

# GREEN AUDIT

STUDY PERIOD (THREE YEARS) 2021 – 2022; 2022 - 2023 & 2023-2024

## Sustainability study RENEWAL AUDIT REPORT

**Studied for**  
Viswambhara Educational Society's  
**Vaagdevi College of Engineering**  
**(Autonomous)**

Bollikunta (Village), Khila Warangal (Mandal),  
Warangal (Dist.) - 506 005, Telangana

**Studied in the capacity of**

**Accredited and Certified**  
Green Building Professional



**Studied by**

Website: <https://thegreenviosolutions.co.in/>

Email: [greenviosolutions@gmail.com](mailto:greenviosolutions@gmail.com)

Valid till **31 January 2025**



# Disclaimer

The Audit Team has prepared this report for the **Viswambhara Educational Society's Vaagdevi College of Engineering (Autonomous)** located at Bollikunta (Village), Khila Warangal (Mandal), Warangal (Dist.) - 506 005, Telangana based on input data submitted by the Institute 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.

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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. 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.

*Nahida Shaikh*  
**Ar. Nahida Abdulla**  
**Greenvio Solutions**

*Developing Healthy and Sustainable Environments*

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Sustainable Academe is our department for conducting Audits

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## Acknowledgment

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Our special thanks are extended are due to **Prof. K. Prakash**, (Principal).

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### **Sustainable Academe**

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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RENEWAL REPORT

# 1. Introduction

## 1.1 About the functioning of the Institution

Vaagdevi College of Engineering is an AICTE approved autonomous college, putting significant efforts to help students with internship opportunities. It is fully equipped with lecture theatres, purpose-built labs and learning areas, cafes, recreation areas, libraries, transport provisions with a fleet of college buses and separate hostels for boys and girls with a range of services and facilities.

## 1.2 Statements of the Institution

### Vision

- *Striving Continuously for Global Recognition through Academic Excellence in Higher Education for the Betterment of Society*

### Mission

- *To produce technically competent and socially responsible engineers with ethical values through innovative teaching learning process*
- *To promote research and entrepreneurship culture among faculty and students*

## 1.3 Populace analysis

### 1.3.1 Students and staff data (Academic year 2021-2022)

The premises had **3,130** male and **1,522** female stakeholders.

### 1.3.2 Students and staff data (Academic year 2022-2023)

The premises had **3,155** male and **1,608** female stakeholders.

### 1.3.2 Students and staff data (Academic year 2023-2024)

The premises had **3,167** male and **1,768** female stakeholders.

## 2. Compliance

The compliance study was carried out through investigative ways. This was done to understand the **extent of suggestions and their implementations based on previous report of Academic years 2019-2020 and 2020-2021**. The renewal is for academic years 2021-2022, 2022-2023 and 2023-2024.

### 2.1 Compliance status

The details of compliance state that no change has been implemented.

### 2.2 Compliance technical study

As per investigation of the systems, we confirm the availability of the following features:

#### 2.2.1 Green practices

There is scope to increase the initiatives.

#### 2.2.2 Waste audit



*Plate 1: Dustbins and clean washroom in the premises*

S. No.	Type	Current disposal	Proposed disposal
1	Solid waste (Toilets)	Disposed and sent to local body	<b>Biogas plant can be designed</b>
2	Organic waste (Regular)		<b>Dedicated compost area should be designed and practiced</b>
3	Liquid waste (Toilets, wash basins)	Flush through drainage system & Disposed	<b>Water treatment plant can be designed and practiced</b>
4	Chemical waste from laboratories		<b>Neutralize well and dig a pit 20 ft. from the main building where the waste can be disposed</b>
5	Toxic waste from laboratories		<b>Neutralize well and dig a pit 20 ft. from the main building where the waste can be disposed</b>
6	E-waste	Disposed to local vendors	<b>Tie-up with eco-reco; thereco for recycling</b>
7	Plastic waste		<b>Tie up with Bisleri company's Bottles for change programme</b>
8	Bio-waste (Sanitary)	Not applicable	Not applicable
9	Medical waste (Pharmacy etc.)		
10	Construction waste and reuse (Only if applicable)		

**Table 1: Details of the waste management practices**

## 2.2.3 Water Audit

This section analyses the water management facilities in the premises.

