

7.1.6. Reports on environment,
energy and green audit
submitted by the auditing
agency

ENERGY AUDIT

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

AUDIT REPORT

Studied for
Viswambhara Educational Society's
Vaagdevi College of Pharmacy
2-2-457/3, Ramnagar, Hanamkonda,
506001, Telangana, India

Studied in the capacity of
Accredited and Certified
Green Building Professional



Studied by

Greenvio
to future

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

Email: greenviosolutions@gmail.com

Valid till April 2024



Principal

Vaagdevi College of Pharmacy
Hanamkonda, Warangal-506 001

Disclaimer

The Audit Team has prepared this report for the **Viswambhara Educational Society's Vaagdevi College of Pharmacy** located at 2-2-457/3, Ramnagar, Hanamkonda, 506001, Telangana, India 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 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

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

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Acknowledgement

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

Our special thanks are due to **Ch. Narsimha Reddy**, President; **Ch. Rathnakar Reddy**, Treasurer; **Ch. Devender Reddy**, Secretary and Correspondent and everyone from the Management.

Our heartfelt thanks to the Chairperson of the entire process **Dr. Challa Srinivas Reddy**, Principal and Professor for the valuable inputs.

We are also thankful to **College's Task force the Assistant Professors** who have collected data required - **Dr. E. Venkateshwarlu**, Professor Head, Department of Clinical pharmacy & Pharma D. and **Dr. B. S. Sharvana Bhava**, IQAC Coordinator & H.O.D. Pharma Dept.

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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Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview	8
3. Research	9
4. Investigation	10
5. Documentation	11
6. Suggestion	17
7. Compilation.....	19

DETAILED REPORT




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On-site investigation and physical verification
 Audit Team during the visit on 6 May 2023

Evidence documents for Site visit of external audit team


Audit team headed by external expert - Ar. Nahida Abdulla
 Accredited & Certified Green Building Professional, ISO 1A (IMS)
 Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May 2023

Document objective: Inferences of the Site visit

Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
- Rain water harvesting pit available in the premises - Social Initiatives & waste management undertaken	- Increase reflectance & documentation of all facilities & activities
Energy Audit	
- solar panels are installed checked during visit for alternate source of energy	- Install solar HOT water Heater system in hostels - Install sensor band water taps, lights, hand (Educational areas) dryer
Environment Audit	
- Pharmacognosy garden	- Increase green cover on roof top & vertical garden - Improve ground level green cover through beautification


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 For the said Institute


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Audit objective: Green Building up gradation of the premises

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Institute: VAAGIDEVI COLLEGE OF PHARMACY Date: 6th May' 2023.

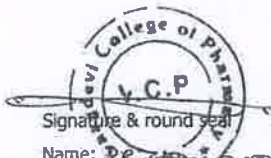
Document objective: Proof of the Site visit



Meeting with the core team



Investigation of the systems


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1. Introduction

1.1 About the Society

To impart higher education of high quality in the backward region of Telangana, some young, technically qualified persons with philanthropic qualities under the guidance of senior persons, established the Viswambhara Educational Society in Warangal on 3rd April 1993.

The main aim of the society is to offer higher education of high quality and noble values to the students of the backward region of Telangana and help in the upliftment of society.

As a maiden effort, the society started Vaagdevi College of Pharmacy in 1997.

The firm commitment of management and dedicated efforts of faculty started attracting many students to join in courses offered by **Vaagdevi College of Pharmacy** year after year. The College has grown in leaps and bounds in recent times and today, it is one of the most sought-after colleges in the region.

With the success of initial efforts and patronage of its stakeholders, Viswambhara Educational Society spread its educational services to the breadth and width of many disciplines like – engineering, pharmacy, physiotherapy, M.B.A, M.C.A, Education, and physical education apart among many undergraduate and postgraduate non-professional programs.

Today Vaagdevi Group of institutes is managing thirty colleges including - Engineering Colleges, Pharmacy Colleges, Management Colleges, M.C.A Colleges, Physiotherapy Colleges, Education Colleges, Ayurvedic Medicine Colleges, Paramedical and Nursing Colleges apart from conventional Degree & P.G Colleges.

Thus, Vaagdevi Group of Colleges has been making steady and tremendous strides in the present day, living up to the expectations of the people at large by imparting value-based education through professional and non-professional courses. It is now poised for a big leap in developing as a Deemed University.



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1.2 Statements of the Institution

1.2.1 Vision

The institute envisions

- ⇒ *Equipping students with the critical thinking skills, global perspective and respect for the core values of loyalty, honesty and compassion.*
- ⇒ *Helping students acquire these abilities is the cornerstone of the education.*
- ⇒ *Offering students will be successful now and will be prepared for the future.*
- ⇒ *Generating young people who will lead the nation to a brighter future by becoming engaged, smart, appreciated citizens and professionals.*

1.2.2 Mission

The College adheres and focuses

- ⇒ *"To prepare outstanding pharmacists, educators, scholars, and researchers and to advance the field of pharmacy education as a whole through research on the science and art of teaching and learning, the use of industrial and clinical procedures, the effective use of technology, the analysis development of leadership and educational policies."*

1.2.3 Aim

The College has formulated the following aim to achieve its mission

- ⇒ *Providing professional aspirants from both urban and rural areas with delivering top-notch instructions, student-centered teaching and learning techniques, and cutting-edge infrastructure to professionals seeking to make their mark in wherever they are placed.*
- ⇒ *Imparting technical education, also by using online advanced classes, resources like e-books, e-learning, e-library, etc., which encourage independent thought, develops strong subject matter expertise, sharpens modern skills, and produces attitudes supportive of the holistic development of young minds.*
- ⇒ *Enhancing the nation's healthcare by developing the institution into a Centre of Academic and Research Excellence in Pharmaceutical Education and becoming a global leader in the fields of pharmacy practice and pharmaceutical sciences.*

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1.2.4 Objective

The main objective of the college is to produce and qualify pharmacy graduates who satisfy the following characteristics:

- *Handle chemicals efficiently and safely while according to all applicable rules and regulations.*
- *Possesses the ability to formulate and prepare Pharmaceutical products*
- *Assess the quality and amount of raw materials and Pharmaceutical products using a variety of qualitative and quantitative analytical techniques.*
- *Utilize their in-depth understanding of their fundamental knowledge to offer the community and patients about drug information and education services regarding the usage of pharmaceuticals and medical devices.*
- *Possess the fundamental understanding of the pathogenesis of a disease, pharmacology and pharmacotherapy necessary to collaborate with other healthcare professionals in enhancing the delivery of healthcare services via the use of evidence based information and to manage unusual or extremely difficult cases.*
- *Planning, designing, and carrying out research with the proper methodology*
- *Develop student's presentation, marketing, business administration, computation and numeric skills*
- *Demonstrate student's communication skills, ability to work in a team, time-management, critical thinking, decision making and problem solving strategies*
- *Perform duties in accordance with the Law, Morality and Professional standards*
- *Capable of continuing education for the purpose of enhancing one's professional knowledge and abilities*
- *To ensure the sustainability of good practice, manage the effective and safe delivery of pharmaceuticals and take part in programmes for quality assurance and improvement*

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- ⇒ *Demonstrate a professional mind set by conducting business ethically and maintaining expertise over time through lifelong learning*

Finally, the student stepping out from this college should be a well-educated and trained professional acclimatized with all the future prospective and goals to be faced in advance.

1.3 Assessment of the Institute

1.3.1 Affiliation

The College has all its courses approved and is affiliated with the **Kakatiya University**, a public university located in the Indian state of Telangana.

1.3.2 Certification

The College has received the following Certifications:

- ⇒ **ISO** – The certification related to ISO 9001:2015 (Quality Management Systems) was received on 23 July 2023.
- ⇒ **AISHE** – The certification from the Department of Higher Education Statistics Division, New Delhi in 2022 and the code is C-27290.

1.3.3 Approval

The courses provided by the college are approved by the following bodies:

- ⇒ **Pharmacy Council of India (PCI), New Delhi** received in 2001 with the affiliation number being PCI – 2552.
- ⇒ **All India Council for Technical Education (AICTE), New Delhi** received in 1997 with the affiliation number being 1-12136136.




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2. Overview

2.1 Summarised Populace analysis

2.1.1 Students data

The student data (shared by the Institute) shows there were an **approximately 634 students in academic year 2022-2023 and 529 students in academic year 2021-2022** in the premises.

2.1.2 Staff data

The staff data shows the premises had an approximate of **49 nos. of Staff Members** on the premises in both academic years.

2.2 Site and Building spread area

The **total site area is 2.2 acres** and the **total Built-up area of the Institute is 1,02,758 sq. ft. (9,550 sq. m)**

2.3 Institute Infrastructure

2.3.1 Establishment

The Institute was established in **1997**.

2.3.2 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 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 for around 250 days.
- **Library areas** – 7:30 am to 9:30 pm, Monday to Saturday for around 320 days.



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




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On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May 2023.

