**DYEARS) 2020 - 2021 AND 2021 - 2022** 00 STUDY PERI

# Sustainability study AUDIT REPORT

Studied for Shri Vishweshwar Shikshan Prasarak Mandal's Shivlingeshwar College of Pharmacy Post Almala, Taluka Ausa, District Almala, Maharashtra 413520, India

Studied in the capacity of An accredited & Certified Green Building Professional



Valid till December 2023

Background reference image Sosin Tipchqi on unsplash

### Disclaimer

The Audit Team has prepared this report for the **Shri Vishweshwar Shikshan Prasarak Mandal's Shivlingeshwar College of Pharmacy** located at <u>Post Almala,</u> <u>Taluka Ausa, District Almala, Maharashtra 413520, India</u> 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 <u>Sustainable Academe</u> is our department for conducting Audits Palghar District, Maharashtra- 401208 <u>sustainableacademe@gmail.com</u>



## Acknowledgement

The Audit Assessment Team thanks the **Shri Vishweshwar Shikshan Prasarak Mandal's Shivlingeshwar College of Pharmacy, Maharashtra** 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 Mr. Dharashive Shivcharan Limbanapa, President; Mr. Kapse Prabhakar Nagnath, Vice President; Mr. Dharashive Basweshwar Shivcharan, Secretary; Mr. Khichade Mahadev Ramling, Joint Secretary; Mr. Dharashive Prashant Shivcharan, Treasurer and everyone from the Management.

Our heartfelt thanks to Chairperson of the entire process **Dr. Dharashive Vishweshwar Mahishankar**, Principal for the valuable inputs.

We are also thankful to **College's Task force the faculty members** who have collected data required **Dr. Sameer Shafi**, Academic Incharge and Assistant Professors – **Mr. Somwanshi Bhagwat, Mr. Sachin Hangargekar**.

We highly appreciate the assistance of **Mr. Dharashive Yogeshwar Shivcharan**, Admin Incharge; **Mr. Arab Hasan Mubarak**, Non-Teaching Staff Member and the **entire Teaching**, **Non-teaching and Admin staff** for their support while collecting the data.

#### Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208



## Contents

)isclaimer	1
cknowledgement	2
Contents	3
. Introduction	4
2. Institution overview	6
6. Green Building Study as a Research based technical audit	8
Green Practices Audit	9
5. Waste Audit1	3
5. Water Audit1	6
'. Health and Hygiene Audit1	9
3. References 2	1



### 1. Introduction

#### 1.1 About the Institution

The institute campus area is 27 Acers featuring with well-equipped Lab, Library & Reading room. It also features a computer lab with Wi-Fi and Lease line with 100 mbps high speed internet connection. 240 students are taking pharmacy education. The institute is providing platform of students in different competitions such as State Level paper presentation, sports for overall development of students. The excellent academic infrastructure of the Institute is supplement with facilities for outdoor and indoor games as well as cultural activities.

The main multi-storeyed building is with all the state of the art infrastructural facilities like well-equipped Pharmaceutical Laboratories, Computer Laboratory, Library etc.... The institution emphasizes discipline oriented, high academic standards by keeping specific institutional objectives. The faculty comprises of highly competent, qualified and well experienced academicians and provides excellent coaching and motivation to the students.

The discipline and calm atmosphere in the campus which is absolutely necessary for the education is highly appreciated by the parents and senior students. The growth of the institutions is not only steady but Fast and Furious too. Our aim is to faster the innovative ideas and vision of the profession of pharmacy through our Budding pharmacist. We prepare the students with appropriate skill and knowledge to care the Health of a person.

#### 1.2 **Statements of the Institution**

#### 1.2.1 Vision

The College proposes <u>"To be a college of excellence, providing holistic academic</u> <u>standards in Pharmacy"</u>

#### 1.2.2 Mission

The College adheres and focuses

- Promote excellent standards of education to economically, educationally and socially weaker section of society especially from rural areas.
- Provide quality education of international standards to students and help



them to become Pharmacist of higher calibre while upholding human values.

Develop, promote and nurture research activities in Pharmaceutical sciences and translating research into health care."

#### 1.3 Assessment of the Institute

#### **1.3.1 Affiliations**

The Institute is affiliated to **SRTMU, Nanded** a collegiate public state university located in Maharashtra, India.

#### **1.3.2 Certification**

The College has received the All India Survey of Higher Education Certification and its code is C-7600.

#### 1.3.3 Approval

The technical courses provided by the College are approved by the Pharmacy Council of India, New Delhi.