### 2.2.3.1 Primary sources of water management

This refers to the drinking water supply that the Institute receives from the local government and is stored in the form of tanks at suitable locations. However, some of the same is utilised for secondary purposes as well.

S. No.	Location of tank	Capacity of water tank in liters
1	A-Block	50,000
2	A-Block	10,000
3	A-Block	10,000
4	B-Block	10,000
5	Mechanical	20,000
6	RO Plant	2,000

**Table 2: Details of the water tanks**

### 2.2.3.2 Secondary sources of water management

This refers to the water supply used for secondary purposes such as cleaning, flushing, washing etc. these are generally taken through tanks and wells/ bore wells in premises. The available provisions are documented below:

S. No.	Type	Size	Nos.
1	Well	--	1
2	Bore well	700 ft. each	4
3	Tube well	--	0

*Table 3: Details of the wells and bore wells*

### 2.2.3.3 Tertiary sources

This refers to the water supply harvested through rain water and other sources. The premises has a pit dedicated to store rain water in 3 nos.



*Plate 2: Rain water harvesting in the premises*

**Observation:** The space is well maintained, however certain manuals and details about the facility would be better.

### 2.2.4 Health and Hygiene Audit

The photos and data shared by the team shows that the campus is clean.



## 3. Inferences

The following suggestions can be implemented ***in next two years***. The Institute can execute a plan after discussion with Project Head.

Note: The text with light blue background is the same recommendation as last year that has not been implemented.

### 3.1 Green practices audit

- **Plant as a gift** - As a kind gesture, the guests visiting the premise can be asked to plant a small plant on the premise itself and they can be even given plants/bouquets from the flowers of the plants on the premise as a gift.
- **Environmental awareness** - There can be various slogans in local and national language on the compound wall giving the message of saving the environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizens.
- **Signages on the plants mentioning scientific names** - The practice of having the names of each plant and tree will provide awareness among the staff and students.



*Reference suggestions 1: Signages on the plantations*

- ➔ **Increase the green awareness practice** – This should be in terms of the physical and virtual events which will be beneficial for all stakeholders in the shared premises. (Basically the frequency of the lectures should be increased)
- ➔ **Documentation** – Improve and increase the documentation and visibility/ reflectance of the environment related events on the website, social media handles

### 3.2 Waste Audit

- ➔ **Multi-colored waste management bins** - There should be more number of dual litter dustbins at various locations in areas such as Canteen, and open spaces. This would inculcate the awareness of waste segregation among students. Whereas a single type of dry waste dustbin should be available inside the teaching areas.



*Reference suggestions 2: Twin litter dustbins in the premises*

- ➔ **Signages** - Messages about avoiding wastage should be placed at appropriate locations.

- **Dustbins at every 100m** - There should be a dustbin at every 50-100m in open spaces
- **Material of dustbin** - The plastic dustbins should be replaced with eco-friendly material.
- **Organic compost pit maintenance methodology** - The Institute can recheck the current methodology as it can yield better results in terms of quantity if it is well maintained with the following strategies:
  - The sanitary pad incineration dust can be sent to the compost pit
  - There should be a balance of brown and green waste material
  - Shred the materials before adding them to pit
  - Add twigs
  - Stir occasionally
  - Add water in less quantity to avoid the smell
  - Keep ample air circulation to avoid the smell
  - Regular monitoring and maintenance.
- Tie up with **Bisleri International regarding their 'Bottles for change program'** also with **'Thereco'** for their waste management.
- Invite companies such as **'Thaely'** and **'Recharkha'** to undertake skill development workshops.

### 3.3 Water Audit

- **Signages** - Messages about avoiding water wastage should be placed at appropriate locations.
- **Water flow stopper** - The water flow stopper should be installed to avoid overflow and smart use of the system. Install water-saving showerheads or flow restrictors. No leakage anywhere on-premises. Water lawn only when it needs it.
- **Rain water bunds** – There should be landscape beautification project undertaken to appropriate channelize the rain water through bunds and similar facilities.