Document objective: Induction Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. C. Srinivas Reddy	INTERNAL COLLEGE COMMITTEE	PRINCIPAL	
4.	Dr. B.S. SHARVANABHAVA		IQAC- Coordinator & H.O.D, Pharm.D.	
5.	Dr. E. Venkateshwarlu		H.O.D., Pharmacology,	
6.	Dr. A. MAKARANDH		ASSISTANT PROFESSOR	
7.	Ms. V. RASHMITHA		ASSISTANT PROFESSOR	
8.	Mrs. M. SUMALATHA		ASSISTANT PROFESSOR	M. Sumalatha
9.	Ms. K. SHARANYA		ASSISTANT PROFESSOR	shanya
10.	Dr. K. SRINIVAS REDDY		H.O.D., pharmacognosy.	
11.	Mr. N. KOMURA REDDY		ADMINISTRATIVE OFFICER	

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Name: DR. C. SRINIVAS REDDY
Designation: PRINCIPAL

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On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

4 | Page

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Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May' 2023

Document objective: Exit Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. C. SRINIVAS REDDY	INTERNAL COLLEGE COMMITTEE	PRINCIPAL	
4.	Dr. B.S. SHARVANA BHAVA		IQAC- Coordinator & H.O.D - Pharm.D.,	
5.	Dr. E. VENKATESHWARLU		H.O.D - Pharmacology	
6.	Dr. A. MAKARANDH		ASSISTANT PROFESSOR	
7.	MS. V. RASHMITHA		ASSISTANT PROFESSOR	
8.	Mrs. M. SUMALATHA		ASSISTANT PROFESSOR	M. Sumalatha
9.	MS. K. SHARANYA		ASSISTANT PROFESSOR	Shanya
10.	Dr. K. SRINIVAS REDDY		H.O.D. - Pharmacognosy	
11.	Mr. N. KOMURA REDDY		ADMINISTRATIVE OFFICER	

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4. Investigation

4.1 Sources analysis

The primary and secondary sources of energy consumption are based on the electrical supply through the local government.

4.2 Energy efficiency analysis

4.2.1 Energy efficient practices for alternative sources

- Additional provisions such as solar hot water heaters, solar parking etc., should be introduced in the near future.
- The premise has LED Lights contribute to 45% in terms of number and **21% of the power requirement** is met through the same. As per our study we could conclude that both of these numbers should improve.

4.2.2 Energy efficient equipment

- The premise has LED Lights in multiple spaces.
- The air conditioners are BEE star labelled appliances and new.
- There are no energy efficient fans in the premises.



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5. Documentation

5.1 Primary sources of energy consumption

- **Electrical (Metered)** – Light, Fans, Equipments, Pumps comprise these sources.
- **Renewable energy** – There are **107 Solar panels** to harness solar energy in the premises through solar panels.

5.2 Secondary sources of energy consumption

The premise uses batteries, inverters & UPS as backup for administrative purposes. The details of the existing sources are documented below:

S. No.	Name	Nos.
1	UPS	2
2	Inverters	1
3	Gas cylinders	7

Table 1: Details of secondary sources of energy consumption

5.3 Actual Electrical Consumption as per Bills

The College spends a substantial amount on electricity bills every month. However, we would like to recommend the use of alternate sources of energy to harness the electrical loads and reduce the monetary expenses.

S. No.	Month	Year	Amount
1	August	2022	95,041
2	September	2022	1,13,923
3	October	2022	1,04,417
4	November	2022	94,154
5	December	2022	1,01,866

Table 2: Details of the electrical consumption



5.4 Calculated Electrical Consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff.

The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioner, and equipment. The inventory and data collection for sources of energy consumed in the premise is summarised in the following sections.

The following documentation is based on the consumption practice of the premises on a regular working day.

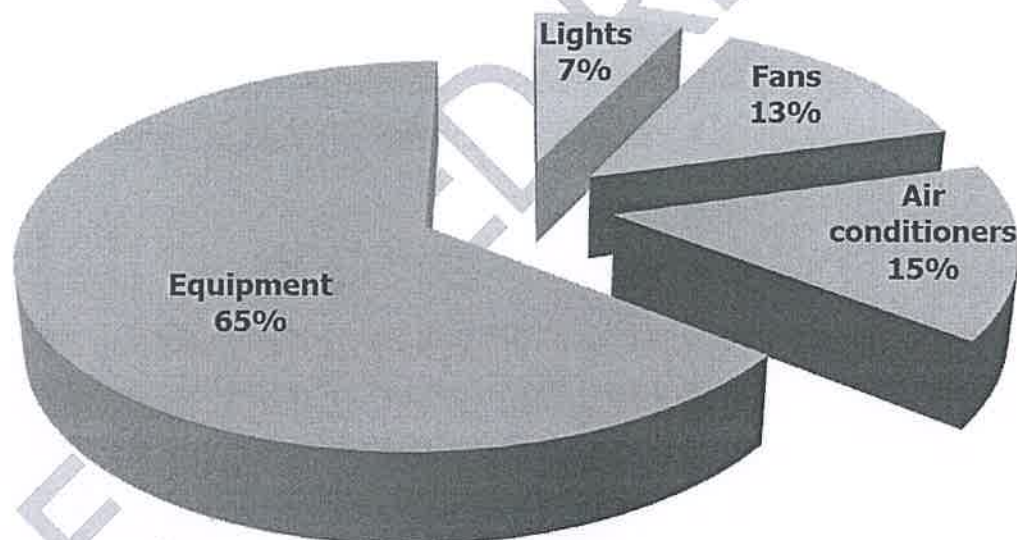


Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consumes 65% whereas the air conditioners consume 15% while the fans consume 13% and the lights consume 7% of the total calculated electrical energy.



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5.5 Lights

5.5.1 Types of lights based on the numbers

There are a total of **222 nos. of lights on the premises**; the following table shows the various types of lights on the premises.

S. No.	Type	Nos.
1	LED (Energy-efficient lights)	100
2	Non-LED (Non Energy-efficient lights)	122

Table 3: Summary of the types of lights on-premise

5.5.2 Types of lights based on the power consumption

The energy consumption of lights is **10,380 kWh** of energy.

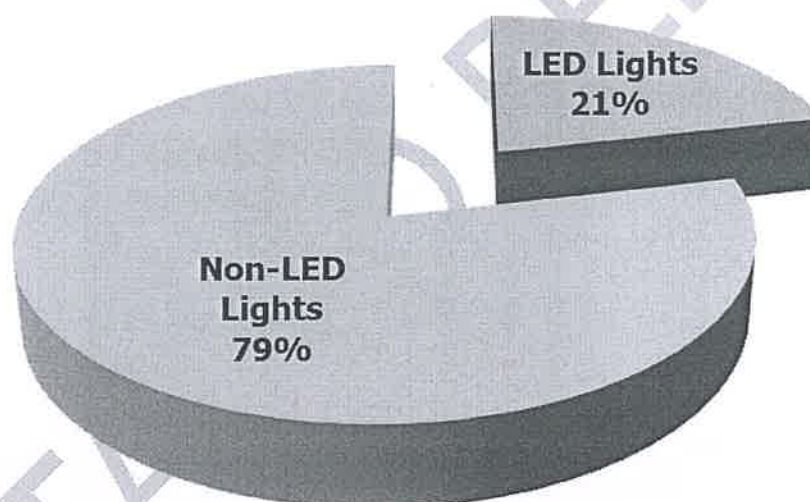


Figure 2: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights on the premises shows that the **Non-LED lights consume 79%** while the **LED lights consume 21%** of the total power consumed by lights.

5.5.3 Usage analysis

The premise has LED Lights contribute to 45% in terms of number and **21% of the power requirement** is met through the same. As per our study we could conclude that both of these numbers should improve.



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5.6 Fans

5.6.1 Types of fans based on the numbers

There are a total of **221 fans** on the premises as follows:

S. No.	Type	Nos.
1	Ceiling fans	211
2	Small Motor exhaust fans	8
3	Wall mounted fans	2

Table 4: Summary of the types of fans in the premises

5.6.2 Types of fans based on the power consumption

The energy consumption of fans is **19,472 kWh** of the energy.

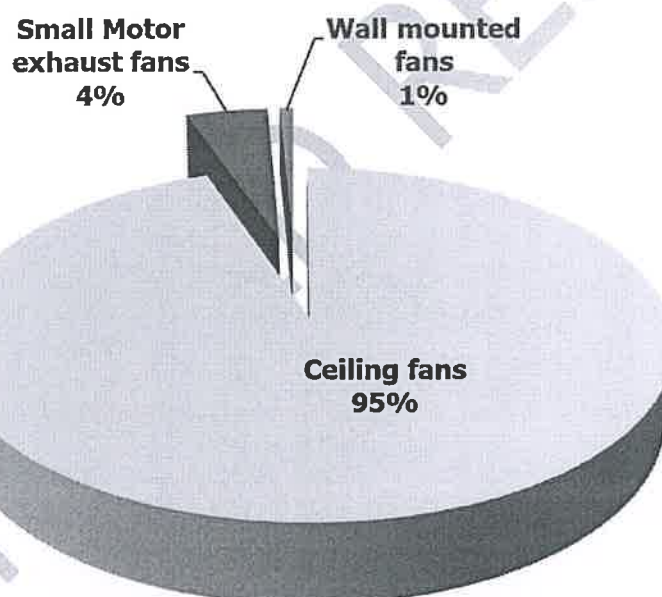


Figure 3: Types of fans based on power consumption

The above analysis shows the **Ceiling fans consume 95%** whereas the **small motor exhaust fans consume 4%** and the **wall mounted fans consume 1%** of the total power.

5.6.3 Usage analysis

There are no energy efficient fans in the premises.



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5.7 Air conditioners

5.7.1 Types of air conditioners based on the numbers

There are **two window air conditioners** and **one centralised air conditioning system** on the entire premises.

5.7.2 Building-wise consumption analysis

The energy consumption of air conditioner is **21,594 kWh** of energy.

5.7.3 Site investigation observations

The Outdoor units are cleaned properly and do not possess dust collection problems.

5.7.4 About the replacement of current air conditioners

Though there is not an immediate requirement for replacement.

However, whenever the Institute undergoes redevelopment or a new Block is constructed there can be provisions for replacement with energy-efficient appliances that require less power consumption.



5.8 Equipment

5.8.1 Types of Equipment

There are **153 nos. of equipment** in the Educational sector.

