

Date: 14 July 2022
Ref no: LA/14/07/40

Letter of Appreciation

For

**Implementing the recommendations suggested during the
Green, Energy and Environment Audit Process**

Awarded to

Viswambhara Educational Society's

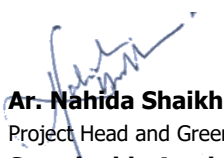
Vaagdevi Degree & P.G. College

2-2-457/A, Ramnagar, Hanamkonda, Telangana- 506001

With reference to the above cited subject we appreciate the efforts of the College in **implementing the activity of printing and putting up awareness posters related to Cleanliness, Energy, Waste, Water, Save Environment.** The College has printed these and put them at appropriate locations in the premise.

We hope the College continues similar efforts in the future as well. We have attached some of the photographic evidences in this letter.

Best regards,


Ar. Nahida Shaikh

Project Head and Green Building Consultant

Sustainable Academe

Sustainability Department of Greenvio Solutions, Naigaon

An environment Design and Consultancy developing Healthy and Sustainable Environments

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Note: These photographic evidences were shared by the College post the suggestion given to the Institute.





ENVIRONMENT AUDIT

STUDY PERIOD (FIVE YEARS) 2016-21

Sustainability study

AUDIT REPORT

Studied for

Viswambhara Educational Society's

Vaagdevi Degree & P.G. College

2-2-457/A, Ramnagar, Hanamkonda, Telangana- 506001



Studied by

Greenenvia
Solutions

Valid till June 2023

Disclaimer

The Audit Team has prepared this report for the **Viswambhara Educational Society's Vaagdevi Degree & P.G. College** located at 2-2-457/A, Ramnagar, Hanamkonda, Telangana- 506001 based on input data submitted by the College and analyzed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on a comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase-wise or as a whole depending on the decision taken by the Hon'ble Management and 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 while and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is an Accredited and Certified Green Building Professional-Architect; Green Building consultancy is her forte and she is one of the most sought-after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted incapacity of an Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

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Acknowledgment

The Audit Assessment Team thanks the the **Viswambhara Educational Society's Vaagdevi Degree & P.G. College** 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 the Governing Body **Prof. N. Lingamurthy** Former Vice-Chancellor Kakatiya University, Chairrman; **Prof. G. Bhrameshwari**, University Nominee, Member; **Dr. Ch. Devender Reddy, Secretary and Correspondent, Viswambhara Educational Society**, Member; **Prof. S.S.V.N. Sharma**, Retd. Professor Department of Mathematics, Kakatiya University, Member; **Prof. G. Sattaiah**, Retd. Professor Department of Physics, Kakatiya University, Member; **Prof. N. Gopi Krishna**, Retd. Professor Department of Physics, Kakatiya University, Member; **Ch. Narshima Reddy, Chairman Viswambhara Educational Society**, Member; **Dr. Ch. VahiniDevi**, Director, Academics Vaagdevi Colleges, Member; **Sri. Chandrasekhar Reddy** (Industrialist), Hyderabad, Member; **Dr. A. SheshaChalam** , Principal,Vaagdevi Degree & P.G. College, Ex-officio Member and Convener; **Dr. P. Harender Reddy**, Academic Co-ordinator, Vaagdevi Degree & P.G. College, Member and everyone from the Management.

Our heartfelt thanks to the Chairperson of the entire process **Dr. A. Sheshachalam, Principal, Head Department of English & languages, VDPGC** for the valuable input.

We are also thankful to **College's Taskforce and the faculty members** who have collected the data required – **Dr. P. Harender Reddy**, Academic Coordinator, Head Department of Botany, Microbiology, VDPGC; **Dr. A. Raja Prasad Gouda**, IQAC Coordinator, Course Coordinator & Head Department of Physics and Electronics; **Dr. C. Padmavati**, Course Coordinator & Head Department of Zoology, Food Science & Quality Control, Nutrition & Dietitics, Geology (*Special mention for the excellent coordination*); **Smt. K. Himabindu**, Head Department of Biotechnology; **Sri. M. Narasimha Murthy**, Faculty Department of Physics & Electronics; **Sri. Rajin Kumar**, NSS coordinator; **Dr. Sateesh Suthari**, Faculty, Department of Botany; **Sri. Madhu** Department of Physics; **Smt. T. Anusha**, MBA, Department of management; **Smt. G. Chandrakala**, Department of Micro biology; **Sri. Kishan**, P.D; **Sri. Kishore**, MBA, Department of management; **Sri. Madhukar**, P.D; **Ms. Shamili**, Department of Chemistry;**Sri. Yakiah**, Department of