- **Manual about the functioning of the system** – There should be manual such as follows to increase sensitization about the facility and its operations.

## Roof Rain water Harvesting System

For irrigating the plantation in campus

Rainwater harvesting is a technique used for collecting, storing, and using rainwater for landscape irrigation and other uses. The rainwater is collected from various hard surfaces such as rooftops and/or other manmade aboveground hard surfaces. We have much potential of roof rain water harvesting from which we can collect this water and store it for different purposes.

In first phase we have collected the roof water 3000 sqft.

On that basis we can estimate the annual water collection which as follows

Roof Type	Co-efficient
Slab	0.8 to 0.9

Satara City annual rainfall in mm = 1200-1500, Consider rainfall -1300 mm. **Rainfall in meter =1.3**


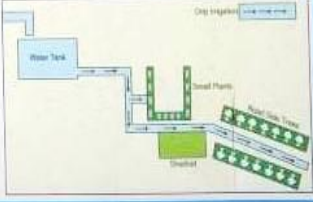
Rainwater Harvesting Potential (In Cum) = Area (in Sq,Meter) X Annual Rainfall (m)X Co-efficient X Constant Co. eff (0.80)

Rainwater Harvesting (3000 Sq.ft) = Area in Meter X Annual Rainfall (m) X Co-efficient X Constant Co. eff

278.7091	1.3	0.8	0.80
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Rainwater Harvesting (3000 Sq.ft) = 278.7091X 1.3 X 0.8 X 0.80  
 = 231.8859712 Cum  
 = 231885.9712

We are using this water for irrigation plantations in campus by using drip irrigation system

*Reference suggestions 3: Roof rain water harvesting system*

### 3.4 Health and Hygiene Audit

- **Avoid burning waste** - The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- **Designated staff for maintenance** - There should be a designated Hygiene specialist and Maintenance staff who can keep a regular check on the operation and maintenance of the toilet areas and the equipment, lights, and all facilities.
- **Signboards** – The Institute should have multiple signboards about 'No smoking' and 'Healthy premises' at every nook and corner of the Institute.
- **Compound wall** – The compound wall should have awareness messages about 'No Smoking' and 'No Tobacco'



## 4. Compilation

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.

- ➔ 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
- ➔ 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



# ENERGY AUDIT

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### 2.1 Compliance status

The details of compliance state that no change has been implemented.

### 2.2 Compliance comparative study

The information for the existing nos. of electrical appliances and their power consumption is documented below.

#### ➤ Lights – Source of electrical usage

- The current data shows there are **1,230 nos. of LED lights contributing to 35,977 kWh of energy**.
- The previous data shows there were **1,234 nos. of LED lights**, thus, there has been a **reduction of 4 nos. of lights**
- Since the appliances used are LED, there are no changes required for this section and the current practices can be continued

#### ➤ Fans – Source of electrical usage

- The data is documented as follows:

S. No.	Type	Previous nos.	Current nos.
1	Wall mounted fan	39	39
2	Table Fan	11	11
3	Small motor Exhaust fan	6	6
4	Large Motor exhaust fan	1	0
5	Regular ceiling fans	743	743

*Table 1: Details of the fans in premises*



- **As per the above analysis there were 800 fans previously and there are 799 fans at present, there is only a decrease in one large motor exhaust fan.**
  - **Thereby, reducing the 63,742 kWh energy to 63,085 kWh**
  - Since the total numbers of regular ceiling fans are extensive bulk replacement is not recommended. Whenever the appliances are not in working conditions they are suggested to be replaced with energy efficient fans.
- ➔ **Air conditioners – Source of electrical usage**
- Previously there were **91 nos. and currently there are 91 nos. of air conditioners in the premises.**
  - There has been no increase in the numbers thus the energy consumption remains the same **contributing to 8,16,640 kWh of energy**

## 2.3 Compliance technical study

As per investigation of the systems, we confirm the availability of the following features:

### 2.2.1 Solar panels

There are 460 nos. of solar panels generating up to 150KWP.

