

# ENVIRONMENT AUDIT

STUDY PERIOD (TWO YEARS) 2021 – 2022 & 2022 - 2023

Sustainability study

## AUDIT REPORT

**Government Degree College,  
Pattikonda**

Main road, Kotha Peta, Pattikonda,  
Kurnool (District), Pattikonda – 518380,  
Andhra Pradesh, India

**Studied in the capacity of**

**Accredited and Certified**  
Green Building Professional



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# Disclaimer

The Audit Team has prepared this report for the **Government Degree College, Pattikonda** located at Main road, Kotha Peta, Pattikonda, Kurnool (District), Pattikonda – 518380, Andhra Pradesh, India 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 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 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 as an Accredited and Certified Green Building Professional-Architect. 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

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# Acknowledgement

The Audit Assessment Team thanks the **Government Degree College, Pattikonda, Andhra Pradesh** 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 **everyone from the Governing body.**

Our heartfelt thanks are extended to the Chairperson of the entire process **Dr. R. Madhuri** (Principal) for the valuable inputs.

We are also thankful to Institute's Task force who have played a major role in data collection - **Dr. Md. Osman Ahmed**, IQAC Coordinator; **Ms. Vasantha** and **Mr. Rajesh**

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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# 1. Introduction

## 1.1 About the Institution

**The Government Degree College, Pattikonda,** Kurnool Dist. was established with an initial strength of 88 students with B.A., & B.Com courses in 1988 in Government Junior College. Since its inception, it has been striving hard to impart quality and job oriented education to the students of socially and economically backward area of Kurnool district.

Innovative teaching and learning methods are adopted which include student centered learning, seminars, G.Ds and assignments. Besides Mana T.V. Guest lectures and invited lectures enhance the quality of education with values and latest concepts. Field trips are arranged to broaden the outlook of the students. Academically backward students are identified and special care is taken to sharpen their skills by conducting remedial coaching

**Cerment cell is making relentless efforts to address the problems of the girl students.** Apart form conducting various competitions for the girls, if instils confidence to face the challenges of the society bravely. Grievance Redressal cell is taking all steps to solve the issues of the students. Students are given freedom to express their grievances without hesitancy.

**Eco club is at its best in maintaining greenery in the campus.** On the games and sports front, physical education department deserves great appreciation as it is putting untiring efforts in shaping students into bright and talented.

Being a socially responsive organization, the institution is putting all its endeavours to improve the lot of the stake holders through value based education and relevant community development activities. **The College anticipates a good number of its students will become socially responsible citizens who can make society a better place to live in.**

## 1.2 About the statements of the Institute

### 1.2.1 Vision

The Institute proposes "To provide quality education to the students of poor, down trodden and privileged of rural, backward and side-lined area of Pattikonda and achieve academic excellence."

### 1.2.2 Mission

The Institute adheres and focuses towards:

- To provide quality education through effective curriculum design and implementation.
- To emancipate from legal, socio and economic restrictions.
- To help the students in the development of their personality, life skills, communicative skills for acquiring better and fruitful employment.
- To encourage staff to utilize ICT enabled methods in teaching and learning process to make it effective.
- To sensitize the students towards social concern human rights gender quality and environmental issues.

## 1.3 Assessment of the Institute

### 1.3.1 Affiliations

The Institute is affiliated to **Rayalaseema University**, a state University in Pasupula, Andhra Pradesh, India.

### 1.3.2 Certification

The Institute has received the following Certifications

- **ISO 9001** – Quality Management Systems
- **ISO 50001** – Energy Management Systems
- **All India Survey of Higher Education** (AISHE) - wherein the code is C-26248.

### 1.3.3 Recognitions

The courses provided and the Institute are recognised under the **section 2(f) and 12 (B) of the University Grants Council Act, 1956.**

### 1.3.4 Accreditation

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

Cycle	First	Second
<b>CGPA</b>	70	2.3
<b>Grade</b>	B	B
<b>Year</b>	2007	2015

*Table 1: NAAC Accreditation details of the Institute*

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

## 2. Overview

### 2.1 Summarised Populace analysis for 2022-2023

#### 2.1.1 Students data

The data (shared by the Institute) shows there were **460 male and 265 female students**.

#### 2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Teaching staff	19	03	22
2	Non-Teaching staff	06	01	07
<b>Total Staff Members</b>		<b>25</b>	<b>04</b>	<b>29</b>

*Table 2: Staff data of the Institution for 2022-2023*

The staff data shows the Institute premises had a total of **29 Staff Members**.

### 2.2 Summarised Populace analysis for 2021-2022

#### 2.2.1 Students data

The data (shared by the Institute) shows there were **222 male and 135 female students**.

