

# ENVIRONMENT AUDIT

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

Sustainability study

## AUDIT REPORT

Studied for

Maharshi Karve Stree Shikshan Samstha's  
**Cummins College of Engineering for Women**  
Karvenagar, Pune – 411052

Studied in the capacity of

An accredited & Certified Green Building Professional



Studied by

**Greenenvia**  
Solutions

Valid till **October 2023**



Hereby presents

**An Eco-friendly premises**  
that has executed  
**more than 90% elements**  
required for a Green Building

One of India's first technical institute for girl students

**Cummins College of Engineering for Women**  
**Affiliated to the Savitribai Phule Pune University**



# Disclaimer

The Audit Team has prepared this report for the **Maharshi Karve Stree Shikshan Samstha's Cummins College of Engineering for Women** located at Karvenagar, Pune – 411052 based on input data submitted by the Institute and 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 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 Institute. 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 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; 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 incapacity of an 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

Palghar District, Maharashtra- 401208

[sustainableacademe@gmail.com](mailto:sustainableacademe@gmail.com)

## Acknowledgment

The Audit Assessment Team thanks the **Maharshi Karve Stree Shikshan Samstha's Cummins College of Engineering for Women, Pune, Maharashtra** 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. Mr. Ravindra Deo**, Chairman, MKSSS; **Shri. Rajendra Jog**, Trustee, MKSSS; **Dr. P.V.S. Shastry**, Secretary, MKSSS and everyone from the Management.

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### Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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DETAILED REPORT

# 1. Introduction

## 1.1 About the Institution

**Cummins College of Engineering for Women is the first all women engineering college in India** established with the support of Cummins Diesel (India) Foundation. Parent institution of Cummins College is Maharshi Karve Stree Shikshan Samstha (MKSSS). 'Bharat Ratna' Recipient, Maharshi Karve, established MKSSS in 1896 with the mission of women empowerment through education.

**The Institute is recognized for its rigor in academics and dedicated faculty, successful alumnae being its outcome.** It has a strong association with the industry and is recognized for providing quality recruits for the industry.

## 1.2 Statements prescribed by the Institute

### 1.2.1 Vision

The College proposes "To be a globally renowned institute for imparting quality education and development of women leaders in engineering and technology."

### 1.2.2 Mission

The College adheres and focuses "To develop women professional who are academically and technically competent with strong professional ethics"

### 1.2.3 Motto

The College has works towards "Empowerment of Women through Education."

**The commitment of the Institute is towards continuous improvement and democratic functioning,** as is reflected in its vision and mission statements, which in turns become the guiding principles for the governance of the Institute.

## 1.3 Assessment of the Institute

### 1.3.1 Affiliations

The Institute is affiliated to **Savitribai Phule Pune University**, one of the premier universities in India, is positioned in the North-western part of Pune city.

### 1.3.2 Certification

The College has received the following Certifications

- NIRF – Participated in the National Institutional Ranking Framework and has secured position in rank band 200 -250 for the year 2022 and 2021. The institute secured rank 173 in 2020.
- AISHE – The All India Survey of Higher Education code is C-42242.

### 1.3.3 Accreditation

The following are details of the accreditation awarded by the National Assessment & Accreditation Council (NAAC) to the College.

Cycle	First	Second	Third
<b>CGPA</b>	70-75	3.33	3.16
<b>Grade</b>	B	A	A
<b>Year</b>	2002	2012	2017

*Table 1: NAAC Accreditation details of the Institute*

The College is due to enter its Fourth cycle of NAAC.

### 1.3.4 Recognitions

The college is affiliated to Savitribai Phule Pune University, Pune under the UGC scheme for autonomous colleges **for a period of six years w.e.f.2016-2017 to 2021-2022.**

### 1.3.5 Approval

The technical courses provided by the College are approved by **All India Council for Technical Education (AICTE), New Delhi.**

## 1.4 Achievements of the Institute

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

- **The College ranked 22 in All India Private Engineering Colleges according to 'The Week'.**

⇒ **Best College Award by Savitribai Phule Pune University, 2020-2021.**

⇒ **In local media 'Outlook'**

⇒ 2022 :- Rank 37 in Private colleges

⇒ 2021 :- Rank 42 in Private colleges

⇒ 2020 :- Rank 46 in Private colleges

⇒ **In the local media 'India Today'** among overall Private Engineering College

⇒ 2022 :- Rank 49

⇒ 2021 :- Rank 54

⇒ 2020 :- Rank 68

## 1.5 Research and Innovation

The College integrates multiple curriculum programs through its unique research and development activities. The goal is "To develop an integrated R&D environment that will promote and strengthen the research activities in the institute, to meet the immediate as well as futuristic requirements of the Industry and Society and thus improve the quality of various study programs at the College."