Mathematics; **Sri. Venugopal**, Department of Commerce; **Sri. D. Srinivas**, Department of Food science and quality control and **Sri. G. Madhukar**, Department of Physics.

We highly appreciate the assistance of **Sri. Bhaskar**, Electrician 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

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1. Introduction

1.1 About Viswambhara Educational Society

It was established in the year 1993 to provide technical and higher education. This society was formed by dynamic and well-educated persons **to impart standard higher education in the North region of Telangana state.** The society is directed by highly experienced senior citizens, excellent academicians, and dynamic youngsters on the board of directors.

1.2 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of the **Warangal district of Telangana State** with immense peace and calmness in the surroundings. The College is surrounded by Educational Buildings on the macro front from all sides.

The college is located in serene atmosphere and green surroundings away from the buzz of the city and is feasible of the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens, and Police Station.

1.3 About the Institution

The Vaagdevi Degree College is a Co-Educational college affiliated to Kakatiya University successfully introduced P.G Courses to cater the needs of the students. Located at the heart of the tri-cities in Warangal, since its inception, it has been our earnest endeavor to maintain high standards of discipline and achieved academic excellence. **The institution reached unimaginable heights and is now it is one among the premier institutions which is mostly sought.**

The college provides a perfect platform to meet world class challenges. For the past two decades the determination and dedication of teaching gave successful placements to the students. We are committed for the overall development of the students to meet the global challenges. Achieving excellence not only in the academic but also in sports, cultural, curricular fields is our motto.

It is affiliated with the Kakatiya University and provides the following programs:

- **Graduation** – It offers the following courses.
 - B.Sc. Data Science (EM)
 - B.Sc. M.P.G(EM) (Maths, physics & Geology)
 - B.Sc. M.P.Cs (EM) (Maths, physics & Computer science)
 - B.Sc. M.St.Cs (EM) (Maths,Statistics& Computer Science)
 - B.Sc. M.E.Cs (EM) (Maths,Electronics& Computer science)
 - B.Sc. M.C.Cs (EM) (Maths ,Chemistry,Computer Science)
 - B.C.A (Bachelor of Computer Applications)
 - B.Sc. Data Science (EM)
 - B.Com.(EM) Computer Applications
 - B.Com Taxation (EM) (EM)
 - B.B.A (EM) Bachelor of Business Administration
 - Food Science & Quality Control , Zoology, Chemistry (EM)
 - Nutrition & Dietetics, Zoology, Chemistry (EM)
 - Crop Production (EM)
 - Dairy Science(EM)
 - Bt.B.C (EM) Biotechnology , Botany & Chemistry
 - Bt.Z.C (EM) Biotechnology, Zoology & Chemistry
 - Bt.Mi.C (EM) Biotechnology Microbiology & Chemistry
 - B.Z.CS (EM) Botany, Zoology & Computer Applications
 - MI.Z.C (EM) Microbiology, Zoology & Chemistry
 - B.Z.C(EM) Botany, Zoology & Chemistry
 - B.Z.G (EM) Botany, Zoology & Geology
- **Post Graduation** – It offers the following courses.
 - M.B.A (Master of Business Administration)
 - M.Com. Computer Applications General

- M.C.A Master of Computer Applications
- M.Sc. in Computer Science, Mathematics, Physics, Chemistry, Microbiology, Zoology

The College works towards training young men and women to be competent, committed, and compassionate, and lead in all walks of life.