#### 2.2.2 Staff data

S. No.	Type	Male	Female	Total
1	Teaching staff	19	03	22
2	Non-Teaching staff	06	01	07
<b>Total Staff Members</b>		<b>25</b>	<b>04</b>	<b>29</b>

*Table 3: Staff data of the Institution for 2021-2022*

The staff data shows the Institute premises had a total of **29 Staff Members**.



## 2.3 Institute area

The **site area is 6.5 acres** for an approximately **754 footfalls**.

## 2.4 Institute Infrastructure

### 2.4.1 Establishment

The Institute was established in **1988**.

### 2.4.2 Spatial Organisation

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

The Institute is located prettyclose 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.

## 2.5 Operation and Maintenance of premises

The interview session was held with the staff regarding the operation and working hours. The Institution is open from Monday to Saturday with the timings being 10:00 am to 17:00 hours.

## 3. Research

### 3.1 About the Green Building Study Audit

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

### 3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- Investigation
- Technical discussion with team
- Observations
- Inferences

### 3.3 Strategy adopted for Green Building Study Audit

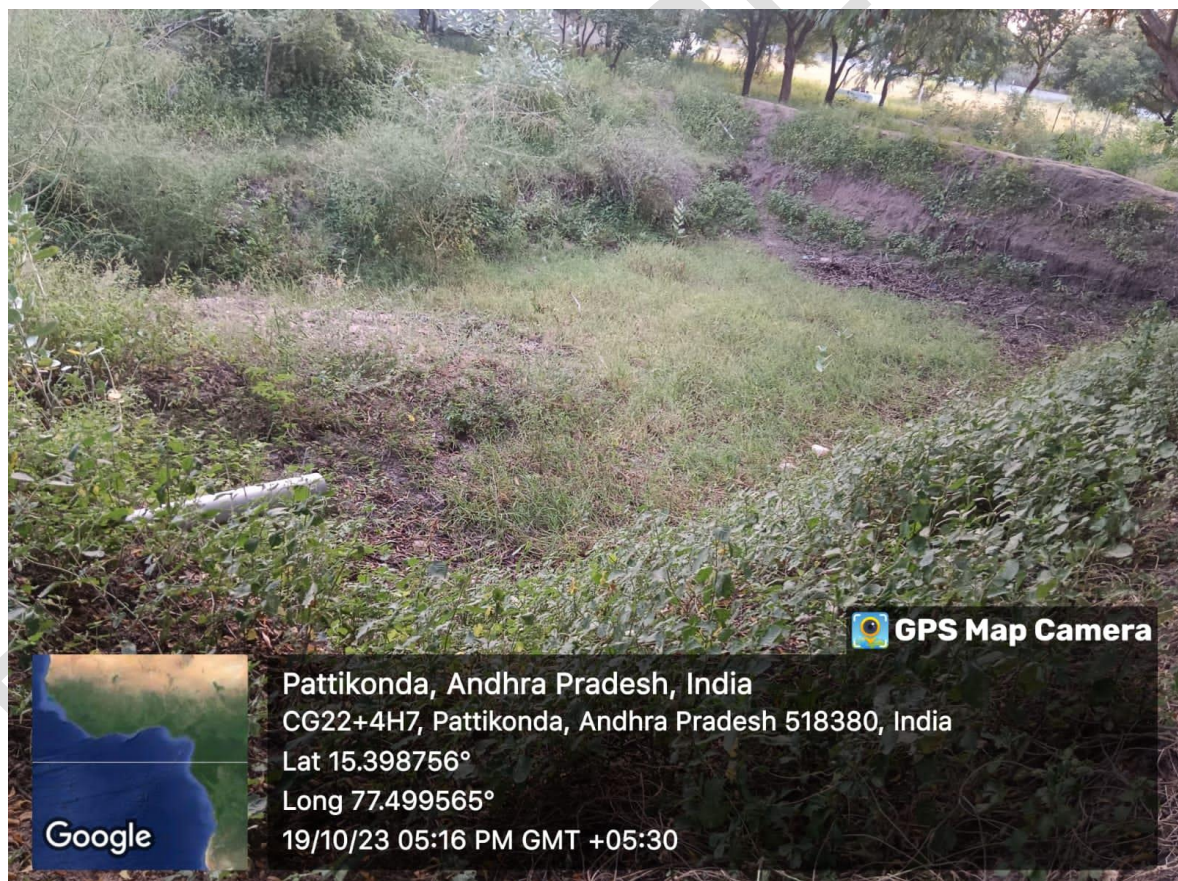
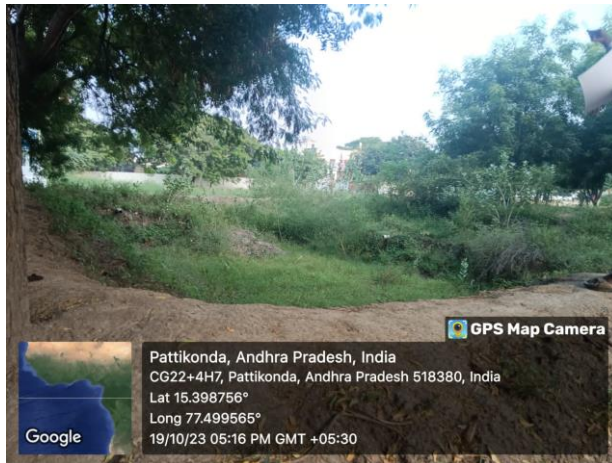
The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