#### 1.4 Achievements of the Institute

The Institute has received the following awards

- Adarsh Educational Institution Award, 2017
- Outstanding work in the field of Education, 2018
- Shikshan Maharishi Vasantrao Kale Education Service Award, 2018



## 2. Institution overview

#### 2.1 Populace analysis for Academic year 2021 - 2022

#### 2.1.1 Students data

The student data (shared by the College) shows there were a total of **291 Boys and 246 Girl students,** thus there were **a total of 537 students** on the premises.

#### 2.1.2 Staff data

Туре	Male	Female	Total
Admin staff	01	00	1
Teaching staff	22	14	36
Non-Teaching staff	18	03	21
Total Staff Members	41	17	58

 Table 1: Staff data of the Institution for 2021 - 2022

The staff data shows the premises had a total of **58** Staff Members.

#### 2.2 Populace analysis for Academic year 2020 - 2021

#### 2.2.1 Students data

The student data (shared by the College) shows there were a total of **229 Boys and 170 Girl students,** thus there were **a total of 399 students** on the premises.

#### 2.2.2 Staff data

Туре	Male	Female	Total
Admin staff	01	00	01
Teaching staff	19	10	29
Non-Teaching staff	12	2	14
Total Staff Members	32	12	44

Table 2: Staff data of the Institution for 2020 - 2021

The staff data shows the premises had a total of **44** Staff Members.



#### 2.3 Total College Area & College Building Spread Area

The total site area is 2 Acres & total Built-up area of College is 47,850 sq. ft. for around 595 populace footfalls.

#### 2.4 College Infrastructure

#### 2.4.1 Establishment

The College was established in 1998.

#### 2.4.2 Spatial Organisation

The college has ample and wide open classes with facilities appropriate for an educational space. There are open spaces with a beautiful entrance approach. The balance of hardscape and softscape provides a landscape serene ambience. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design.** 

#### 2.4.3 Operation and maintenance of the premises

The data collection session was held with the staff regarding the operation and working hours. The schedule is mentions that the College is working Monday to Saturday (Excluding the Second and Fourth Saturdays) with timings being 09:00 hours to 15:30 hours.



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

#### 3.1 About the Green Building Study Audit

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

#### 3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification for the following:

#### **Energy Audit**

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

#### **Green Audit**

- Green initiatives
- Hygiene audit
- Water Audit Analysis of the current water consumption of campus; Rainwater harvesting and Wastewater treatment on the premises.
- Waste Audit Current waste produced, its segregation, and usage; Strategies to be adopted for waste management and awareness

#### **Environmental Audit**

- Analysis of the current landscape + hardscape of the premises
- Analysis of the flora and fauna of the premises
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

#### 3.3 Strategy adopted for Green Building Study Audit

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

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

- **The set of the set of**
- 27 December 2022 Induction Meeting
- 23 September 2022 Survey of students and staff completed
- 30 December 2022 Site visit at the Institute



#### **On-site investigation and physical verification** Audit Team during the visit on 30 December 2022





Key facilities on the site



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



Exit meeting with the Team



## **Green practices**

不



Background reference image Free photos on pixabay

### 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 in the premises.

- Low fossil fuel usage The College does not use coal, wood and in very less quantity uses diesel for generator in case of power cuts. Thus there is less harm to the environment in terms of fossil fuel usage.
- Health conscious The College avoids the usage of smoking and tobacco in the premises.
- Pollution The College does not face any dust, noise, air pollution since it is surrounded by farmlands and has a good amount of green cover.
- Fresh environment The College provides an eco-friendly ambience with fresh air and soothing environment which helps to maintain a physical and mental balance. This kind of a space it a must for an educational specially technical institute which is inviting and gives the stakeholders an opportunity to explore indoor and outdoor learning to a great extent.
- Universally accessible premises There are provisions for ramps at every possible entrance aspect, this highlights the sensitization towards stakeholders in the form of universally accessible premises.
- Rural Model The College is a model for a Rural Green College with multiple aspects to protect environment and make building a Green Building.
- Social awareness The College has taken up awareness drives on various social issues for rural upliftment and regeneration in the college and surrounding villages.
- Cleanliness Campaign The Swachha Bharat Abhiyan is carried out on college premises as well as off-premises.



#### 4.2 Community Development

The NSS Unit of the College is involved in multiple community development programs which include, **Blood Donation Camp**, **Food Kit Distribution Program to the neighbourhood community**, **Relief fund programs**.

#### 4.3 Survey Results

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



#### 4.3.1 Participation

Figure 1: Participation analysis in the survey

A total of **51 responses** were received out of which 53% were students.

#### Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 Poor
- Scale 2 Satisfactory
- Scale 3 Good
- Scale 4 Very good
- Scale 5 Excellent



The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)



#### 4.3.2 Rate the Green awareness practices in College

There were mixed responses received the highest was for rating 5 (Excellent) at 77% followed by 16% for rating 4 (Very good).



Figure 3: Confirmation of the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **98%** of responses confirmed that the activities are conducted this is excellent.



Figure 2: Green awareness practices in College



Figure 4: Participation in the environment awareness programs/ webinars/ plantations/ cleanliness or similar programs conducted by the College

The students, staff **almost 88%** of the responses confirmed their participation, this is <u>an excellent response, the College should continue its efforts.</u>

## 4.4 Suggestions related to section 'Green practices audit'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

#### a) 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.

#### b) QR codes on the plants mentioning scientific names

The practice of having the codes with details of each plant and tree will provide awareness among the staff and students.



## Waste Audit

Background reference image Polina Tankilevitch on pexels



### 5. Waste Audit

Waste is an inevitable part of our lives. Over the years as the awareness about waste management techniques has given a rise to rethink how the waste can be avoided form 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, waste management strategies that are and implemented in addition to the newer ways the can be adopted aiming to make the premise clean and sustainable. Here sustainable refers to a broader aspect to analyse whether the current techniques are having positive or negative effect on the stakeholders of the premises.

#### 5.1 Waste produced

#### Types and disposal of waste in Premises

The details are documented below.

S. No.	Type of waste	Source and quantity	Current Disposal method	Can be treated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste	Led into the storm water drains	Yes	TREATED – Organic composting and Biogas undertaken
2	Paper waste	Newspaper and other paper	Given to vendor	Yes	TREATED – Adopt a Paper recycling unit
3	E-waste	Computers - Non- biodegradable waste as per the annual year usage	Given to vendor	Yes	CONTINUE - with the current practice
4	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste	Dumped and partially treated	Yes	TREATED – Proper Organic composting and Biogas undertaken
5	Liquid waste	Toilets, washbasins – Around 100 – 120 litres per week during general times and 50 litres at present	Led into the storm water drains	Yes	Treat before letting in to storm water drain
6	Organic regular waste	Dust, dirt usually dry waste from Canteen and all sources	There is a Biogas plant but it is not functioning	Yes	TREATED – Proper Organic composting and Biogas undertaken

Table 3: Summary of the types of waste produced in the premises



#### 5.2 Waste management

There are Small-sized, medium-sized and large-sized dustbins made of plastic material available at present in a total of 72 nos. in the interiors and 4 nos. in the exteriors.

#### 5.3 Survey Results

#### Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 Poor
- Scale 2 Satisfactory
- Scale 3 Good
- Scale 4 Very good
- Scale 5 Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

## Rating for the views regarding the Waste management practices adopted in College, following is the result received.



#### Figure 5: Waste management practices in College

There were mixed responses received the highest was for rating 4 (Very good) at 45% followed by 39% for rating 5 (Excellent).



#### 5.4 Suggestions related to section 'Waste Audit'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

#### a) Incinerators

The Incinerators should be installed in Girl's toilets for disposal of sanitary napkins

#### b) 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.

#### c) Signages

Messages about avoiding wastage should be placed at appropriate locations.

#### d) Dustbins at every 100m

There should be a dustbin at every 50-100 in the open spaces

#### e) Material of the dustbin

The current plastic dustbins should be replaced with eco-friendly material.



## Water Audit

Background reference image Vlad Chetan on pexels

0



C

• • •

### 6. Water Audit

Water is one of the basic needs. Pure drinking water is a resource which needs to be preserved efficiently. Water audit helps to identify the sources of water consumption, the water requirement by the premises met by these sources. The points and effective usage of 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 Sources of Primary water supply

**The primary water supply refers to the drinking water.** The main source of water is the Local Municipality. The water received is stored in water tanks at various locations. These are periodically cleaned and well maintained for hygiene purpose. <u>At present</u> there are multiple tanks in the premises as it is a shared premises.

#### 6.1.2 Sources of Secondary water supply

The secondary source of water is the source of water supply available through wells/ bore wells/ tube wells which is used for wash basin, kitchens, toilet purposes. <u>At present there is 1 well and 2 bore wells available on site.</u>

#### 6.1.3 Sources of Tertiary water supply

The tertiary source of water is the additional source of water harvesting. <u>At</u> present there is natural rain water harvesting practiced to increase recharge of groundwater by capturing, by rainwater harvesting from rooftop run-offs; collected water from rooftop was discharge in bore well.