5.8.2 Types of equipment as per their energy contribution

The energy consumption of equipment is **93,665 kWh** of energy.

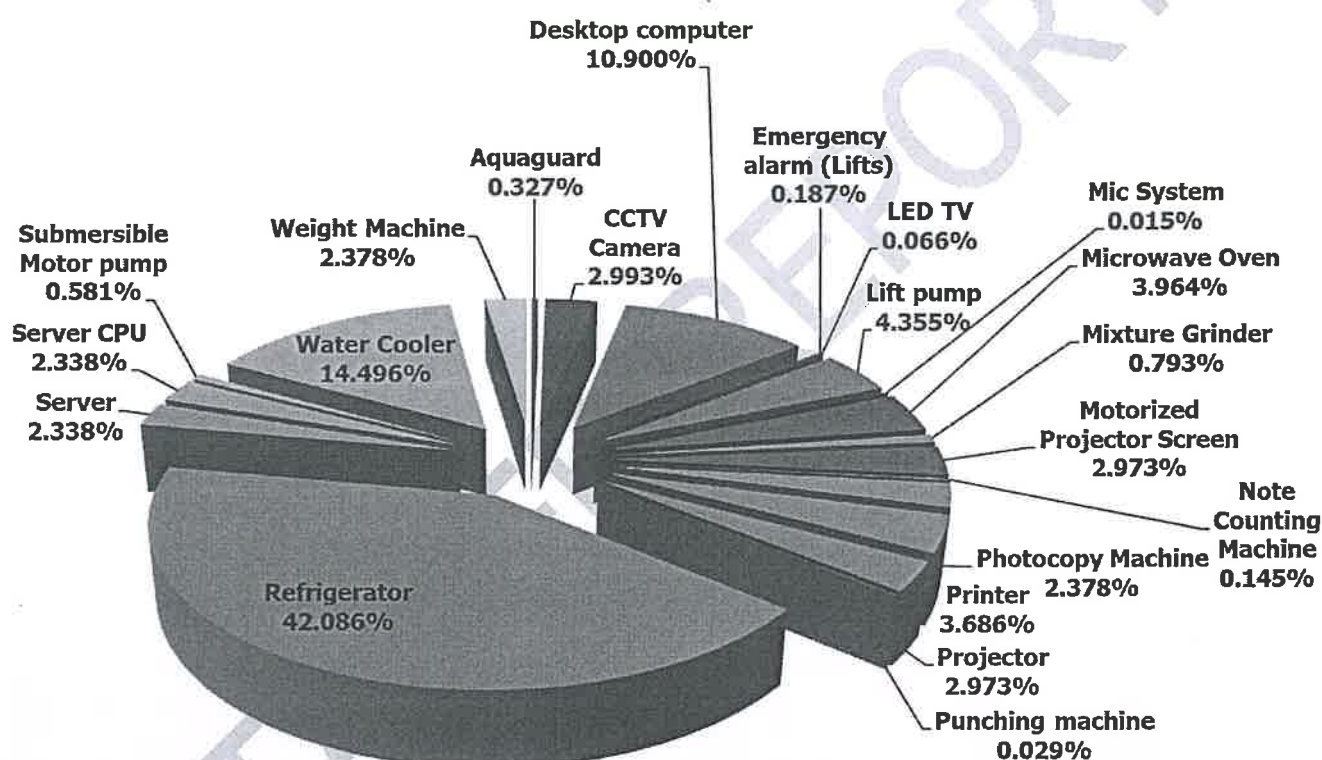


Figure 4: Energy consumed by types of equipment in the educational sector based on the usage study

The above summary shows that the **refrigerator consumes more energy at 42.086%** while the **water cooler consumes 14.496%** the **desktop computer consumes 10.900%** and the **lift pump consumes 4.355%** these are the maximum consumers as compared to other equipment.



6. Suggestion

6.1 Section-wise suggestions

The following suggestions are to be considered as a ***first priority*** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission.** The Institute can execute a plan after discussion with Project Head.

6.1.1 Electromechanical systems - Electrical and Lighting

Section 1 - Non-LED lights

The current light analysis shows that Non-LED lights consume anywhere between 50W to 54W and even more when in use; these should be replaced with LED lights which consume on an average 12-16W when in use. Our technical analysis shows that there would be a reduction of an average of **67% reduction** in energy consumption through lights specifically as a part of the electro -mechanical system if all **Non-LED lights on all floors** are replaced with an energy efficient appliance whenever the College undergoes renovation.

Section 2 - Ceiling fans

The current Fans are in proper working conditions and maintained well. The ceiling fans are in more quantity and consume at least 45W when in use. These should be replaced with energy efficient fans consuming 14W when in use. Our detailed study states that is all the **ceiling fans on all floors** if replaced with star rated appliance results in a reduction of average of **69% reduction** in energy consumption if replaced with energy efficient appliance. It will be suggested to either replace these now if College can have certain plans else the replacement can be done when fans get damaged or are not in working condition.



6.2 General suggestions

The following details are consolidated study recommendations related to 'entire Institute' and should be considered as ***second priority*** for implementation, once the section wise recommendations are implemented. The following recommendations should be ***implemented within 2.5 to 3.5 years from the date of the Report submission.***

6.2.2 Alternatives towards Smart premises mechanisms

6.2.2.1 Facility management systems, controls

(Includes electromechanical systems – Electrical, Water)

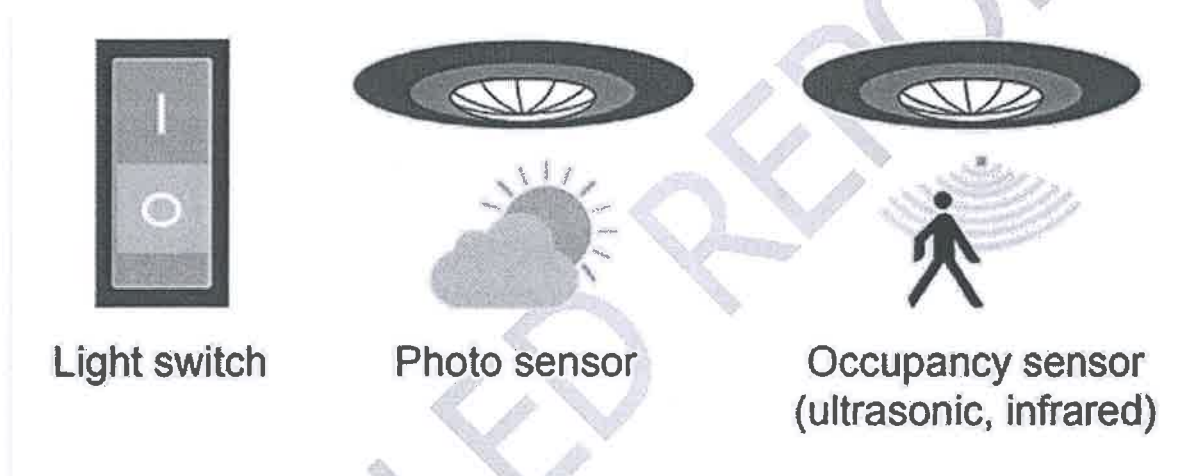


Plate 1: Understanding the lighting concepts

Source: https://seors.unfcc.int/applications/seors/attachments/get_attachment?code=NG125PFE4WHMWSYAK8TCAKTHMWX0F4QD

The above diagram provides a detailed study of how the system controls should be incorporated in the premises as far as lighting systems are considered. The suggestions for this sub-section are listed below.

- ⇒ Install PIR control of the lighting in the toilet areas.
- ⇒ Install low flow taps with automatic shut off in the toilets.
- ⇒ Install push button timer control in all rooms lighting and ceiling fans.
- ⇒ Install Power Electronics control of the Foyer notice board lighting.
- ⇒ Installation of intelligent lighting controller will help in controlling the lighting energy.
- ⇒ Use of photo sensor switch for street light controlling helps in conserving the lighting energy.



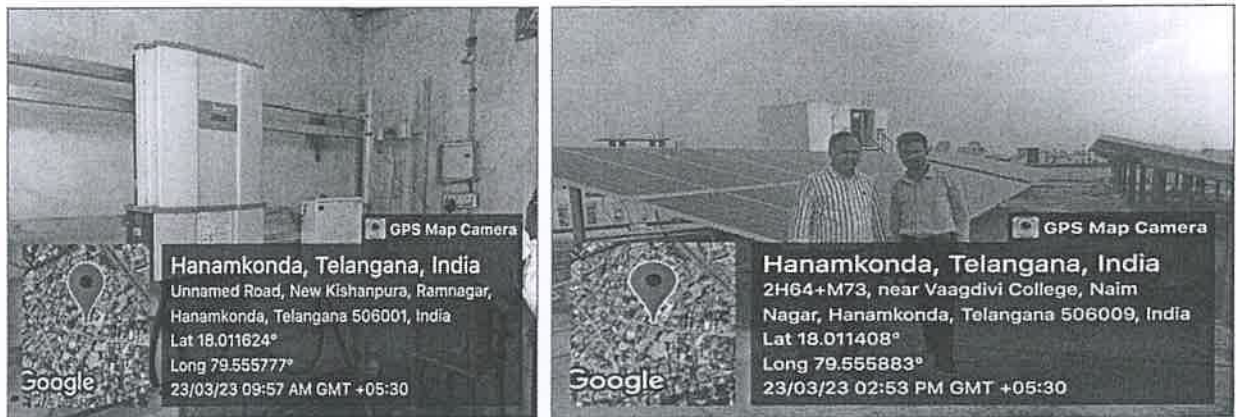
On-site investigation and physical verification
 Audit Team during the visit and other photos collected during data documentation