## 1.6 Facilities

The College is one of India's first Institute of Engineering for girl students. It has an excellent state of the art infrastructure. The College emphasizes on latest technological advancement through its educational initiatives. Some of the key facilities are listed below.

- ⇒ Auditorium
- ⇒ Conference halls
- ⇒ Outdoor sports areas
- ⇒ Workshop areas
- ⇒ Break-out spaces in the Indoors of the premises
- ⇒ Hostel



## 2. Institution overview

### 2.1 Populace analysis for the 2020-2022

#### 2.1.1 Students data

The student data (shared by the Institute) shows there were an **approximately 2,500 Girl students** on the premises in both academic years.

#### 2.1.2 Staff data

The staff data shows the premises had an approximate of **300 Staff Members** on the premises in both academic years.

### 2.2 Total Institute Area & Institute Building Spread Area

The **total site area is 4 acres** and the **total Built-up area of the Institute is 40,870.57 sq. ft.** for a total of **3,000 footfalls.**

### 2.3 Institute Infrastructure

#### 2.3.1 Establishment

**The Institute was established in 1991.**

#### 2.3.2 Spatial Organisation

The overall ambiance of the Institute is warm and inviting. The Architectural style of exposed bricks provides a soothing and contrasting feel to the built-form. The colour palate of earthy colours in the facades helps the building stand out positively.

There are provisions for lifts and a staircase for accessibility on the premises, whereas there are amenities such as CCTV, a first aid room, etc. The Institute 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.

### 2.4 Operation and Maintenance of the premises

The interview session was held with the staff regarding the operation and working hours. The schedule is mentioned below.

- **Main Institutional areas** - 7:30 am to 6:00 pm, Monday to Friday and 10:00 am to 2:00 pm on Saturdays for around 250 days (Approximate).
- **Library areas** – 7:30 am to 7:30 pm, Monday to Saturday and 9:00 am to 1 pm on Sundays usually for around 320 days (Approximate).

DETAILED REPORT

## 3. Green Building Study as a Research based technical 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 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 premises

#### Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; 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 + hardscape 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.

### 3.3 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.

### 3.4 Activities undertaken for the Green Building Study Audit

- 01 August 2022 - Allotment and Initiation by the Institute
- 08 August 2022 - Induction Meeting
- 25 August 2022 - Review Meeting
- 23 September 2022 - Survey of students and staff completed
- 28 September 2022 - Site visit at the Institute
- 20 October 2022 - Submission of the Report

# On-site investigation and physical verification

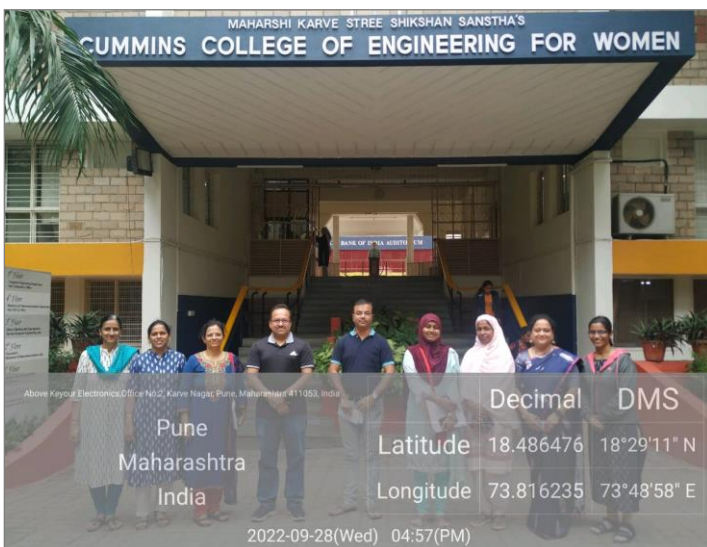
Audit Team during the visit on 28 September 2022



On-site review with the Team



Induction meeting with the Team and inspection of the Universal toilet



Group photo with the Team

## 4. Site Study

### 4.1 On-site observations 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 Maharshi Karve Stree Shikshan Samstha's Cummins College of Engineering for Women is located at Karvenagar, Pune – 411052 and falls under Pune Municipal Corporation.
- **Neighbourhood context** - The premises is surrounding by open spaces and Residential areas on the immediate surroundings of the site.
- **Natural physical features** – The premises includes a rich biodiversity and huge number of plants in the open space. The site does not have major difference in the land levels (contours).
- **Manmade features** – The premises is situated in an 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 an adequate 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/>)

## **4.2 Positive site features as per 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) 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.