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

- Discussion with the Institute
- Allotment and Initiation by the Institute
- Data collection
- Submission of the files

## 4. Observation

The section showcases the facilities available in the premises



*Plate 1: Open spaces in and around the premises*

## 5. Documentation

### 5.1 Site beautification

#### 5.1.1 Open Spaces

There are multiple green zones equipped with extensive ecological cover. These areas also facilitate the outdoor game areas with the prevailing **natural and potted plantations the beauty of the space has been well enhanced.**

#### 5.1.2 Flora audit

A survey was carried out to identify ecological footprint of site as documented below.

The data has been compiled by the Internal team and further analysed by the external team. The uses of the plantations are termed under 'Greenery and ambience'

S. No.	Plant name	Type	Nos.
1	<i>Neem</i>	Tree	50
2	<i>Teak</i>	Tree	25
3	<i>Coconut</i>	Tree	10
4	<i>Ashoka Sal</i>	Tree	20
5	<i>Tamarins</i>	Tree	5
6	<i>Beech</i>	Tree	45
7	<i>Henna Tree</i>	Tree	10
8	<i>Leucaena</i>	Tree	70
9	<i>Jamorn</i>	Tree	10
10	<i>Billa Gannera</i>	Shrub	40
11	<i>Delonix</i>	Tree	25
12	<i>Nerium</i>	Shrub	10

*Table 4: Details of the Flora in the premises*

**At present there are 320 nos. of plantations and innumerable herbs in premises.**

All of these are planted by the on various occasions and some have grown naturally; timely maintenance with sufficient care has resulted in positive benefits for the surroundings.



### 5.1.3 Fauna audit

The details of the fauna available in the premises are documented below:

Fauna available	Names
<b>Birds</b>	Parrots, Crows
<b>Insects</b>	Spiders, Scorpions, Cockroaches
<b>Invertebrates</b>	Earth worms, Leaches
<b>Reptiles</b>	Snakes, Lizards, Calottes, Varanus
<b>Amphibians</b>	Frogs, Toads
<b>Mammals</b>	Cows, Buffalos, Monkeys

*Table 5: Details of the fauna in the premises*

The premise has a beautiful and rich fauna; it enhances the co-existence and provides a fresh environment for the premises.

## 5.2 Heat island reduction

The external temperature is well under control owing to shaded walkways and huge nos. of plantations all over the premises.

## 5.3 Life 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. The current provisions can be improved.

## 5.4 Pollution Control

### 5.4.1 Noise Audit

On a macro level the Institute is surrounded by educational and residential blocks **thus there is a peaceful and noise free arena observed within the premises.**

### 5.4.2 Eco-friendly Commuting Practices

- The site is located in a rural locality.
- Overall, the carbon footprint is well under control.
- Students and staff members commute using public transport.
- There are no major fossil fuels used inside the premises.

### 5.4.3 Outdoor Light Pollution Study

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



## 6. Suggestions

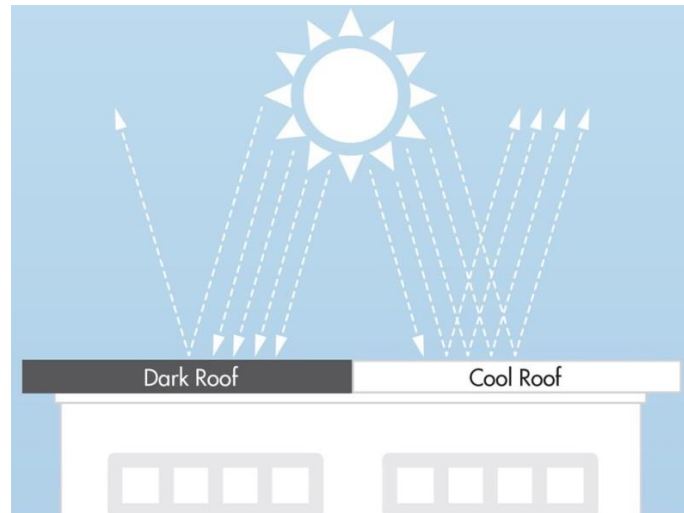
The following points are related to 'entire Institute' and should be implemented [within 3.5 to 5.5 years from date of the Report submission.](#)