Meeting with the core team, group photo with the team and site investigation



Investigative parameters – Ecological Management – Wheelchair, Ramp and Plantations



Investigative parameters – Energy Management – Solar panels and electrical appliances



Investigative parameters – Water & Waste Management – Rain water harvesting pit, Dustbins & vending machine



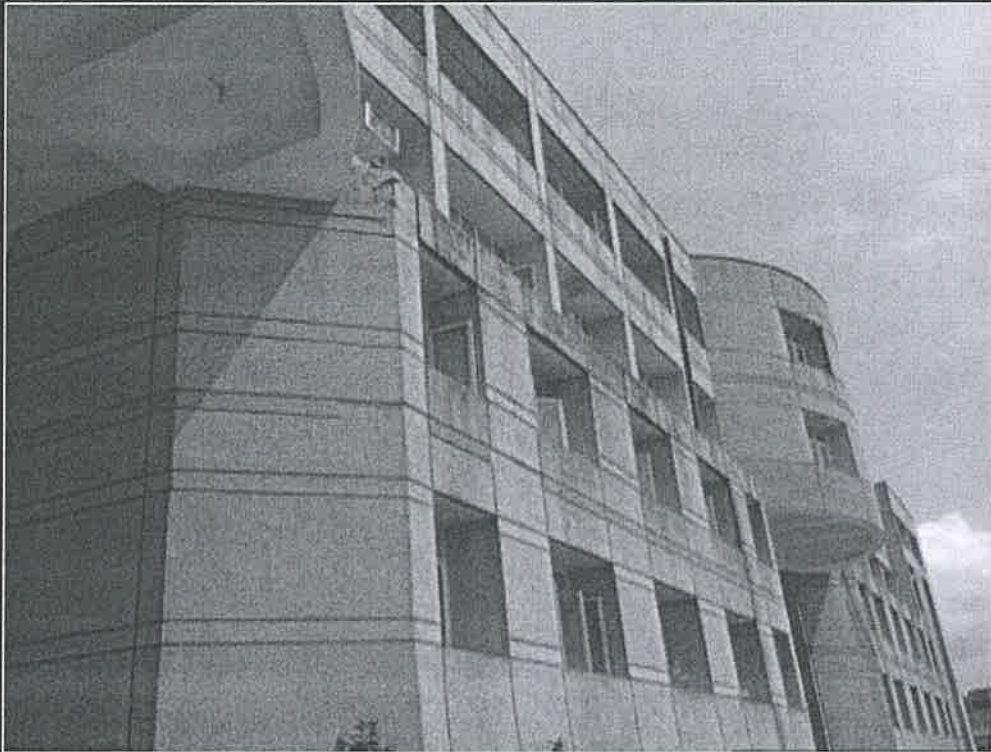
7. Compilation

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.

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://www.happysprout.com/inspiration/what-is-smart-gardening/>
- <https://housing.com/news/smart-gardening/>
- Inference study reference image - Zsuzsa Bóka from Pixabay
- Inference study reference image - <https://solarpowerproject.in/solar-panels-for-parking-lots.php>





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ENVIRONMENT AUDIT

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

Sustainability study
AUDIT REPORT

Studied for
Viswambhara Educational Society's
Vaagdevi College of Pharmacy
2-2-457/3, Ramnagar, Hanamkonda,
506001, Telangana, India

Studied in the capacity of
Accredited and Certified
Green Building Professional



Studied by

Greenvio
Solutions

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

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Valid till April 2024



Vaagdevi College of Pharmacy
Hanamkonda, Telangana, India

Background reference image Nic Y C Gua on unsplash

Disclaimer

The Audit Team has prepared this report for the **Viswambhara Educational Society's Vaagdevi College of Pharmacy** located at 2-2-457/3, Ramnagar, Hanamkonda, 506001, Telangana, India 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 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

Sustainable Academe is our department for conducting Audits

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Principal

Vaagdevi College of Pharmacy

Hanamkonda, Warangal-506 001



Acknowledgement

The Audit Assessment Team thanks the **Viswambhara Educational Society's Vaagdevi College of Pharmacy, Telangana, India** 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 **Ch. Narsimha Reddy**, President; **Ch. Rathnakar Reddy**, Treasurer; **Ch. Devender Reddy**, Secretary and Correspondent and everyone from the Management.

Our heartfelt thanks to the Chairperson of the entire process **Dr. Challa Srinivas Reddy**, Principal and Professor for the valuable inputs.


We are also thankful to **College's Task force the Assistant Professors** who have collected data required - **Dr. E. Venkateshwarlu**, Professor Head, Department of Clinical pharmacy & Pharma D. and **Dr. B. S. Sharvana Bhava**, IQAC Coordinator & H.O.D. Pharma Dept.

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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Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview	8
3. Research	9
4. Observations.....	10
5. Suggestions	14
6. Compilation.....	17




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On-site investigation and physical verification

Audit Team during the visit on 6 May 2023

1 | Page

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May '2023

Document objective: Inferences of the Site visit

Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
<ul style="list-style-type: none"> - Rain water harvesting pit available in the premises - Social initiatives & waste management undertaken 	<ul style="list-style-type: none"> - Increase reflectance & documentation of all facilities & activities
Energy Audit	
<ul style="list-style-type: none"> - solar panels are installed checked during visit for alternate source of energy 	<ul style="list-style-type: none"> - Install solar HOT water Heater system in hostels - Install sensor band water taps, lights, hand (Education and awareness) dryer
Environment Audit	
<ul style="list-style-type: none"> - pharmacognosy garden 	<ul style="list-style-type: none"> - Increase green cover on roof top & vertical garden - Improve ground level green cover through beautification



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Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO 1A (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May' 2023.


Document objective: Proof of the Site visit



Meeting with the core team



Investigation of the systems


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1. Introduction

1.1 About the Society

To impart higher education of high quality in the backward region of Telangana, some young, technically qualified persons with philanthropic qualities under the guidance of senior persons, established the Viswambhara Educational Society in Warangal on 3rd April 1993.

The main aim of the society is to offer higher education of high quality and noble values to the students of the backward region of Telangana and help in the upliftment of society.

As a maiden effort, the society started Vaagdevi College of Pharmacy in 1997.

The firm commitment of management and dedicated efforts of faculty started attracting many students to join in courses offered by **Vaagdevi College of Pharmacy** year after year. The College has grown in leaps and bounds in recent times and today, it is one of the most sought-after colleges in the region.

With the success of initial efforts and patronage of its stakeholders, Viswambhara Educational Society spread its educational services to the breadth and width of many disciplines like – engineering, pharmacy, physiotherapy, M.B.A, M.C.A, Education, and physical education apart among many undergraduate and postgraduate non-professional programs.

Today Vaagdevi Group of institutes is managing thirty colleges including - Engineering Colleges, Pharmacy Colleges, Management Colleges, M.C.A Colleges, Physiotherapy Colleges, Education Colleges, Ayurvedic Medicine Colleges, Paramedical and Nursing Colleges apart from conventional Degree & P.G Colleges.

Thus, Vaagdevi Group of Colleges has been making steady and tremendous strides in the present day, living up to the expectations of the people at large by imparting value-based education through professional and non-professional courses. It is now poised for a big leap in developing as a Deemed University.



1.2 Statements of the Institution

1.2.1 Vision

The institute envisions

- *Equipping students with the critical thinking skills, global perspective and respect for the core values of loyalty, honesty and compassion.*
- *Helping students acquire these abilities is the cornerstone of the education.*
- *Offering students will be successful now and will be prepared for the future.*
- *Generating young people who will lead the nation to a brighter future by becoming engaged, smart, appreciated citizens and professionals.*

1.2.2 Mission

The College adheres and focuses

- *"To prepare outstanding pharmacists, educators, scholars, and researchers and to advance the field of pharmacy education as a whole through research on the science and art of teaching and learning, the use of industrial and clinical procedures, the effective use of technology, the analysis development of leadership and educational policies."*

1.2.3 Aim

The College has formulated the following aim to achieve its mission

- *Providing professional aspirants from both urban and rural areas with delivering top-notch instructions, student-centered teaching and learning techniques, and cutting-edge infrastructure to professionals seeking to make their mark in wherever they are placed.*
- *Imparting technical education, also by using online advanced classes, resources like e-books, e-learning, e-library, etc., which encourage independent thought, develops strong subject matter expertise, sharpens modern skills, and produces attitudes supportive of the holistic development of young minds.*
- *Enhancing the nation's healthcare by developing the institution into a Centre of Academic and Research Excellence in Pharmaceutical Education and becoming a global leader in the fields of pharmacy practice and pharmaceutical sciences.*



1.2.4 Objective

The main objective of the college is to produce and qualify pharmacy graduates who satisfy the following characteristics:

- *Handle chemicals efficiently and safely while according to all applicable rules and regulations.*
- *Possesses the ability to formulate and prepare Pharmaceutical products*
- *Assess the quality and amount of raw materials and Pharmaceutical products using a variety of qualitative and quantitative analytical techniques.*
- *Utilize their in-depth understanding of their fundamental knowledge to offer the community and patients about drug information and education services regarding the usage of pharmaceuticals and medical devices.*
- *Possess the fundamental understanding of the pathogenesis of a disease, pharmacology and pharmacotherapy necessary to collaborate with other healthcare professionals in enhancing the delivery of healthcare services via the use of evidence based information and to manage unusual or extremely difficult cases.*
- *Planning, designing, and carrying out research with the proper methodology*
- *Develop student's presentation, marketing, business administration, computation and numeric skills*
- *Demonstrate student's communication skills, ability to work in a team, time-management, critical thinking, decision making and problem solving strategies*
- *Perform duties in accordance with the Law, Morality and Professional standards*
- *Capable of continuing education for the purpose of enhancing one's professional knowledge and abilities*
- *To ensure the sustainability of good practice, manage the effective and safe delivery of pharmaceuticals and take part in programmes for quality assurance and improvement*



- ⇒ *Demonstrate a professional mind set by conducting business ethically and maintaining expertise over time through lifelong learning*

Finally, the student stepping out from this college should be a well-educated and trained professional acclimatized with all the future prospective and goals to be faced in advance.