### **c) OPAC system**

The system in the library is beneficial for the students.

### **d) Paperless technologies**

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

### **e) Resting places**

There are provisions for resting places on-premises outdoor and indoors.

### **f) Ample greenery**

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

### **g) Universally accessible premises**

In addition to availability of ramps, there are provisions for lifts, universal toilets.

***As part of our study we can surely state the Institute comprises of almost 85-95% of the Sustainable features required for a building as per the Green Building Standards.***

# 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 a beautiful balance of natural and open spaces in the premises and the open/vegetation spaces are balanced overall. The Ground is used by students at present for sports as it has outdoor sports facility in the premises. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are sufficient numbers of 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 University 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 and fauna audit

### 5.2.2 Flora Audit – Research study

**Exceptional factor: The College has a more than 1,760+ trees in the adjacent sanstha and the existing college site; this makes its one of its kind ‘Green zone’ n the urbanized city.**

**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. **Some of them have grown naturally and have been conserved at their respective locations to maintain the beauty of the premises.** The detailed study is as follows.

S. No.	Plant name	Type	Nos
1	<i>Spathodea Campanulata</i>	Tree	27
2	<i>Dalbergia Sisso</i>	Tree	3
3	<i>Azadirachta Indica</i>	Tree	22
4	<i>Tamarindus Indica</i>	Tree	8
5	<i>Pithecellobium Dulce</i>	Tree	8
6	<i>Psidium Guajava</i>	Tree	3
7	<i>Millingtonia Hortensis</i>	Tree	24
8	<i>Polyalthia Longifolia</i>	Tree	57
9	<i>Ficus Religiosa</i>	Tree	7
10	<i>Eucalyptus Globulus</i>	Tree	64
11	<i>Gmelina Arborea</i>	Tree	1
12	<i>Delonix Regia</i>	Tree	21
13	<i>Syzygium Cumini</i>	Tree	40
14	<i>Cascabela Thevetia</i>	Shrub	6
15	<i>Grevillea Robusta</i>	Tree	8
16	<i>Ficus Benjamina</i>	Tree	23
17	<i>Terminalia Catapa</i>	Tree	12
18	<i>Acacia Horrida</i>	Tree	1
19	<i>Tectona Grandis</i>	Tree	3

<b>20</b>	<i>Cocos Nucifera</i>	Tree	4
<b>21</b>	<i>Ficus Benghalensis</i>	Tree	9
<b>22</b>	<i>Mangifera Indica</i>	Tree	58
<b>23</b>	<i>Ficus Racemosa</i>	Shrub	16
<b>24</b>	<i>Casuarina Equisetifolia</i>	Tree	9
<b>25</b>	<i>Annona Reticulata</i>	Tree	1
<b>26</b>	<i>Jacaranda Mimosifolia</i>	Tree	10
<b>27</b>	<i>Peltophorum Pterocarpum</i>	Tree	8
<b>28</b>	<i>Ficus Elastica</i>	Tree	6
<b>29</b>	<i>Areca Palm</i>	Shrub	5
<b>30</b>	<i>Plumeria Alba</i>	Shrub	1
<b>31</b>	<i>Caryota Urens</i>	Tree	3
<b>32</b>	<i>Bauhinia Tomentosa</i>	Shrub	2
<b>33</b>	<i>Callistemon</i>	Shrub	1
<b>34</b>	<i>Plumeria</i>	Shrub	9
<b>35</b>	<i>Saraca Ashoka</i>	Tree	3
<b>36</b>	<i>Tabebuia</i>	Shrub	6
<b>37</b>	<i>Cassia Fistula</i>	Tree	6
<b>38</b>	<i>Samanea Saman</i>	Tree	7
<b>39</b>	<i>Roystonea Regia</i>	Tree	23
<b>40</b>	<i>Caesalpinia Pulcherrima</i>	Shrub	7
<b>41</b>	<i>Putranjiva Roxburgii</i>	Tree	1
<b>42</b>	<i>Cassia Grandis</i>	Tree	1
<b>43</b>	<i>Plumeria Rubra</i>	Shrub	7
<b>44</b>	<i>Araucaria Columnaris</i>	Tree	3
<b>45</b>	<i>Calliandra Haematocephal A</i>	Shrub	1
<b>46</b>	<i>Tabernaemont Ana Divaricata</i>	Shrub	1
<b>47</b>	<i>Eucalyptus Tereticornis</i>	Tree	15
<b>48</b>	<i>Ficus Elastica</i>	Tree	5
<b>49</b>	<i>Bauhinia Variegata</i>	Tree	7
<b>50</b>	<i>Erythrina Indica</i>	Tree	1
<b>51</b>	<i>Musa Acuminata</i>	Large Herb	2