1.4 Statements of the Institution

1.4.1 Vision

"The institute envisions ***"To achieve academic excellence by providing Skill enhancing and value enriching education which helps not only the growth of the individual student but also enable us of become a rich source for the Nation building by offering by talented youth to the society."***

1.4.2 Mission

The College seeks to realize its Vision with a Mission to ***"Inculcating the innovative Learning methods with a unique diversified curriculum and also by adopting a need based approach Our Institution strives hard to provides a perfect platform to meet world class challenges. By in academics while giving priority to moral and ethics which Shapes the individual to be fit for ever-changing global environment."***

1.5 Assessment of the College

1.5.1 Affiliations and approvals

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

1.5.2 Certification

AISHE – The College received the AISHE certification from the Department of Higher Education Statistics Division, New Delhi in 2022 and the code is C- 27378.

1.6 Achievements of the College

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

- **Best Degree College** award given on 30 of January in 2021 by ambitions career counsellors.
- **Best Science & Commerce College South India Region** has been awarded India's education excellence award in 2018 by Berkshire media LLC, USA.
- **Outstanding degree & P.G institute** with best placements given in 18th world education summit on 3-6 March 2021.
- **Best Principal Performance National Award** to Dr. Amaravadi Shesha Chalam on the occasion of national seminar on individual contribution for national and social development on 10 January, 2018 at panjim, Goa.
- **Certificate given in membership with Telangana academy for skill and knowledge** for the academic year 2019-20.

2. Institution overview

2.1 Populace analysis for the Academic year 2020-21

2.1.1 Students data

The student data (shared by the College) shows there were a total of **3,078 Boys and 2,287 students**, thus there were **a total of 5,365 students** on the premises.

2.1.2 Staff data

Type	Male	Female	Total
Teaching Staff	142	213	355
Non-Teaching Staff	31	40	71
Total Staff Members	173	253	426

Table 1: Staff data of the Institution for 2020-21

The staff data shows the premises had a total of **426** Staff Members.

2.2 Total College Area & College Building Spread Area

The **total site area is 1 acre and 21 cents** and the **total Built-up area of the College is 26,740 sq. ft.** for a **total of 5,791 footfalls.**

2.3 College Infrastructure

2.3.1 Establishment

The College was established in 1993. The college is located pretty close to nature and hence has a very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building.

2.3.2 Spatial Organisation

The overall ambiance of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The color palette not

just helps the building to stand out but also provides an Institutional arena. There are provisions for lifts and a staircase for accessibility on the premises, whereas there are amenities such as CCTV, Fire extinguishers, smoke detectors, a first aid box, etc.

2.3.3 Operation and Maintenance of the premises

The interview session was held with the staff regarding the operation and working hours. The Institution is open from Monday to Saturday. The first and third Saturdays are off. The schedule is mentioned below.

S. No.	Section	Spaces	Time	Hours/day	Days in a year
1	Main Institutional College	Student areas and Teaching faculty	09:00 a.m. to 04:30 p.m.	7.5	280
2	General areas	Admin areas and library, Passage, staircase, toilet	08:30 a.m. to 04:30 p.m.	8	300

Table 2: Schedule of the timings of the premises

3. Green Building Study Audit

3.1 About the Green Building Study Audit

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

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

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

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include 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

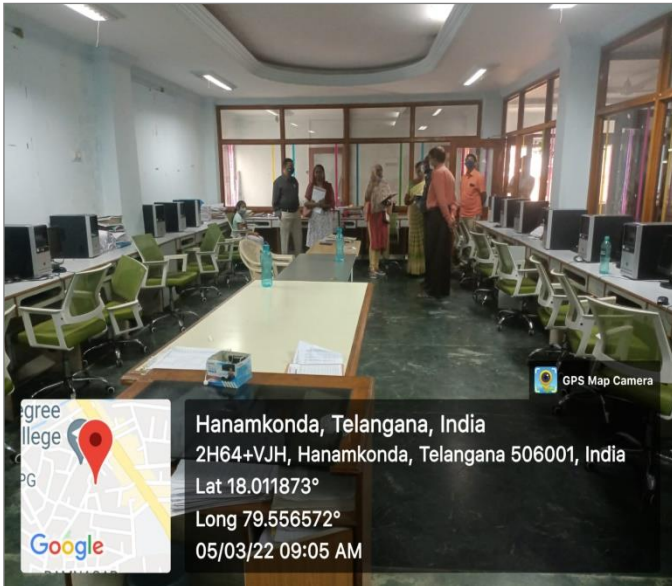
The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