1.3 Assessment of the Institute

1.3.1 Affiliation

The College has all its courses approved and is affiliated with the **Kakatiya University**, a public university located in the Indian state of Telangana.

1.3.2 Certification

The College has received the following Certifications:

- ⇒ **ISO** – The certification related to ISO 9001:2015 (Quality Management Systems) was received on 23 July 2023.
- ⇒ **AISHE** – The certification from the Department of Higher Education Statistics Division, New Delhi in 2022 and the code is C-27290.

1.3.3 Approval

The courses provided by the college are approved by the following bodies:

- ⇒ **Pharmacy Council of India (PCI), New Delhi** received in 2001 with the affiliation number being PCI – 2552.
- ⇒ **All India Council for Technical Education (AICTE), New Delhi** received in 1997 with the affiliation number being 1-12136136.



2. Overview

2.1 Summarised Populace analysis

2.1.1 Students data

The student data (shared by the Institute) shows there were an **approximately 634 students in academic year 2022-2023 and 529 students in academic year 2021-2022** in the premises.

2.1.2 Staff data

The staff data shows the premises had an approximate of **49 nos. of Staff Members** on the premises in both academic years.

2.2 Site and Building spread area

The **total site area is 2.2 acres** and the **total Built-up area of the Institute is 1,02,758 sq. ft. (9,550 sq. m)**

2.3 Institute Infrastructure

2.3.1 Establishment

The Institute was established in **1997**.

2.3.2 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 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 for around 250 days.
- **Library areas** – 7:30 am to 9:30 pm, Monday to Saturday for around 320 days.



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



On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

3 | Page

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May 2023.

Document objective: Induction Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. C. Srinivas Reddy	INTERNAL COLLEGE COMMITTEE	PRINCIPAL	
4.	Dr. B.S. SHARVANABHAVA		IQAC- Coordinator & H.O.D, Pharm.D.	
5.	Dr. E. Venkateshwarlu		H.O.D, Pharmacology.	
6.	Dr. A. MAKARANDH		ASSISTANT PROFESSOR	
7.	Ms. V. RASHMITHA		ASSISTANT PROFESSOR	
8.	Mrs. M. SUMALATHA		ASSISTANT PROFESSOR	M. Sumalatha
9.	Ms K. SHARANYA		ASSISTANT PROFESSOR	Shoja.
10.	Dr. K.SRINIVAS REDDY		H.O.D., Pharmacognosy.	
11.	Mr. N. KOMURA REDDY		ADMINISTRATIVE OFFICER	

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4 | Page

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Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May' 2023

Document objective: Exit Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
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2.	Ar. Nahida Abdulla	External	Project Head	
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6.	Dr. A. MAKARANDH		ASSISTANT PROFESSOR	
7.	MS. V. RASHMITHA		ASSISTANT PROFESSOR	
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4. Observations

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.

4.1 Open Spaces

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

4.2 Flora and fauna audit

4.2.1 Flora audit

The campus is located in a shared campus with multiple Institutes sharing the same building. There is little to almost no scope to increase the flora/ green cover of the premises on ground level.

However, the College being a Pharmacy Institute has a dedicated subject related to Medicinal Plants known as 'Pharmacognosy' and hence the Team has done an excellent job by utilising an outdoor partially open terrace area as a pharmacognosy garden.

- In this area not only are the medicinal plants placed all over.
- It serves as a dual purpose for study and break-out zone.
- All the plants are documented with name tags which include local names and scientific names.
- The area is kept clean.



The plants in the premises are documented through a survey by the internal team and refined further as follows:

S. No.	Plant name	Type	Nos.	Planted by
1	<i>Azadirachta indica L.</i>	Tree	1	Dr. C. Srinivas Reddy
2	<i>Psidium guajava L.</i>	Tree	1	Dr. Y. Shravan Kumar
3	<i>Phoenix dactylifera L.</i>	Tree	2	Dr. D. Kumara Swamy
4	<i>Terminalia catappa</i>	Tree	1	Dr. K. Srinivas Reddy
5	<i>Calotropis gigantea (L.) Dryand.</i>	Shrub	1	Dr. E. Venkateshwarlu
6	<i>Mangifera indica L.</i>	Tree	2	Dr. D. Adukondalu
7	<i>Polyalthia longifolia</i>	Tree	1	Mrs. S. Pavani
8	<i>Lawsonia inermis L.</i>	Shrub	1	Mr. B. S. Sharavana Bhava
9	<i>Nerium oleander L.</i>	Shrub	1	Mrs. T. Rajani
10	<i>Aloe vera</i>	Herb	1	Mrs. P. Girija
11	<i>Punica granatum L.</i>	Shrub	1	Mrs. K. Ragini
12	<i>Withania somnifera (L.) Dunal</i>	Shrub	1	Ms. M. Shruthy
13	<i>Piper betle L.</i>	Herb	1	Mrs. B. Krishnaveni
14	<i>Tinospora cordifolia</i>	Shrub	1	Y. Ramya Sree
15	<i>Couroupita guianensis Aubl.</i>	Tree	1	Dr. L. Venkatesh
16	<i>Bauhinia purpurea L.</i>	Tree	1	E. Rajeev Reddy
17	<i>Gymnema sylvestre</i>	Shrub	1	S. Sirisha
18	<i>Capparis zeylanica</i>	Shrub	1	S. Kalyani
19	<i>Vanda tessellata</i>	Herb	1	M. Mounika
20	<i>Stachytarpheta jamaicensis</i>	Shrub	1	G. Swapna
21	<i>Andrographis paniculata</i>	Herb	1	T. Sushma Preethi
22	<i>Centella asiatica</i>	Herb	1	P. Goutham
23	<i>Anisomeles indica</i>	Shrub	1	D. Mounika
24	<i>Chamaecostus cuspidatus</i>	Herb	1	M. Madhavi



25	<i>Aristolochia indica</i>	Plant	1	T. Keerthi
26	<i>Tylophora asthmatica</i>	Plant	1	B. Neeraja
27	<i>Cardiospermum halicacabum</i>	Shrub	1	B. Venkatesh
28	<i>Aegle marmelos</i>	Tree	1	Ch. Mounika
29	<i>Nycanthes arbor-tristis</i>	Shrub	1	C. Vijitha
30	<i>Madhuca longifolia var. latifolia</i>	Tree	1	D. Madhuri
31	<i>Sauropus androgynus</i>	Shrub	1	D. Sushma
32	<i>Justicia adhatoda</i>	Shrub	1	D. Titus

Table 1: Details of the Flora in the premises

At present there are 32 numbers of plantations comprising of plants, trees, shrubs. 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.

4.1.2 Fauna audit

There are 15 frogs available in the premises.

4.3 Noise Audit

On a macro level the College is surrounded by huge farms and minimal residential blocks thus there is a peaceful and noise free arena observed inside the premises.

4.4 Carbon Footprint Audit

4.4.1 Eco-friendly Commuting Practices

- The site is located in a semi-urban 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.



4.4.2 Heat Island Reduction

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

4.4.3 Outdoor Light Pollution Study

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

4.5 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.

- Low height risers in the staircases
- Non-slippery floor surfaces
- Toilets for the specially abled
- Lifts

4.6 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. **All provisions such as extinguishers, sand buckets have been undertaken.**



5. Suggestions

5.1 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 1.5 to 2.5 years from the date of the Report submission.** The Institute can execute a plan after discussion with Project Head.

5.1.1 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.

5.1.2 Heat island reduction

Cool rooftops - It is suggested that the Institute gets the Terrace roofs painted with Cooltop as it will help reduce the temperature of the spaces.

5.1.3 Universally accessible premises

- **Resting places** - There should be increased provision for resting places on-premises outdoor and indoors.
- **Provisions for visually impaired - Signages** – In addition to the signages being in regular language there should be additional signages in braille language for the specially-abled students.
- **Provisions for visually impaired - Tactile flooring** – The indoor and outdoor of the premises should have dedicated tactile flooring for the visually impaired.

5.1.4 Life safety

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



- **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.
- **Fire and life safety practices** – Provisions such as signages, fire alarm, smoke detectors, fire hydrant cabinets, sand buckets, hose reel, fire cabinet, fire water tank and fire pump near the entrance block whichever is applicable should be practiced.
- **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.

5.1.5 Pollution Control

- **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.
- **Avoid burning waste** - The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- **Plant more carbon dioxide absorbing plants** - The following plantations should be planted as they will help in Carbon neutralisation.
 - Pine – It is known for its ability to sequester carbon.
 (<https://www.single.earth/blog/which-trees-absorb-the-most-carbon#:~:text=Pine%20trees%20as%20carbon%20sinks,their%20ability%20to%20sequester%20carbon.&text=These%20trees%20are%20found%20in,also%20make%20good%20landscape%20plants>)
 - Neem – It helps to reduce greenhouse gases through photosynthesis absorbing large quantities of CO₂ and producing oxygen.
 (<https://neemfoundation.org/greening-india-with-neem/#:~:text=The%20planting%20of%20Neem%20trees,of%20CO2%20and%20producing%20oxygen>)



- Peepal – It can uptake CO₂ during the night as well because of its ability to perform a type of photosynthesis called Crassulacean Acid Metabolism (CAM)

[https://nursecyfire.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2-.Peepal,Crassulacean%20Acid%20Metabolism%20\(CAM\)\)](https://nursecyfire.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2-.Peepal,Crassulacean%20Acid%20Metabolism%20(CAM)))

- Bamboo - It can absorb as much as 12 tonnes of carbon dioxide per hectare per year, giving the plant a potentially crucial role in stabilising our planet's atmosphere.