<b>52</b>	<i>Gliricidia Sepium</i>	Tree	35
<b>53</b>	<i>Aiphanes Erosa</i>	Tree	1
<b>54</b>	<i>Sandulum Album</i>	Tree	1
<b>55</b>	<i>Leucaena Leucocephala</i>	Tree	1
<b>56</b>	<i>Holoptelia Integrifolia</i>	Tree	1
<b>57</b>	<i>Artocarpus Heterophyllus</i>	Tree	8
<b>58</b>	<i>Moringa Oleifera</i>	Tree	3
<b>59</b>	<i>Hardwickia Binata</i>	Tree	1
<b>60</b>	<i>Plumeria Obtusa</i>	Shrub	3
<b>61</b>	<i>Tecoma Stans</i>	Shrub	3
<b>62</b>	<i>Carpentaria Acuminata</i>	Tree	1
<b>63</b>	<i>Albizia Lebbeck</i>	Tree	1
<b>64</b>	<i>Seena Siamea</i>	Tree	3
<b>65</b>	<i>Michelia Champaca</i>	Shrub	1
<b>66</b>	<i>Khaya Senegalensis</i>	Tree	3
<b>67</b>	<i>Senna Spectabilis</i>	Tree	1
<b>68</b>	<i>Tabernaemont Ana Coronaria</i>	Shrub	3
<b>69</b>	<i>Wrightia Tinctoria</i>	Tree	1
<b>70</b>	<i>Pongamia Pinnatia</i>	Tree	2
<b>71</b>	<i>Murraya Koenegi</i>	Tree	1
<b>72</b>	<i>Areca Catechu</i>	Tree	1
<b>73</b>	<i>Casabella Thevetia</i>	Shrub	1

**Table 2: Details of the Flora in the premises**

**At present, there are 651+ plantations on the premises.**

### **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.**

The existing fauna includes *Parrots, Hornbills, Crows, Owls, Koels, Black Kite, Red-Whiskered Bulbul, Woodpecker, Bats, Sparrows, Greater Coucal, Purple Sunbird, Indian White-Eye, White-Throated Fantail, Spot-Breasted Fantail and the Common Tailorbird.*

## 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 extremely 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 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 parking provisions provided in the premises which causes minimum noise as they are situated near the entrance which is a bit away from the College building.

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:

- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 10-15%
- **Vehicles details** – The provision provided by College includes vehicle parking only for the staff members; no student vehicles are allowed inside the premises.

### 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 top floor has a flat roof which is absolutely clean and well maintained. The Buildings are covered with white paint and the Maintenance staffs along with Management have taken ample measures to maintain the same.

**There was certain extent of the weathering of roof observed.** However, the current practices are well maintained.

- **Exposed non-roof hardscape areas** - There are pathway on all sides of the premises. These include many natural and potted plantations along the pathways. Huge garden spaces too are available in the premises.

**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 Universally accessible premises

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

The following facilities are available on the premises for the specially-abled as part of universally accessible premises initiatives. As per our study these are sufficient and good.

- **Lifts for vertical circulation except on one block**
- **Wheelchair availability**
- **100% Ramps at the entrance area**
- **Toilets for the disabled friendly in two blocks**

## 5.6 Fire Safety

Fire and life safety are an important consideration of the National Building Code 2016. This aspect is touched upon as part of this study in the capacity of an Architect registered with the Council of Architecture.

As part of the research, fire safety audit was considered from the 'Building systems' perspective, as we have found that the College has taken care for adequate fire safety measures to be adopted. The following provisions are available at present.