3.4 Timeline of the activities for the Green Building Study Audit

- 05 February 2022 – Discussion with the College
- 12 February 2022 – Allotment and Initiation by the College
- 18 February 2022 – Induction Meeting
- 23 February 2022 – Survey of students and staff completed
- 05 March 2022 – Site visit
- March to May 2022 – Data collection and discussion
- 16 June 2022 – Submission of the Report

On-site investigation and physical verification

Site visit and interaction session



4. Site Study

The following listed are some of the positive site elements which are beneficial to the college in terms of tangible and intangible benefits.

- **Location** - The the Viswambhara Educational Society's Vaagdevi Degree & P.G. College located at 2-2-457/A, Ramnagar, Hanamkonda, Telangana - 506001 and falls under the Mawal Taluka, Bollikunta Village, Khila Warangal Mandal, Wardhannapet taluka, Warangal district and the Greater Warangal Municipal Corporation (GWMC).
- **About the district** - Warangal, also called Orugallu or Ekasila Nagaram in earlier times is the headquarters of the Warangal district in Telangana. Warangal is at a distance of 145 km to the northeast of Hyderabad.

(Source: <https://telanganatourism.gov.in/partials/destinations/regions/warangal.html>)

- **Neighborhood context** - The premises are surrounded by open spaces and Residential, Commercial, and Educational areas in the immediate surroundings of the site.
- **Natural physical features** – The premises includes rich biodiversity and a good number of plants in the adjacent open space. The site does not have a major difference in the land levels (contours).
- **Manmade features** – The premises are situated in a semi-urban area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for the entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation** – There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff are parked.
- **Climate** – Warangal has a tropical climate. The summers are much rainier than the winters in Warangal. This climate is considered to be Aw according to the Köppen-Geiger climate classification. The average annual temperature in Warangal is 27.2 °C | 80.9 °F. The rainfall here is around 1,020 mm | 40.2 inches per year.

(Source: <https://en.climate-data.org/asia/india/warangal/warangal-968182/>)

Ecological (Environment) Audit



Background reference image Yugal Shrivastava on pexels

5. Ecological (Environmental) Audit

The environment is an essential part of 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, and 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 and a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. The universal design applies to all built and unbuilt spaces.

As part of our study, we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

The college has an adjacent open space used by all. The students use it as a leisure place for study and the college ground is used for sports activities. There are ample resting spaces as part of the building design which provide a resting and warm welcoming approach on the premises.

5.2 Flora and fauna audit

5.2.1 Flora Audit

A flora survey was carried out to identify the total number of plants and trees.

The landscape area has a variety of plantations constituting hundreds in numbers. Most of the trees have been planted by students, staff, management, Principal non-teaching staff, and office staff on several occasions and also during the plantation drives. **A few trees have grown naturally and have been conserved at their respective locations to maintain the beauty of the premises.** The detailed study is as follows.

S. No.	Plant name	Description
1	Common Name	Neem
	Scientific Name	Azadirachta indica L.
	Family	Meliaceae
2	Common Name	Guava

	Scientific Name	Psidium guajava L.
	Family	Myrtaceae
3	Common Name	Data Palm (2)
	Scientific Name	Phoenix dactylifera L.
	Family	Arecaceae
4	Common Name	Indian Almond
	Scientific Name	Terminalia catappa
	Family	Combretaceae
5	Common Name	Giant Milkweed
	Scientific Name	Calotropis gigantea (L.) Dryand.
	Family	Apocynaceae
6	Common Name	Mango (2)
	Scientific Name	Mangifera indica L.
	Family	Anacardiaceae
7	Common Name	Indian Mast tree
	Scientific Name	Polyalthia longifolia
	Family	Annonaceae
8	Common Name	Henna Tree
	Scientific Name	Lawsonia inermis L.
	Family	Lythraceae
9	Common Name	Oleander
	Scientific Name	Nerium oleander L.
	Family	Apocynaceae
10	Common Name	Aloe
	Scientific Name	Aloe vera
	Family	Xanthorrhoeaceae
11	Common Name	Pomegranate
	Scientific Name	Punica granatum L.
	Family	Lythraceae
12	Common Name	Ashwagandha
	Scientific Name	Withania somnifera (L.) Dunal
	Family	Solanaceae
13	Common Name	Betel