### 2.2.2 Other renewable energy sources

The other sources of energy consumption such as solar tree, solar hot water heaters, solar car, Solar parking, Solar pumps, Solar street lights, Wind mills and IoT mechanism are 'NOT' available in the premises.

### 2.2.2 Power backup sources

S. No.	Block Name	KVA	Quantity
1	Block A	220	1
2	Block B	500	1
3	Block Mechanical	100	1

*Table 2: Power Backup (Transformer)*

S. No.	Block Name	KWP
1	Block B	150

*Table 3: Power Backup (Solar)*



*Plate 1: Solar PV Panels on roof top and Solar PV inverters*

The internal team has shared the following data.

Month	Total Consumption		KVA		TOD1	TOD2	Amount in INR
	KWH	KVAH	Billed	Recorded			
<b>Mar-22</b>	14,386	16,120	304	131	1,417	4,617	60,444.13
<b>Apr-22</b>	10,438	12,108	304	131	448	4,137	1,49,084.13
<b>May-22</b>	8,722	10,336	304	52	394	3,490	1,77,746.13
<b>Jun-22</b>	8,575	8,943	304	38	392	2,456	1,77,869.13
<b>Jul-22</b>	13,271	14,606	304	119	781	3,310	1,78,737.13
<b>Aug-22</b>	21,573	24,947	304	205	1,957	4,301	1,44,834.00
<b>Sep-22</b>	19,474	24,085	304	254	1,475	4,849	1,12,331.00
<b>Oct-22</b>	15,001	17,831	304	178	739	4,545	55,556.00
<b>Jan-23</b>	11,315	12,319	304	69	1,137	3,723	1,79,365.17

<b>Feb-23</b>	11,426	12,590	304	78	1,032	4,346	1,79,922.17
<b>Mar-23</b>	13,199	15,234	304	108	1,006	4,760	1,79,502.17
<b>Apr-23</b>	27,439	31,743	304	191	1,848	5,787	2,53,816.17
<b>May-23</b>	31,552	39,267	304	264	2,679	5,163	4,36,744.17
<b>Jun-23</b>	36,290	43,724	304	252	2,736	5,573	4,84,508.17
<b>Jul-23</b>	10,438	12,108	304	131	448	4,137	1,49,084.13
<b>Aug-23</b>	19,474	24,085	304	254	1,475	4,849	1,12,331.00
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<b>Nov-23</b>	13,271	14,606	304	119	781	3,310	1,78,737.13
<b>Dec-23</b>	8,722	10,336	304	52	394	3,490	1,77,746.13
<b>Jan-24</b>	11,426	12,590	304	78	1,032	4,346	1,79,922.17

*Table 4: Electrical unit consumption study*

**The observation related to above information states:**

- ⇒ The **total amount** spent in past twenty-one months is **Rs. 39,27,147.57 /-**
- ⇒ The **average amount** spent every month are **Rs. 1,87,007/-**
- ⇒ The **total units** consumed in past twenty-one months is **~ 3,30,506 units**
- ⇒ The **average units** consumed every month are **~15,738 units**
- ⇒ **The energy from solar is given back to the grid**

## 3. Inferences

### Entire site recommendations

The following suggestions can be implemented ***in next two years***. The Institute can execute a plan after discussion with Project Head.

#### 3.1 Replacement of non-energy efficient appliance

- Regular ceiling fans with energy efficient appliances
- Reduce nos. of air conditioners

#### 3.2 Alternatives to increase renewable energy

##### 3.2.1 Solar tree

Since there is availability of space; the solar trees can be installed in multiple places as they will provide dual benefits of aesthetic and energy reduction.