[https://www.theguardian.com/environment/2003/mar/20/research.science#:~:text=Research%20in%20Japan%20and%20elsewhere,in%20s tabilising%20our%20planet's%20atmosphere\) and https://www.nelda.org.in/15-indian-trees-that-produce-the-most-oxygen](https://www.theguardian.com/environment/2003/mar/20/research.science#:~:text=Research%20in%20Japan%20and%20elsewhere,in%20s tabilising%20our%20planet's%20atmosphere) and https://www.nelda.org.in/15-indian-trees-that-produce-the-most-oxygen)

- Teak – It has the highest capacity for carbon sequestration among trees in India. This is the finding of a study conducted by the Gujarat Ecological Education and Research (GEER).

<https://timesofindia.indiatimes.com/city/ahmedabad/teak-absorbs-max-co2-from-air-helps-check-global-warming/articleshow/51721842.cms>



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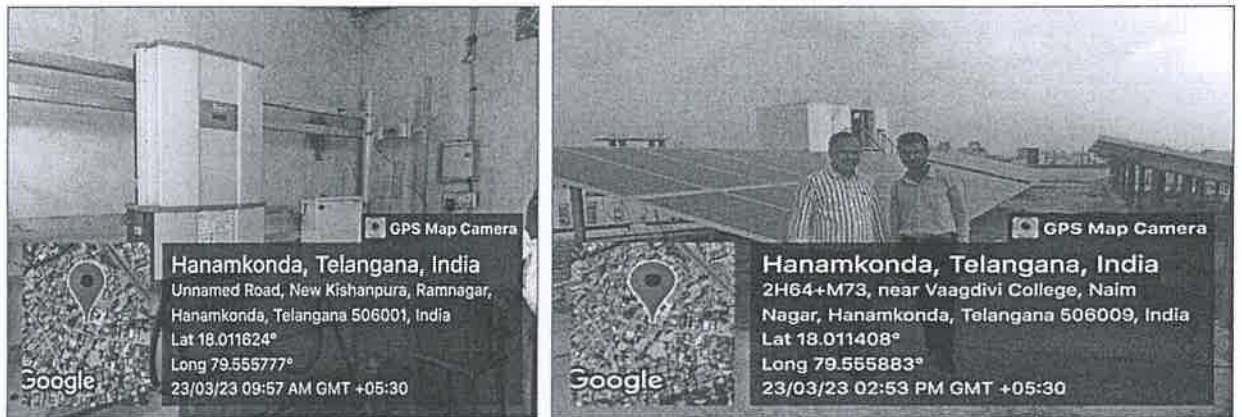
On-site investigation and physical verification
 Audit Team during the visit and other photos collected during data documentation



Meeting with the core team, group photo with the team and site investigation



Investigative parameters – Ecological Management – Wheelchair, Ramp and Plantations



Investigative parameters – Energy Management – Solar panels and electrical appliances



Investigative parameters – Water & Waste Management – Rain water harvesting pit, Dustbins & vending machine

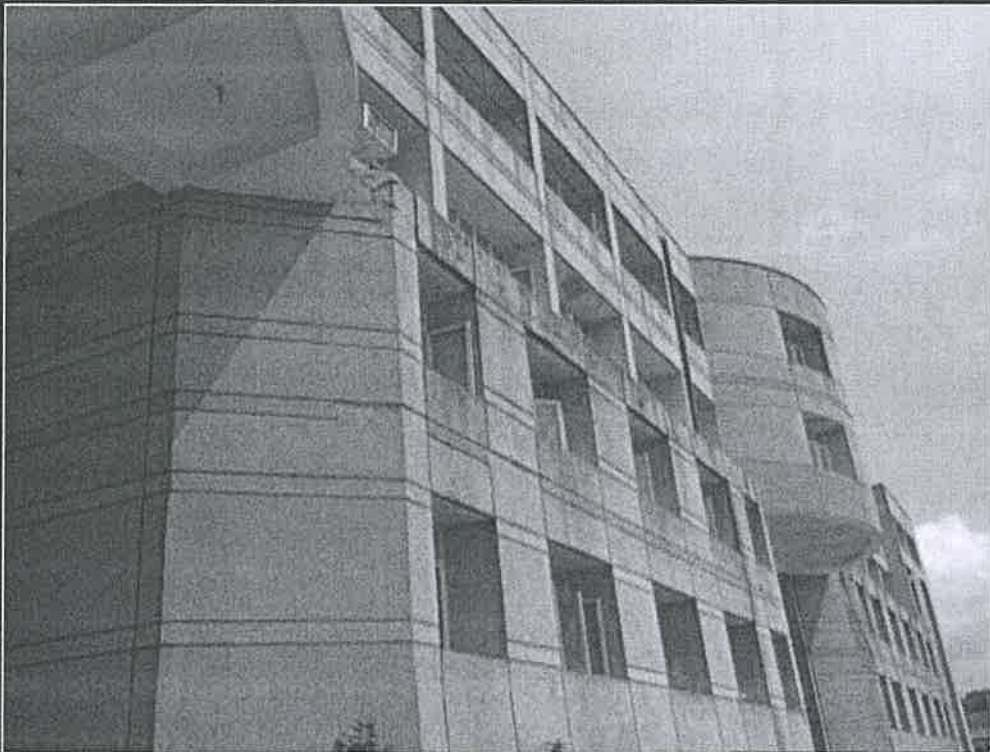


6. Compilation

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.

- 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 centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.





Dr. Anil K. Chaudhary
Principal
Vaidya College of Pharmacy
Hawar, Jaipur, Rajasthan

GREEN AUDIT

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

Sustainability study
AUDIT REPORT

Studied for
Viswambhara Educational Society's
Vaagdevi College of Pharmacy
2-2-457/3, Ramnagar, Hanamkonda,
506001, Telangana, India

Studied in the capacity of
Accredited and Certified
Green Building Professional



Website: <https://www.greenviasolutions.com/>

Email: greenviasolutions@gmail.com

Valid till April 2024

Background reference image Sasin Tipchai on unsplash

Disclaimer

The Audit Team has prepared this report for the **Viswambhara Educational Society's Vaagdevi College of Pharmacy** located at 2-2-457/3, Ramnagar, Hanamkonda, 506001, Telangana, India 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 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

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com



Acknowledgement

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

Our special thanks are due to **Ch. Narsimha Reddy**, President; **Ch. Rathnakar Reddy**, Treasurer; **Ch. Devender Reddy**, Secretary and Correspondent and everyone from the Management.

Our heartfelt thanks to the Chairperson of the entire process **Dr. Challa Srinivas Reddy**, Principal and Professor for the valuable inputs.

We are also thankful to **College's Task force the Assistant Professors** who have collected data required - **Dr. E. Venkateshwarlu**, Professor Head, Department of Clinical pharmacy & Pharma D. and **Dr. B. S. Sharvana Bhava**, IQAC Coordinator & H.O.D. Pharma Dept.

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




Principal
Vaagdevi College of Pharmacy
Hanamkonda, Warangal-506 001 

Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview	8
3. Research	9
4. Green Practices Audit	10
5. Waste Audit	12
6. Water Audit.....	14
7. Health and Hygiene Audit.....	16
8. Compilation.....	17

DETAILED REPORT



On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

Evidence documents for Site visit of external audit team


Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May' 2023

Document objective: Inferences of the Site visit

Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
- Rain water harvesting pit available in the premises - Social initiatives & waste management undertaken	- Increase reflectance of documentation of all facilities & activities
Energy Audit	
- solar panels are installed checked during visit for alternate source of energy	- Install solar HOT water Heater system in hostels - Install sensor band water taps, lights, hand (Educational areas) dryer
Environment Audit	
- pharmaughosy garden	- Increase green cover on roof top & vertical garden - Improve ground level green cover through beautification


 Signature & round seal
 Name: DR. S. R. S. S. S. S. S.
 Designation: PRINCIPAL
 For the said Institute


 Signature & round seal
 Name: M. A. Shaikh
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On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

2 | Page

Evidence documents for Site visit of external audit team

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Institute: VAAGDEVII COLLEGE OF PHARMACY Date: 6th May' 2023

Document objective: Proof of the Site visit



Meeting with the core team



Investigation of the systems


Signature & round seal

Name: DR. HANU S. S. ANAND
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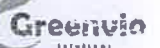

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Name: M. F. A. Shaikh
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Principal
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1. Introduction

1.1 About the Society

To impart higher education of high quality in the backward region of Telangana, some young, technically qualified persons with philanthropic qualities under the guidance of senior persons, established the Viswambhara Educational Society in Warangal on 3rd April 1993.

The main aim of the society is to offer higher education of high quality and noble values to the students of the backward region of Telangana and help in the upliftment of society.

As a maiden effort, the society started Vaagdevi College of Pharmacy in 1997.

The firm commitment of management and dedicated efforts of faculty started attracting many students to join in courses offered by **Vaagdevi College of Pharmacy** year after year. The College has grown in leaps and bounds in recent times and today, it is one of the most sought-after colleges in the region.

With the success of initial efforts and patronage of its stakeholders, Viswambhara Educational Society spread its educational services to the breadth and width of many disciplines like – engineering, pharmacy, physiotherapy, M.B.A, M.C.A, Education, and physical education apart among many undergraduate and postgraduate non-professional programs.