	Scientific Name	Piper betle L.
	Family	Piperaceae
14	Common Name	Guduchi/Amruth
	Scientific Name	Tinospora cordifolia
	Family	Menispermaceae
15	Common Name	Cannonball tree
	Scientific Name	Couroupita guianensis Aubl.
	Family	Lecythidaceae
16	Common Name	Orchid tree
	Scientific Name	Bauhinia purpurea L.
	Family	Fabaceae
17	Common Name	Sugar destroyer/Podapatri
	Scientific Name	Gymnema sylvestre
	Family	Apocynaceae
18	Common Name	Ceylon caper
	Scientific Name	Capparis zeylanica
	Family	Capparaceae
19	Common Name	Grey Orchid
	Scientific Name	Vanda tessellata
	Family	Orchidaceae
20	Common Name	Brazilian tea
	Scientific Name	Stachytarpheta jamaicensis
	Family	Verbenaceae
21	Common Name	Kalmegh
	Scientific Name	Andrographis paniculata
	Family	Acanthaceae
22	Common Name	Gotu kola
	Scientific Name	Centella asiatica
	Family	Apiaceae
23	Common Name	Catmint
	Scientific Name	Anisomeles indica
	Family	Lamiaceae
24	Common Name	Insulin plant

	Scientific Name	Chamaecostus cuspidatus
	Family	Costaceae
25	Common Name	Easwaramooli
	Scientific Name	Aristolochia indica
	Family	Aristolochiaceae
26	Common Name	Anantamool
	Scientific Name	Tylophora asthmatica
	Family	Apocynaceae
27	Common Name	Balloon Vine
	Scientific Name	Cardiospermum halicacabum
	Family	Sapindaceae
28	Common Name	Bilwa
	Scientific Name	Aegle marmelos
	Family	Rutaceae
29	Common Name	Night flowering jasmine
	Scientific Name	Nycanthes arbor-tristis
	Family	Nyctanthaceae
30	Common Name	Ippa/Mahuva
	Scientific Name	Madhuca longifolia var. latifolia
	Family	Sapotaceae
31	Common Name	Multivitamin plant
	Scientific Name	Sauropus androgynus
	Family	Phyllanthaceae
32	Common Name	Malabar Nut
	Scientific Name	Justicia adhatoda
	Family	Acanthaceae

Table 3: Details of the Trees on the premises

At present, there are 32 types of plantations on the premises. The benefits of having trees on the premises are innumerable, some of the key benefits are providing shade, reduction in noise pollution by acting as noise barriers and maintaining the silence zones, interactive outdoor learning spaces, lowering the stress levels by staying connected with the nature, and the use of dried leaves to for organic composting.

5.2 Fauna Audit

The natural fauna of the region has been conserved since decades including birds, butterflies, honey bees, grasshoppers, and other small reptiles etc. This is due to vegetation in the premises.

5.3 Noise Audit

5.3.1 Macro level

On a macro level, there are residential areas adjacent to the site. The approach road however has traffic. As the college is oriented amidst the residential areas with sufficient vegetation the noise levels do not affect the students and staff in their day-to-day functioning. The approach road is pretty away. **Overall the noise level in terms of bad effects is moderate and there are positive outcomes as per our analysis on a macro level.**

5.3.2 Micro-level

The college has an adequate open space covered with huge trees prevailing naturally in the premises which act as a noise barrier; in addition the Institution building is surrounded by Residential Buildings which further act as a benefit in reducing any noise pollution.

There are huge numbers of parking provisions provided in the premises which causes noise. These are parked within the premises and cause a lot of traffic and noise issue.

The college does not have generator thus there is no inconvenience or sound problem caused due to the same. There are no particular equipments which cause any noise effect.

Overall the noise levels inside the premises during the peak hours are above average; there should be certain steps taken towards the same.