**Plate 2: Solar tree concept for the Institute (For reference purpose only)**

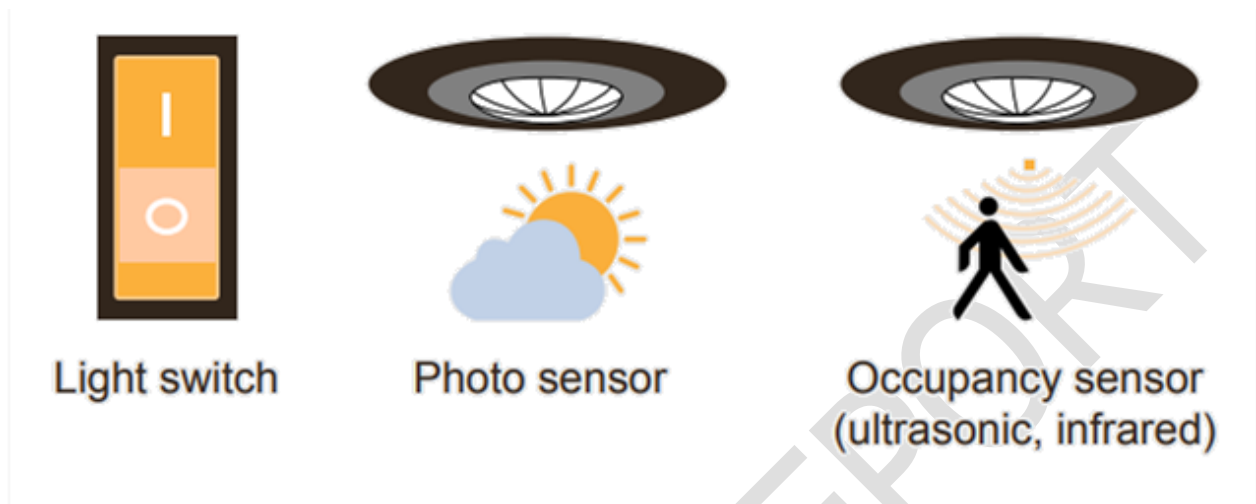
Source: Image by <https://timesofindia.indiatimes.com/india/cmeri-installed-the-worlds-largest-solar-tree-at-durgapur/articleshow/77856790.cms>



### 3.3 Alternatives towards Smart premises mechanisms

#### 3.3.1 Facility management systems, controls

(Includes electromechanical systems – Electrical, Water)



*Plate 3: Understanding the lighting concepts*

Source: [https://seors.unfccc.int/applications/seors/attachments/get\\_attachment?code=NG125PFE4WHMWSYAK8TCAKIHMWX0F4QD](https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=NG125PFE4WHMWSYAK8TCAKIHMWX0F4QD)

#### 3.3.2 Smart gardening

The Institute can undertake a Smart Gardening system using IoT Technology. This will result in saving time by scheduling time for watering; saving money through automated water schedules tracking dampness of soil to know when, how much water garden needs.



*Plate 4: Solar farm concept for the Institute (For reference purpose only)*

Image source: <https://housing.com/news/smart-gardening/>

Data source: <https://www.happysprout.com/inspiration/what-is-smart-gardening/>

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### Specific references for study related to energy

- ➔ <https://www.energy.gov/eere/buildings/zero-energy-buildings>
- ➔ <https://www.dsaarch.com/zero-net-positive-energy>
- ➔ U.S. Energy Information Administration
- ➔ <https://ieeexplore.ieee.org/document/6779316>
- ➔ <https://www.murata.com/en-global/apps/industry/security/entranceandexitsystem>
- ➔ <https://www.energuide.be/en/questions-answers/what-are-the-alternatives-to-air-conditioning/2121/>





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Valid till **31 January 2025**

# Disclaimer

The Audit Team has prepared this report for the **Viswambhara Educational Society's Vaagdevi College of Engineering (Autonomous)** located at Bollikunta (Village), Khila Warangal (Mandal), Warangal (Dist.) - 506 005, Telangana based on input data submitted by the Institute 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. 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.

*Nahida Shaikh*  
**Ar. Nahida Abdulla**  
**Greenvio Solutions**

*Developing Healthy and Sustainable Environments*

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## Acknowledgment

The Audit Assessment Team thanks the **Viswambhara Educational Society's Vaagdevi College of Engineering (Autonomous), Telangana** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are extended are due to **Prof. K. Prakash**, (Principal).