#### 6.2 Water requirement

The main areas of water requirement and type of usage is as follows

- Drinking water Consumption of around 850-950 litres of water through Aquaguard like system available in the premise, the taps and water cooler.
- Toilet blocks- General usage by occupants in toilets, urinals, bathrooms, wash basins using approx. 400-600 litres of water daily.



- Cleaning of the premises The entire Institution is very well maintained with respect to hygiene and cleaning is one of the major uses of water requirement. <u>The toilet areas are cleaned twice on a daily basis.</u>
- Garden and surrounding open space Cleaning, watering the plants requires approximately 500 litres of water.

#### 6.3 Areas of water usage

10 11--

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

	-10 NOS.
Toilets	– 19 Nos.
Wash basins	– 14 Nos.
Taps (Indoors)	– 22 Nos.
Taps (Outdoors)	– 13 Nos.

Ilrinola

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.

#### 6.4 Site investigation about water management.

The College has an excellent management system which is very appreciable. We have observed the following points.

- There is no water leakage in the entire premise; the pipes are well maintained with adequate hygiene.
- The premise has an efficient water management in terms of operations and maintenance. The toilets are kept very tidy and are cleaned every day.
- The waste water does not mix with ground water and gets directed to storm water drains. There are sufficient numbers of taps in the premise.



#### 6.5 Survey Results

#### Note about the review-rating survey

The Participants were asked to review (Though an online mode) the practice on a scale of 1-5 with scale components as follows:

- Scale 1 Poor
- Scale 2 Satisfactory
- Scale 3 Good
- Scale 4 Very good
- Scale 5 Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

## Rating for the views regarding the Water management practices adopted in College, following is the result received.



There were mixed responses received the highest was for rating 5 (Excellent) at 71% followed by 22% for rating 4 (Very good).

#### 6.6 Suggestions related to section Water audit'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

**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.



## Health & Hygiene Audit



Background reference image Curology on unsplash



## 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 the following facilities as part of the premise.

- S Washroom facility in each of the Building.
- Hand wash facility
- Drinking water facility in the form of Water coolers and taps
- Ample number of dustbins in the premise

#### 7.2 Smoke Exposure

As per the Site visit the following analysis has a positive impact on premises.

- The College has No Smoking on its compound wall as part of the awareness.
- The Institution is a tobacco and smoke free premises which helps in adapting to a Healthy Institution

#### 7.3 Hygiene

As per the Site visit the following analysis has a positive impact on premises.

- For overall hygiene of the students and staff there are facilities such as Washroom facility on ground floor, hand wash. The hygiene of toilet areas is well maintained.
- The staffs keep a regular check about the operation and maintenance of the equipments each floor.
- Water management initiative with appropriate hygiene is undertaken. The areas of water tanks in site on ground floor are clean and no mosquito breeding spots are there.



#### 7.4 On-site investigation

During the physical verification of the site, the following points were noted.

- All the facilities are cleaned on a daily basis.
- The Maintenance staffs are allotted the responsibility of the washroom hygiene and they do a very commendable and excellent job to maintain hygiene of the premise.

## 7.5 Suggestions related to section 'Health and Hygiene'

The following points are listed as value addition to the existing premises, are should be considered as *first priority* for implementation under section wise study. These have to be **implemented in the next 1 year of the submission of the Report.** 

- Alternatively since it is a pharmacy College, regular and routine cleaning should be undertaken.
- There should be facilities such as potpourri, camphor tablets.



#### **On-site investigation and physical verification**

Facilities related to water and cleanliness, hygiene practices in the premises



Waste management practices in the College



Water management practices in the College



### 8. References

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

- $\Rightarrow$  Uniform Plumbing Code India, 2008
- ⇒ IGBC Green Existing Buildings Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- $\Rightarrow$  IGBC Green Landscape Rating system, March 2013

#### International references

- $\Rightarrow$  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
- ⇒ The city of Cheyenne, Streetscape/ Urban Design elements Wyoming Planning Association, Gillette, Wyoming, United States
- $\Rightarrow$  Streetscape elements Chapter 6 on San Francisco
- ⇒ American lung association <u>https://www.lung.org/</u>
- ⇒ Study related to air pollution <u>https://www.airgle.com/</u>
- ⇒ Exploring the light pollution <u>https://education.nationalgeographic.org/</u>
- ⇒ Accessibility study <u>https://www.washington.edu/</u>
- ⇒ Urban heat island effect <u>https://www.epa.gov/heatislands/what-you-can-do-</u> reduce-heat-islands