- Fire extinguisher on every floor.

- Open staircase without any barriers and free of storage or combustible material.
- 1.5m and more width wide corridors with ample ventilation.
- Accessible fire exit areas such as staircase in case of an emergency as per the NBC norms.

**As per our observations the additional measures which can be adopted are:**

- One fire extinguisher in every space which has an air conditioner.
- One fire extinguisher in immediate spaces outside the lift areas.
- Every laboratory space should have both sand bucket and fire extinguisher.
- Every space which has a gas cylinder or combustible equipment should have a provision for additional safety including the barricade around the gas cylinders, appropriate safety boards.
- A fire drill and safety evacuation drill should be undertaken every 6 months for students and staff.
- Regular seminars/ webinars by experts such as Architects, Govt. Fire department on subjects related to fire and life safety should be organized and the outputs should be adopted and documented.
- Fire safety practices such as signages, Fire hydrant cabinets, sand buckets.

## 5.7 Recommendations for a Sustainable Habitat by Greenvio Solutions

The following points are listed as value addition to the existing premises, are should be considered as **first priority** for implementation under section wise study.

These have to be **implemented in the next 1 year of the submission of the Report**. Owing to the excellent practices adopted at present, the numbers of recommendations are less for this section.

### Site beautification

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

### Pollution Control

- ➔ **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.
- ➔ **Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.

### Heat island reduction

**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.

### Responsible environment systems

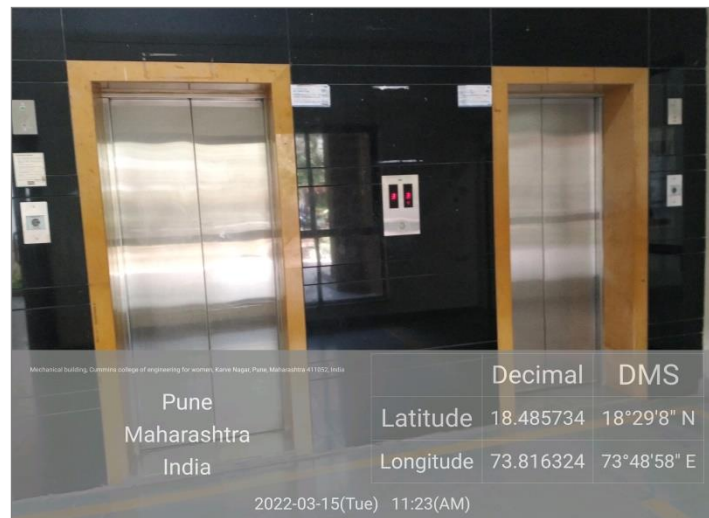
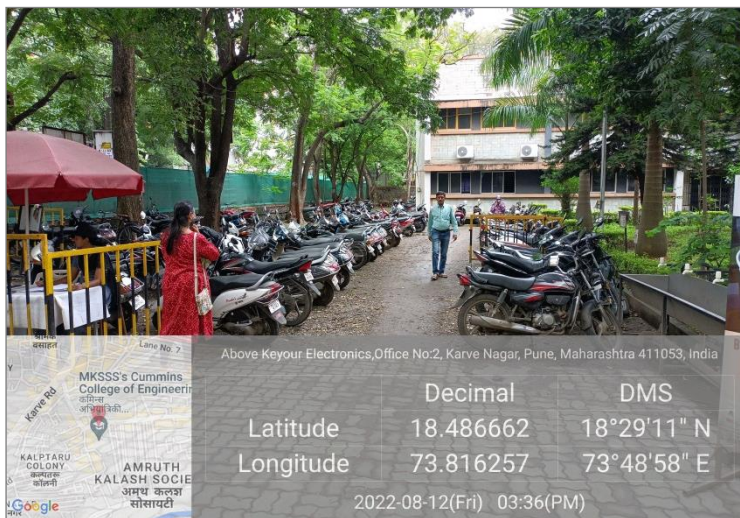
**Community gardening** - There can be provisions for community gardening in addition to allowing the general public to use the parks on the premises for walks and jogging.