We are also thankful for **Institute Taskforce** who have collected the data required – Prof. **K. Thirupathi Rao**, Vice-Principal; **Dr. U. Kiran**, IQAC Coordinator and **Mr. Y. Srinivas**, Assistant Registrar

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

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RENEWAL REPORT

# 1. Introduction

## 1.1 About the functioning of the Institution

Vaagdevi College of Engineering is an AICTE approved autonomous college, putting significant efforts to help students with internship opportunities. It is fully equipped with lecture theatres, purpose-built labs and learning areas, cafes, recreation areas, libraries, transport provisions with a fleet of college buses and separate hostels for boys and girls with a range of services and facilities.

## 1.2 Statements of the Institution

### Vision

- *Striving Continuously for Global Recognition through Academic Excellence in Higher Education for the Betterment of Society*

### Mission

- *To produce technically competent and socially responsible engineers with ethical values through innovative teaching learning process*
- *To promote research and entrepreneurship culture among faculty and students*

## 1.3 Populace analysis

### 1.3.1 Students and staff data (Academic year 2021-2022)

The premises had **3,130** male and **1,522** female stakeholders.

### 1.3.2 Students and staff data (Academic year 2022-2023)

The premises had **3,155** male and **1,608** female stakeholders.

### 1.3.2 Students and staff data (Academic year 2023-2024)

The premises had **3,167** male and **1,768** female stakeholders.

## 2. Compliance

The compliance study was carried out through investigative ways. This was done to understand the **extent of suggestions and their implementations based on previous report of Academic years 2019-2020 and 2020-2021**. The renewal is for academic years 2021-2022, 2022-2023 and 2023-2024.

### 2.1 Compliance status

The details of compliance state that no change has been implemented.

### 2.2 Compliance technical study

As per investigation of the systems, we confirm the availability of the following features:

#### 2.2.1 Open Space



*Plate 1: Open spaces in the premises*

**Observation:** The spaces are well maintained.



## 2.2.2 Flora and fauna audit



*Plate 2: Green cover at the entrance and inside the premises*

**Observation:** The space is well maintained

## 2.2.3 Noise Audit

This section has been excluded technically, but as per site analysis the campus is away from the hustle bustle of noise area and located in a peaceful area.



## 2.2.4 Carbon Footprint Audit

### 2.2.4.1 Heat island



*Plate 3: Green area in the courtyard*

**Observation:** The green cover in the surrounding and internal spaces helps to reduce the heat island effect by absorbing the harsh radiation and providing a cool atmosphere.