### 6.1 Site beautification

- ➔ **Beautification of the entrance pathway** - The existing bricks (waste from the existing new construction going on) can be used or upgraded the pathway through an appropriate Landscape Architecture design.
- ➔ **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.
- ➔ **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.
- ➔ **Xeriscaping** – This practice involves designing the open spaces and planning to use xeriscaping plants which require less water and beautify the premises equally. This type of practice should be implemented in areas where there is water shortage.
- ➔ **Garden development** - The existing open space should be designed as an Architectural landscape.
  - Nursery documentation, expansion and beautification – The premises should have a nursery, details can be decided as per the landscape beautification.
  - 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.
  - The landscape redesign and ecological redesign – This should be done to increase the shade cover in the entire premises.
  - Introduce various types of gardens inside the premises – The examples such as Flower gardens, Woodland gardens, Rock gardens, Water gardens, Vegetable and herb gardens, Roof gardens, Scented gardens, Medicinal gardens and Botanical gardens can be practiced.

## 6.2 Heat island reduction

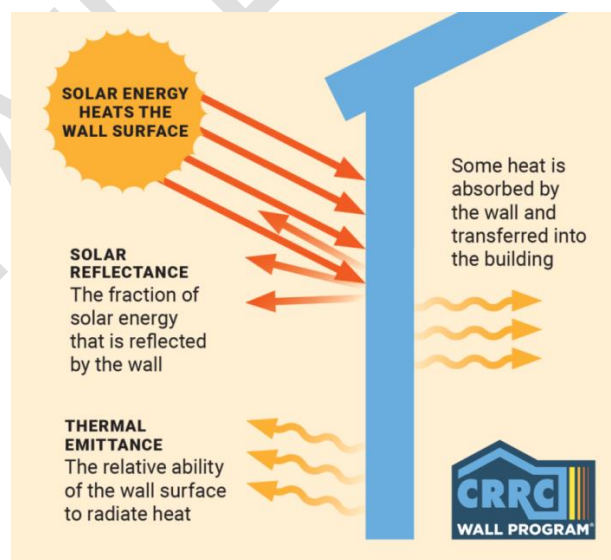
- ➔ **Cool rooftops** - The Terrace rooftops should be painted with Cooltop – reflective materials to reflect the harsh sun rays and reduce the heat absorption in the top most floor and surrounding areas of the building.



**Plate 2: Cool roof comparative analysis (For reference purpose only)**

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

- ➔ **Cool walls/ Solar reflective exterior wall surface** – The exterior walls of the building can be painted in light colors as this will help in reflecting solar radiation. Thus, less heat will be absorbed in the interiors and cool temperature will be maintained.



This illustration describes the flow of radiant energy as heat between the sun, wall surface, building interior, and surroundings. The higher the solar reflectance, the more solar energy is reflected away from the wall surface. Some of the solar energy is absorbed by the wall as heat. The higher the thermal emittance, the more absorbed heat is radiated away from the wall surface. IMAGE CREDIT: COOL ROOF RATING COUNCIL.

**Plate 3: Cool wall physics analysis (For reference purpose only)**

Source: Image by <https://coolroofs.org/resources/what-is-a-solar-reflective-wall>

- ➔ **Light colour flooring for cooler walkways** – The internal walkways in the outdoor areas should be painted in cool and reflective colours; if there is a need to use paver blocks they should be of light toned colour and less absorptive/ radiating materials.



*Plate 4: Cool walkways (For reference purpose only)*

Source: Image by <https://www.dutchiesstoneworks.com/outdoor-living-spaces/stone-walkways-and-stairs/>

### 6.3 Life safety

- ➔ **Mandate fire extinguisher in spaces** - One fire extinguisher should mandatorily be there in every space which has an air conditioner/ gas cylinder.
- ➔ **Sensitization programs** - 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.

### 6.4 Pollution Control

- ➔ **Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.
- ➔ **Avoid using plastic in premise** - There should be a provision for a ban on the use of plastic bags or products on the Premise.
- ➔ **Avoid paper wastage through books** - The Institute can collect all old semester notebooks; these can either be converted to reusable paper on premises through a workshop or using a shredder or handed over to a vendor for making fresh paper. Additionally, Students can undertake similar practices on an individual note.

## 7. Compilation

The study is based on the data collected, analyzed, 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 analyze and study the data collected.

### 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>