# On-site investigation and physical verification

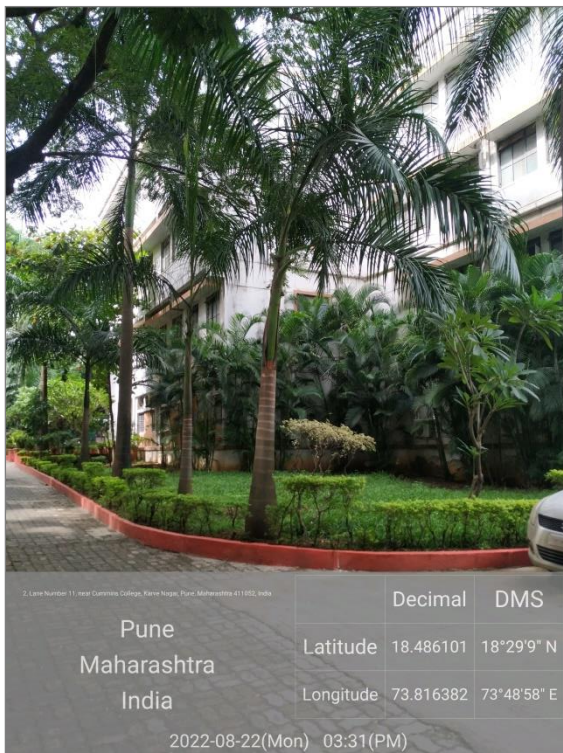
The ecologically friendly ambience with facilities such as open spaces, lifts and gardens



Inspection of the seating area and entrance w.r.t universal design parameters



Parking and lift provisions in the premises



Lush green premises



## 6. Inferences as Consolidated study

These are to be considered as **second priority** for implementation, once the section wise recommendations are implemented. The following recommendations should be **implemented within the next 2.5 years from the date of the Report submission.**

- **Signing of a MoU for improvement w.r.t. to Green Building aspects of premises**
- **Articles and Documentation** – The premises has multiple features which add to the beauty of the nature and improve the environment in the premises, it is thus suggested to have an article written every month as guided by the Team based on the MoU.
- **Carbon sequestration study** – This study will have to under taken in two phases; one for the dense forest in the premises and the second phase will be for all the plants in the premises.
- **Scope for executing multiple dense forests (Green zones) in the premises based on the prototype** – This can be executed after the Carbon sequestration study has been completed. The Miyawaki technique can be undertaken for this purpose.
- **Determination of Plastic (orange) zones** – The study and execution can be undertaken through a pilot project where the waste plastic can be collected through areas within 5 km of the premises and a product can be developed.
- **Net zero carbon reduction projects** – This is a pilot project where each student will plant at least 6 projects.

## 7. Towards a Healthy & Sustainable Institution

To be considered as **last priority** for implementation, once the section wise (first priority) and the consolidated study (second priority) recommendations are implemented.

The following recommendations are researched strategies for a Healthy and Sustainable Institution practices. These should be *implemented within the next 3.5 years from the date of the Report submission.*

- a) Environment Certificate Courses** – The College could begin courses such as Bachelors, Diploma, or Certificate courses with National and International Collaboration related to Environment as part of the courses provided. Though, this is not a requirement or compulsion.
- b) Terrace farming** - 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. It helps in smaller steps are taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, and terrace garden there will be a long term benefit for the environment as a whole.
- c) Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially-abled students.
- d) Clubs** – There can be additional provisions for an Eco-club (For surrounding beautification projects); Hygiene club (For joint activities with local Municipal Corporation to undertake specific hygiene related activities in public areas); Nature/ Adventure club (For outdoor recreational activities); Non-teaching members club (For environment related activities). These are a few suggestions for the increased number of clubs in the Institute. Depending on the curriculum and extra-curricular activities appropriate steps can be undertaken.

## 8. References

The study is based on the data collected, analysed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyse and study the data collected.

### ➔ Local references

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

### ➔ National references

⇒ Uniform Plumbing Code – India, 2008

⇒ IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013

⇒ IGBC Green Landscape Rating system, March 2013

### ➔ International references

⇒ BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada

⇒ 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 and [www.umassd.edu](http://www.umassd.edu)

⇒ The city of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States

⇒ Streetscape elements – Chapter 6 on San Francisco

⇒ American lung association <https://www.lung.org/>

⇒ Study related to air pollution <https://www.airgle.com/>

⇒ Exploring the light pollution <https://education.nationalgeographic.org/>

⇒ Accessibility study <https://www.washington.edu/>

⇒ Urban heat island effect <https://www.epa.gov/heatislands/what-you-can-do-reduce-heat-islands>