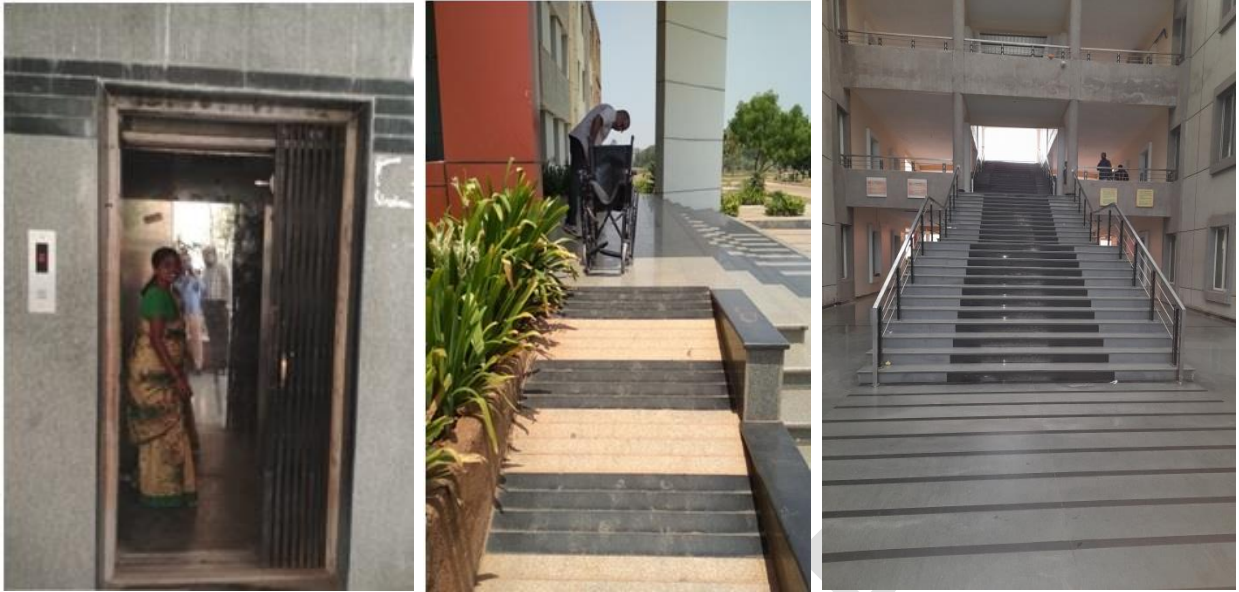
### 2.2.4.2 Commuting practices



*Plate 4: Buses to commute back and forth*

**Observation:** The campus provides hostel facilities for stakeholders, for the students who are day-scholars there are buses provided for commuting back and forth. To a certain extent there is a reduction on reliance of private vehicles to commute by stakeholders, thereby providing an eco-friendly way of commuting

## 2.2.5 Universally accessible premises



*Plate 5: Lift, Ramp and handrail along staircase*

Observation: The current facilities w.r.t. access parameter are fine.

## 2.2.6 Fire Safety

The details about this facility were not informed by internal team.

## 3. Inferences

The following suggestions can be implemented ***in next two years***. The Institute can execute a plan after discussion with Project Head.

Note: The text with light blue background is the same recommendation as last year that has not been implemented.

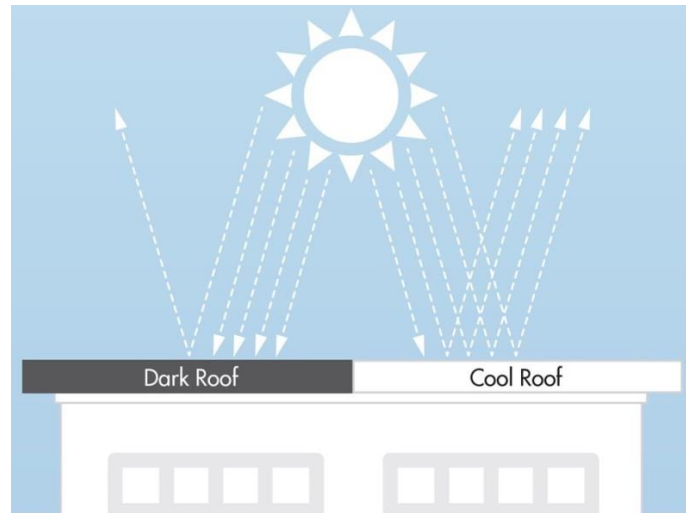
### 3.1 Site beautification

- ➔ **Bird house/ Feeders** - At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.
- ➔ **Child area** - There can be one provision where if student's or staff relative who are toddlers or senior citizens can rest and this area could have facilities accordingly.
- ➔ **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.
- ➔ **Garden development** - *Scientific name plates and QR codes* – The team should undertake a project to have name plates with QR codes on every plant of the premises.
- ➔ **Architectural landscape and streetscape features such as:**
  - *Speed limit signage*
  - *Parking mirror*
  - *Speed breakers and zebra crossing*
  - *No parking signboards at dedicated locations*
  - *Direction sign board*
  - *Post box*
  - *Signboard about specific space*



### 3.2 Heat island reduction

- ➔ **Cool rooftops** - The Terrace rooftops should be painted with Cooltop – reflective materials to reflect the harsh sun rays and reduce the heat absorption in the top most floor and surrounding areas of the building.