5.4 Carbon Footprint Audit

5.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

- **Ease of commuting** – Owing to the proximity to public transport and being

situated in a rural and semi-urban setup the access to the College is very feasible and walkable. The load on private vehicles for commuting is very less and thus there is reduction on harm to the environment owing to the pollution caused by diesel, petrol vehicles.

- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 55-65%
- **Vehicles details** – The Institute has distinguished two-wheeler and four-wheeler parking spaces for both faculty and students.

S. No.	Type	Nos.	For (student/ Staff)
1.	Cars	2-3	Staff
2	Bikes	15-20	Staff and Students
3	Cycles	20-30	Students
4	Electric vehicles	1-2	Staff and Students

Table 4: Details of the Parking on the premise

- **Commute details** – The students and staff commute from multiple places. The details are summarised below. This includes places where they are coming daily and necessarily less than 10 km.

S. No.	Name of all the places of commute	Distance from College
1	Kazipet, Hanamkonda, Bheemaram, Hasanparthy, Gopalpur, Subedari, Nakkalagutta, MGM, KU, Pochamma kunta, New shayampet	Within or less than a 5 km radius
2	Warangal, Madikonda, Mills colony, Fort warangal, Bhattupally, Jangaon, Station ghanapur, Ragubathpally, China pendyal, Pedda pendyal, Gudeppadu, Parkal, Dharmasagar, Mulugu, Karunpuram, Kadipi konda, Rangashaypet, Mamnoor, Bollikunta, Dharmaram, Geesukonda, Sangham, Labour colony, Shiva nagar – puppala gutta, Wardhanpet, Rayaparthi, Elkaturthy, Huzurabad, Husnabad, and Mulkanoor	More than 5 km and up to 10 km radius

Table 5: Details of the places students and staff commute from

5.4.2 Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of the Urban Heat Island Effect which refers to an increase in temperature of the surroundings because of ineffective strategies.

- **Exposed roof areas** – The terrace is a flat roof that is absolutely clean and well maintained. *It is painted and covered with white paint which reflects the heat.*
- **Exposed non-roof hardscape areas** – There is the availability of courtyards surrounded by potted plantations on a micro-level. *This helps in maintaining the internal temperatures by reducing the direct heat gain to a certain extent.*

There are adequate measures adopted on the premises to reduce the heat island effect of Building roofs and on the site.

5.4.3 Outdoor Light Pollution Study

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

5.5 Universally accessible premises

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

There are following facilities available in the premises for the specially abled as part of Universally accessible premises initiatives.

- **Lifts**
- **Ramps**
- **Wheelchair**
- **Handrails along staircase**
- **Low height risers in the staircases**

The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect.

5.6 Fire Safety

The Institution has undertaken adequate fire safety measures. Each floor has an open staircase without any barriers for fire safety measures. These staircases are free of any kind of storage or combustible material.

The windows in each classroom are at a low height with fresh air and natural light thereby adding to ample ventilation throughout the day.

The college should adopt additional fire safety practices such as fire hydrant and others whenever the College undergoes further extension or renovation. The current facilities are however quite well maintained.

Our observation was that there are adequate Fire extinguishers in the premises. Though, there can also be provision for additional fire safety signages.