Today Vaagdevi Group of institutes is managing thirty colleges including - Engineering Colleges, Pharmacy Colleges, Management Colleges, M.C.A Colleges, Physiotherapy Colleges, Education Colleges, Ayurvedic Medicine Colleges, Paramedical and Nursing Colleges apart from conventional Degree & P.G Colleges.

Thus, Vaagdevi Group of Colleges has been making steady and tremendous strides in the present day, living up to the expectations of the people at large by imparting value-based education through professional and non-professional courses. It is now poised for a big leap in developing as a Deemed University.



Principal

Vaagdevi College of Pharmacy
Hanamkonda, Warangal-506 001



1.2 Statements of the Institution

1.2.1 Vision

The institute envisions

- *Equipping students with the critical thinking skills, global perspective and respect for the core values of loyalty, honesty and compassion.*
- *Helping students acquire these abilities is the cornerstone of the education.*
- *Offering students will be successful now and will be prepared for the future.*
- *Generating young people who will lead the nation to a brighter future by becoming engaged, smart, appreciated citizens and professionals.*

1.2.2 Mission

The College adheres and focuses

- *"To prepare outstanding pharmacists, educators, scholars, and researchers and to advance the field of pharmacy education as a whole through research on the science and art of teaching and learning, the use of industrial and clinical procedures, the effective use of technology, the analysis development of leadership and educational policies."*

1.2.3 Aim

The College has formulated the following aim to achieve its mission

- *Providing professional aspirants from both urban and rural areas with delivering top-notch instructions, student-centered teaching and learning techniques, and cutting-edge infrastructure to professionals seeking to make their mark in wherever they are placed.*
- *Imparting technical education, also by using online advanced classes, resources like e-books, e-learning, e-library, etc., which encourage independent thought, develops strong subject matter expertise, sharpens modern skills, and produces attitudes supportive of the holistic development of young minds.*
- *Enhancing the nation's healthcare by developing the institution into a Centre of Academic and Research Excellence in Pharmaceutical Education and becoming a global leader in the fields of pharmacy practice and pharmaceutical sciences.*



1.2.4 Objective

The main objective of the college is to produce and qualify pharmacy graduates who satisfy the following characteristics:

- *Handle chemicals efficiently and safely while according to all applicable rules and regulations.*
- *Possesses the ability to formulate and prepare Pharmaceutical products*
- *Assess the quality and amount of raw materials and Pharmaceutical products using a variety of qualitative and quantitative analytical techniques.*
- *Utilize their in-depth understanding of their fundamental knowledge to offer the community and patients about drug information and education services regarding the usage of pharmaceuticals and medical devices.*
- *Possess the fundamental understanding of the pathogenesis of a disease, pharmacology and pharmacotherapy necessary to collaborate with other healthcare professionals in enhancing the delivery of healthcare services via the use of evidence based information and to manage unusual or extremely difficult cases.*
- *Planning, designing, and carrying out research with the proper methodology*
- *Develop student's presentation, marketing, business administration, computation and numeric skills*
- *Demonstrate student's communication skills, ability to work in a team, time-management, critical thinking, decision making and problem solving strategies*
- *Perform duties in accordance with the Law, Morality and Professional standards*
- *Capable of continuing education for the purpose of enhancing one's professional knowledge and abilities*
- *To ensure the sustainability of good practice, manage the effective and safe delivery of pharmaceuticals and take part in programmes for quality assurance and improvement*



Principal

- ⇒ *Demonstrate a professional mind set by conducting business ethically and maintaining expertise over time through lifelong learning*

Finally, the student stepping out from this college should be a well-educated and trained professional acclimatized with all the future prospective and goals to be faced in advance.

1.3 Assessment of the Institute

1.3.1 Affiliation

The College has all its courses approved and is affiliated with the **Kakatiya University**, a public university located in the Indian state of Telangana.

1.3.2 Certification

The College has received the following Certifications:

- ⇒ **ISO** – The certification related to ISO 9001:2015 (Quality Management Systems) was received on 23 July 2023.
- ⇒ **AISHE** – The certification from the Department of Higher Education Statistics Division, New Delhi in 2022 and the code is C-27290.

1.3.3 Approval

The courses provided by the college are approved by the following bodies:

- ⇒ **Pharmacy Council of India (PCI), New Delhi** received in 2001 with the affiliation number being PCI – 2552.
- ⇒ **All India Council for Technical Education (AICTE), New Delhi** received in 1997 with the affiliation number being 1-12136136.



2. Overview

2.1 Summarised Populace analysis

2.1.1 Students data

The student data (shared by the Institute) shows there were an **approximately 634 students in academic year 2022-2023 and 529 students in academic year 2021-2022** in the premises.

2.1.2 Staff data

The staff data shows the premises had an approximate of **49 nos. of Staff Members** on the premises in both academic years.

2.2 Site and Building spread area

The **total site area is 2.2 acres** and the **total Built-up area of the Institute is 1,02,758 sq. ft. (9,550 sq. m)**

2.3 Institute Infrastructure

2.3.1 Establishment

The Institute was established in **1997**.

2.3.2 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 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 for around 250 days.
- **Library areas** – 7:30 am to 9:30 pm, Monday to Saturday for around 320 days.



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



On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

3 | Page

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May 2023.

Document objective: Induction Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. C. Srinivas Reddy	INTERNAL COLLEGE COMMITTEE	PRINCIPAL	
4.	Dr. B.S. SHARVANA BHAVA		IQAC- Coordinator & H.O.D, Pharm.D.	
5.	Dr. E. Venkateshwarlu		H.O.D., Pharmacology.	
6.	Dr. A. MAKARANDH		ASSISTANT PROFESSOR	
7.	Ms. V. RASHMITHA		ASSISTANT PROFESSOR	
8.	Mrs. M. SUMALATHA		ASSISTANT PROFESSOR	M. Sumalatha
9.	Ms. K. SHARANYA		ASSISTANT PROFESSOR	Shanya
10.	Dr. K. SRINIVAS REDDY		H.O.D., pharmacognosy.	
11.	Mr. N. KOMURA REDDY		ADMINISTRATIVE OFFICER	

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 Name: DR. C. S. SRINIVAS REDDY
 Designation: PRINCIPAL
 For the said Institute

Signature & round seal
 Name: Mrs. F. A. Shaikh
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 For The Greenvio Solutions

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On-site investigation and physical verification
Audit Team during the visit on 6 May 2023

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Institute: VAAGDEVI COLLEGE OF PHARMACY Date: 6th May' 2023

Document objective: Exit Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. C. SRINIVAS REDDY	INTERNAL COLLEGE COMMITTEE	PRINCIPAL	
4.	Dr. B. S. SHARVANA BHAVA		IQAC- Coordinator & H.O.D - Pharm.D.	
5.	Dr. E. VENKATESHWARLU		H.O.D - Pharmacology	
6.	Dr. A. MAKARANDH		ASSISTANT PROFESSOR	
7.	MS. V. RASHMITHA		ASSISTANT PROFESSOR	
8.	Mrs. M. SUMALATHA		ASSISTANT PROFESSOR	M. Sumalatha
9.	MS. K. SHARANYA		ASSISTANT PROFESSOR	Shanya
10.	Dr. K. SRINIVAS REDDY		H.O.D. - Pharmacognosy	
11.	Mr. N. KOMURA REDDY		ADMINISTRATIVE OFFICER	

Signature & round seal
Name: DR. C. S. REDDY
Designation: PRINCIPAL
For the said Institute

Signature & round seal
Name: F. A. Shaikh
Designation: Project Coordinator
For The Greenvio Solutions



4. Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

4.1 Green practices

We observed the following points during the Site investigation and data verification of the premises; these are common for all the Buildings on the premises.

- **Social awareness** - *The College has taken up awareness drives on various social issues for rural upliftment and regeneration in the College and surrounding villages.*
- **Team work** – *The best quality of the College which sets it apart is its coordinating, cooperative staff members; for a building the foundation plays the most important role for its future similarly for an educational institute its staff members do.*
- **Green management** – *The team has developed a dedicated 'Pharmacognosy garden' on the available open space and is maintaining the same excellently.*

4.2 Community development

The College undertakes a lot of initiatives under the Harithaharam program of Govt. of Telengana.

The programs were held in the past as NSS CAMP, Harithaharam on 10-08-2018 and NSS CAMP, Vanamahotsav week on 05-07-2019.

The NSS started in College since 2013 and the current Coordinator is Dr. K. Srinivas Reddy.




 Principal
 Vaagdevi College of Pharmacy
 Hanamkonda, Warangal-506 001



4.3 Section-wise recommendations related to 'Green practices'

The following suggestions are to be considered as a ***first priority*** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

- **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 artworks 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.
- **Documentation** – Improve and increase the documentation and visibility/reflectance of the environment related events on the website, social media handles



5. Waste Audit

Waste is an inevitable part of our lives. Over the years the awareness about waste management techniques has given a rise to rethink how the waste can be avoided being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, and waste management strategies that are implemented in addition to the newer ways that can be adopted aiming to make the premise clean and sustainable.