*Plate 6: Cool roof comparative analysis (For reference purpose only)*

Source: Image by <https://www.qaf.com/en-us/blog/six-truths-about-cool-roofs-281474980105387>

- ➔ **Structures for shaded walkways** – There should be provisions for shaded walkways and also resting/ breakout zones. A sample of the same is as follows:



*Plate 7: Shade structures concept for the Institute (For reference purpose only)*

Source: Image by <https://earthbound.report/2021/07/14/5-ways-to-reduce-the-urban-heat-island-effect/>

### 3.3 Life safety

- **Fire station** – A dedicated fire station could be established within the premises as part of the Fire and Life safety practices.
- **Combustible equipment** - Every space which has a gas cylinder or combustible equipment should have a provision for the barricade around the gas cylinders, appropriate safety board's mentioning 'danger sign' and 'Do not touch' with an additional small fire extinguisher close by.
- **Awareness** - Fire layouts in immediate spaces outside the lift, on the staircase landing, signages mentioning 'Do not use lift in case of fire' additionally fire exit signages, boards should be put up at all possible locations.
- *The **fire and life safety signages (Including exit signages)** should be increased and displayed.*
- *There should be a **PASS Board** alongside every fire extinguisher and a **RACE Board** at the location of extreme populace/ footfalls.*



**Reference suggestions 1: PASS Board display**



### 3.4 Pollution Control

- ➔ **Vehicle usage** - Restricting the speed limit of vehicles on the premises to 10 km per hour, not honking on the premises will help in maintaining the sound in control and emphasis on a silent zone.
- ➔ **Specific area designated for E-vehicles** – There should be designated area dedicated to E-vehicles parking and charging and this zone should be demarcated as 'Eco-Zone'
- ➔ **Promote the use of Eco-friendly vehicles** - There can be student and staff sensitization program on eco-friendly and battery-operated vehicles/ low emission vehicles for daily use.
- ➔ **Battery charging points for Eco-friendly vehicles** - There can be provision for battery charge points, this would inspire students to change their mode of transportation and adopt sustainable practices.
- ➔ **Avoid burning waste** - The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- ➔ **Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.
- ➔ **Plant more radiation absorbing plants** - The following flora helps in reducing the harmful effects to a certain extent, the Institute can develop a radiation free zone and take to planting these through potted plants or permanent planting:
  - Spider plant
  - Rubber plant
  - Asparagus fern
  - Snake plant
  - Nelumbo nucifera (Includes colourful flowers)
  - Cactus
  - Areca palm
  - Mustard green
  - Betel
  - Aloe vera
  - Sprengers asparagus
  - Fiddle fig

## 4. Compilation

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.

- ➔ 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
- ➔ 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



# (Renewal) Green Audit Certificate

*The study is conducted as per Indian and International Green Building Standards initiated in the capacity of an Accredited & Certified Green Building Professional*

It is awarded for **2021-2022, 2022-2023 and 2023-2024** to the Esteemed Institution  
(Analysed for 3 years and extended validity for 1 year, thus total 4 years)

Viswambhara Educational Society's

## **Vaagdevi College of Engineering (Autonomous)**

Bollikunta (Village), Khila Warangal (Mandal), Warangal (Dist.) - 506 005, Telangana

As part of the Institution's initiatives for a Healthy & Sustainable College the audit was conducted.  
We appreciate the immense efforts taken by Staff and students towards the Efficient Management of Premise.

Issued on **Friday, 23 February 2024** valid till **31 January 2025**

  
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# *(Renewal) Energy Audit Certificate*

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Viswambhara Educational Society's

## **Vaagdevi College of Engineering (Autonomous)**

Bollikunta (Village), Khila Warangal (Mandal), Warangal (Dist.) - 506 005, Telangana

As part of the Institution's initiatives for a Healthy & Sustainable College the audit was conducted.  
We appreciate the immense efforts taken by Staff and students towards the Energy Management and Conservation.

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Architect, IGBC Accredited Professional, ISO Certified I. A. (IMS)  
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