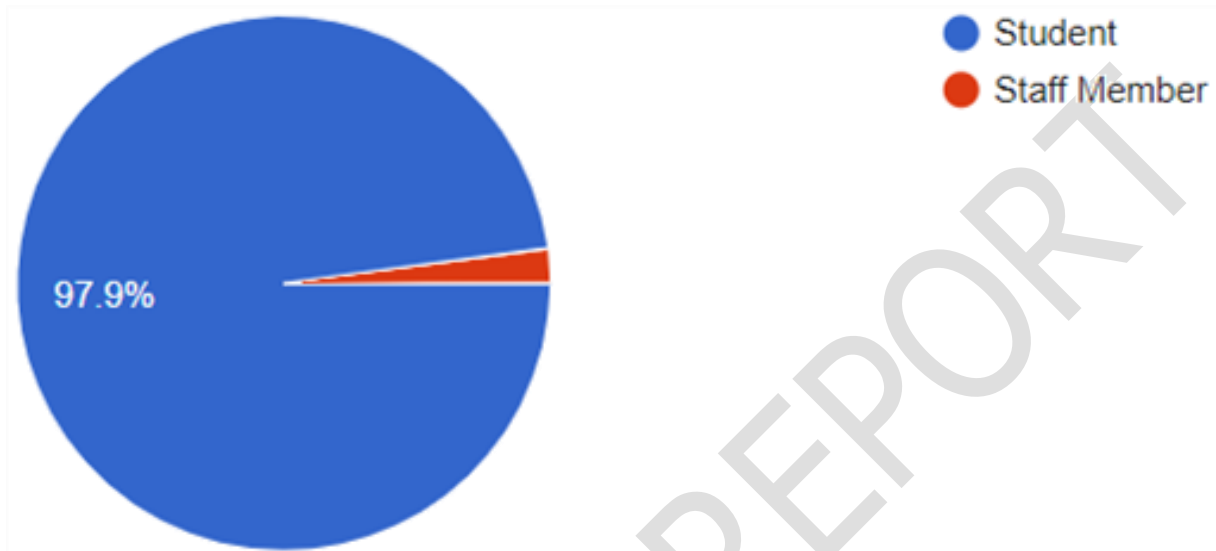


Figure 1: Participation analysis in the survey

A total of **429 responses** were received out of which 98% were students.

5.7.2.2 Survey review

Some of the key reviews as per the responses received are listed below.

- ➡ Planting trees avoiding plastic creating awareness.
- ➡ The activities of planting trees and saving water are carried out in the College.
- ➡ Connecting communities and people.
- ➡ They clean college premises daily and they water the plant daily.

5.8 Section-wise suggestions related to premises

The following suggestions are to be considered as a **first priority** for implementation. These **should be executed within the next 2.5 years from the date of the Report submission or as and when the appliance is not functioning and a replacement is required.** The Institute can execute a plan of action after discussion with Project Head.

Site beautification

- a) Additional facilities for birds** - There can be provision for drinking water and food facility for birds visiting the College premise.
- b) 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.

Universally accessible premises

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

Pollution Control

- a) Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.
- b) Avoid paper wastage through books** - The College can collect all old semester notebooks; these can either be converted to reusable paper on the premises through a workshop or using a shredder machine or handed over to a vendor for making fresh paper. Additionally, the Students can be motivated to undertake similar practices on an individual note.

Life safety

- ➡ One fire extinguisher in every space which has an air conditioner, gas cylinder.
- ➡ Every laboratory space should have both sand bucket and fire extinguisher.
- ➡ Fire safety practices such as signages, Fire hydrant cabinets, sand buckets with instruction manual on 'how to use fire extinguisher'

6. Towards a Healthy & Sustainable Institution

The following suggestions are to be considered as a **last priority** for implementation. These **should be executed within the next 3.5 years from the date of the Report submission**. The Institute can execute a plan of action after discussion with Project Head.

- ➔ **Cutlery in the Canteen** – The regular plastic and steel plates, and spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straws, disposable plates, edible spoons, and tables made out of sugarcane waste or bamboo. This will be the first of its kind initiative to be adopted and practiced thus also inculcating healthy practices in students.
- ➔ **Terrace farming (Applicable only for the buildings with a flat roof)** - There can be the provision of terrace farming 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 food grown which would be used in Canteen.
- ➔ **Waste vio** – University can tie-up with our organization and students can be encouraged to collect dry waste and electronic waste such as newspapers, old laptops, and others and hand them over on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, and eco-friendly habits in becoming a responsible citizen.
- ➔ **Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially-abled students.

On-site investigation and physical verification

The ecologically friendly ambience with specific amenities and facilities in the premises



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. 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.
6. Climate data <https://en.climate-data.org/asia/india/maharashtra/pune-31/>