5.1 Waste produced

S. No.	Type	Quantity	Details
1	Solid waste (Toilets)	12	For solid waste management bins were placed at different departments, wings and floors for collecting the biodegradable and non-biodegradable waste through many sources. The institution ensures that solid waste is segregated at the source and properly disposed. The non-biodegradable waste deposited to the Municipal Garbage Collection Van time and again.
2	Organic waste (Regular)	1	The institution ensures that solid waste is segregated at the source and properly disposed. Plant waste and food remains in the campus are disposed by composting pits. The compost generated is used as plant fertilizer in the campus plant gardens.
3	Liquid waste (Toilets, wash basins)	8	There is proper drainage facility in the campus for the proper disposal of liquid waste generated in the campus. Large sized pipelines are fitted in the campus and liquid waste obtained from the toilets and wash basins is sent to the outlet through the drainage system built in the campus.
4	Chemical waste from laboratories	-	Our campus has proper drainage facility. Large sized pipelines are fitted in the laboratories and liquid waste obtained from laboratories and different parts is sent to the outlet through surface drain system built in the campus.
5	Toxic waste from laboratories	2	The use of hazardous liquid chemicals generating dangerous fumes is avoided in the laboratory.
6	E-waste	1	E-waste obtained in the form of electrical (used switches, boards, lights and wirings etc.) and electronics (computer peripherals etc.) are collected in e-waste collecting bins. E-waste is collected by regional dumping yard for effective disposal or for recycling.



7	Plastic waste	1	The non-biodegradable plastic waste is deposited to the Municipal Garbage Collection Van.
8	Bio-waste (Sanitary)	1	Biomedical waste is obtained from anatomy, pharmacology and microbiology laboratories, in the form of animals, blood, used cotton swabs, syringes, needles and animals used for experimental purpose is packed in bags. Microbiological media is effectively sterilized by autoclaving method.
9	Medical waste (Pharmacy etc.)	1	Hazardous chemicals from laboratories such as weak and strong acids are neutralized or diluted to a safe level in containers first connected by drain pipes from the fuming chamber into soaking pits built in the campus.
10	Construction waste and reuse (Only if applicable)	1	The institute has adopted and implemented the waste material dispose off in proper way and the campus is surrounded by large trees which promotes pollution free and oxyrich environment in the premises and in the campus.

Table 1: Details of the waste management practices adopted by the team

5.2 Bins summary

There are 30 dustbins inside the premises and 4 in the outdoor areas; these are available in the form of plastic bins.

5.3 Section-wise recommendation related to 'waste audit'

The following suggestions are to be considered as a first priority for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

- **Twin Dual Litter Dustbin 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.
- **Signages** - Messages about avoiding wastage should be placed at appropriate locations.



6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource that needs to be preserved efficiently. A water audit helps to identify the sources of water consumption, and the water requirement by the premises is met by these sources. The points and effective usage without any wastage. Understanding the techniques which are best suited to the site to increase water conservation in terms of awareness and practice.

6.1 Water availability and consumption

6.1.1 Source of Primary water supply

The College requires water from the Local Municipality for drinking water purposes; the details of the same are documented below:

S. No.	Type	Capacity (litres)	Nos.	Location
1	Underground	2,000	1	College In front of MBA Block
2	Overhead	5,000	1	College Terrace
3	RO Plant	1,000	1	College Terrace

Table 2: Details of the water tanks in the premises

6.1.2 Source of Secondary water supply

The College uses the secondary sources of water supply for general usages such as watering plants, kitchen, toilets, and wash basins connected to the labs and other spaces.

At present, there is one well with capacity of 5,000 litres and 2 bore wells with capacity of 3,000 litres available in the premises as secondary sources of water supply.

6.1.3 Source of Tertiary water supply

The tertiary source of water is the additional source of water harvesting. There are dedicated pits available for rain water harvesting, we suggest connecting the over flow pipes are connected to the bore wells.

6.1.4 Source of Reusing waste water

The initiative is not under practice at present completely only the chemicals are



neutralized before letting it down in the drains. We have suggested to under practices of green chemistry as per discussion to treat the waste water from the laboratories and reused the same after filtering for watering the plants and the trees in the premises.

6.2 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the following facilities:

Particulars	Nos.
General toilet for students	6
General toilet for staff	2
Special Toilet for handicaps 1.5m x 2.5m	1
Urinals	14
Taps in wash basins in toilets	8
Taps in kitchen sinks	1
Taps in Canteen	1
Taps in the garden	1

Table 3: Details of the water usages in the premises

As per the data shared by the College and on-site observation, it was noted that there is no water wastage of water in the form of Cleanliness of toilets.

6.3 Recommendations for a Sustainable Habitat

The following suggestions are to be considered as a ***first priority*** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission.** The Institute can execute a plan after discussion with Project Head.

- **Waterless urinals** - There can be the provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replaced with such a facility or new toilets can be constructed in this manner.
- **Signages** - Messages about avoiding water wastage should be placed at appropriate locations.



7. Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

7.1 Facilities available

The Institution has washroom facility, hand wash, drinking water and dustbin facilities.

7.2 Hygiene

- There was no odour issue faced during the investigation.
- The areas of water tanks in site on ground floor are clean

7.3 Section-wise recommendation related to 'Health and hygiene audit'

The following suggestions are to be considered as a ***first priority*** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission.** The Institute can execute a plan after discussion with Project Head.

- **Courtyards and duct areas** – These are located in the internal and setback should have vertical gardens for beautification.
- **Health related provisions** – There should be provisions for a dedicated health centre and 24x7 available ambulance services inside the premises.
- **Avoid burning waste** - The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- **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'



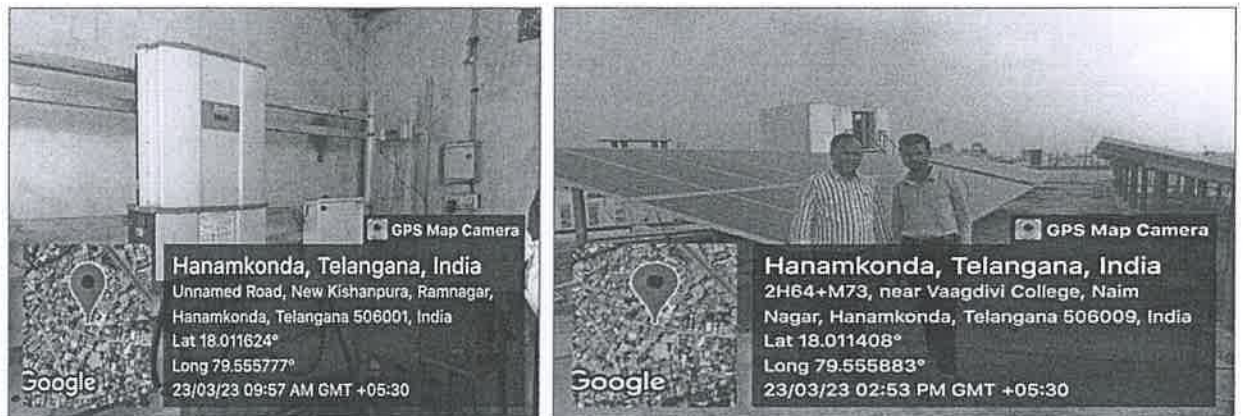
On-site investigation and physical verification
 Audit Team during the visit and other photos collected during data documentation



Meeting with the core team, group photo with the team and site investigation



Investigative parameters – Ecological Management – Wheelchair, Ramp and Plantations



Investigative parameters – Energy Management – Solar panels and electrical appliances



Investigative parameters – Water & Waste Management – Rain water harvesting pit, Dustbins & vending machine

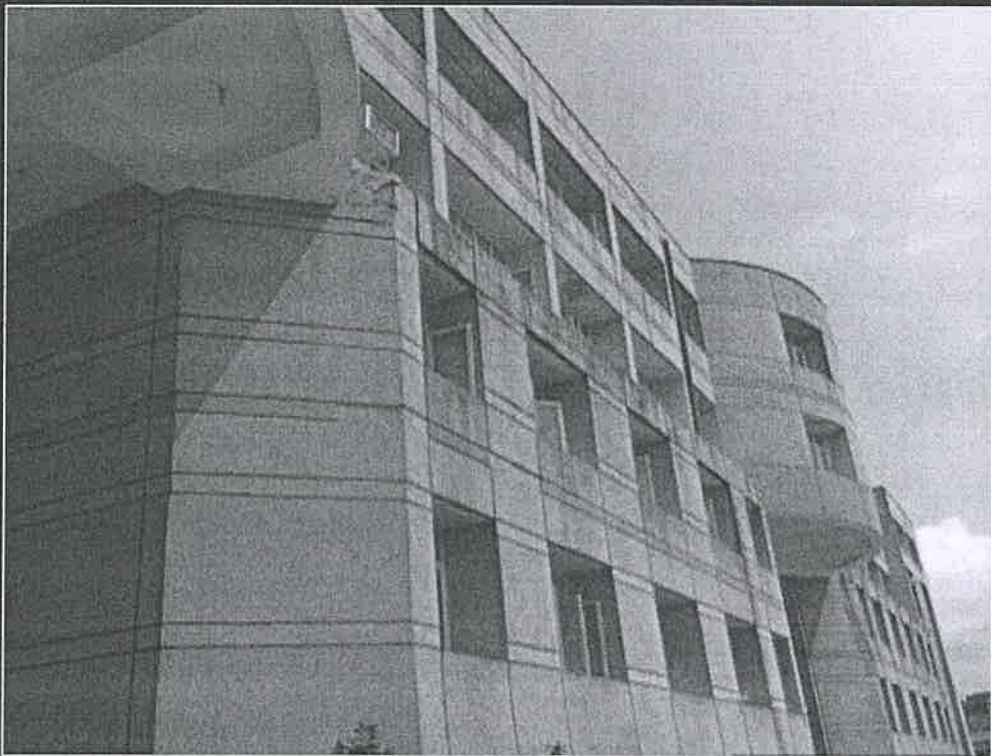


8. Compilation

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.

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- ⇒ 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
- ⇒ The city of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States
- ⇒ Images on site by Coordinators of the both teams
- ⇒ Icon images used by <https://www.vecteezy.com/free-vector/security-camera-icon> and <https://www.vecteezy.com/free-vector/electric-car-icon>





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