5.7 Survey Results

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

5.7.1 Participation

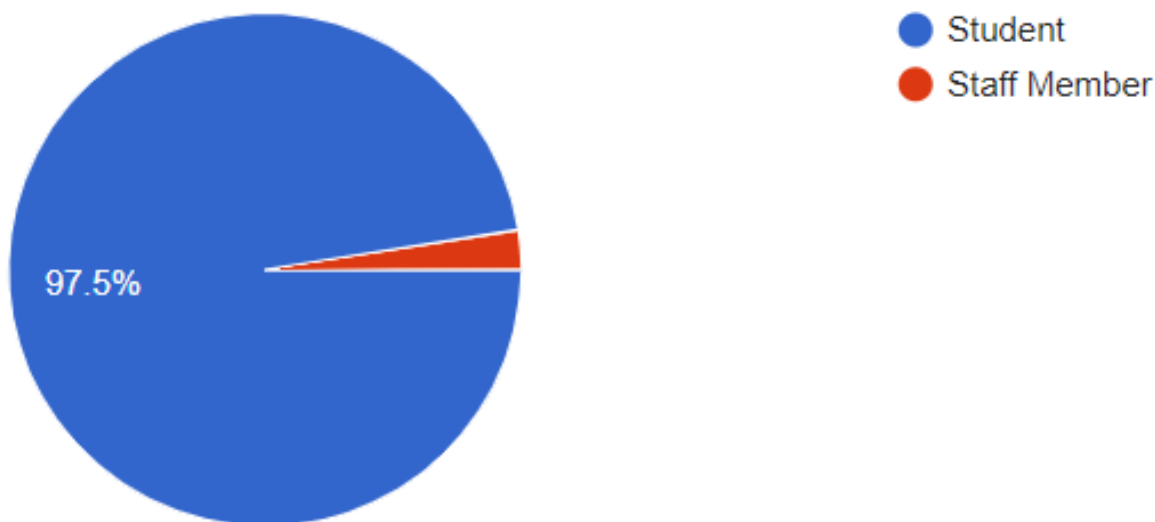


Figure 1: Participation analysis in the survey

A total of **1,444 responses** were received out of which 98% were students.

5.7.2 What according to you are the positive steps taken by the College towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- Frequently conducting awareness programs.
- According to me planting the tree in our college premises and put water boys for get water to plants in every day.
- By conducting Haritha haram and swach barath.
- Good maintenance and neatness.
- First they have a very good green environment and good manegement of the green and clean
- Planting the trees, cleant and neat surroundings, avoid waste, clean and neat slums awareness pograms.
- Continuation of ban on entry of motor vehicles in premises.
- Water conservation is practiced.
- I'd taken up active participation in the environment conservation awareness of placing the placards at key locations in the premises.
- Water conversation is practiced and a plastic free premises.
- Keeping the washrooms clean.

5.8 Positive site features as per our study

5.8.1 Extraordinary features

These aspects undertaken and regularly maintained by the College have benefitted the local environment to a great extent.

- a) **Excellent maintenance of the College** - The College is maintained in an excellent manner, though it is situated amidst residential areas the state of the art infrastructure is highly appreciating. The team is taking efforts to make the premises a sustainable premises.
- b) **Preventive measures of the college for carbon, gas, heat, and hazardous chemicals emission** - The immense vegetation undertaken by the college have resulted in a fresh atmosphere inside the premises. Furthermore, features such as balance in daylight in the interiors, and open-to-sky courtyards included in the architectural design of the premises have been useful in maintaining the emissions to a great extent.

5.8.2 Other features

These are additional aspects that are useful to the site and premises.

a) **Use of organic fertilizers for the plantations**

The college uses organic compost and avoids the use of any chemical fertilizer thus maintaining the practice of organic farming.

b) **Cool rooftops**

The College has its Terrace roofs painted with Cooltop it helps in reducing the temperature of the spaces.

c) **User-friendly movability on-premises**

There are provisions of a Kerb Ramps near the main entrance of the Building premises, also a low height handrail for ease of access.

d) **Avoid using plastic in premise**

There are provisions for a ban on the use of plastic bags or products on the premise.

e) **Paperless technologies for offices**

The college has gone technology-friendly and becomes paperless to a certain extent.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Beautification of the backyard and courtyard

The existing site can be upgraded with an appropriate Landscape Architecture design.

b) Additional facilities for birds

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

Heat island reduction

a) Grass pavers in the setback areas

The college can have grass pavers in replacement to existing paving for further heat island reduction on exposed non-roof areas

Pollution Control

a) Promote the use of Eco-friendly vehicles

There can be provision for battery-operated vehicles/ low emission vehicles such as electrically driven vehicles parking in open spaces along with battery charge points, this would inspire students to change their mode of transportation and adopt sustainable practices.

b) Bicycles as a gift

As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.

c) Avoid paper wastage through books

The College can collect all old semester notebooks; these can either be converted to reusable paper on the premises through a workshop or using a shredder machine or handed over to a vendor for making fresh paper. Additionally, the Students can be motivated to undertake similar practices on an individual note.

Smart and responsible environment systems

a) Smart Gardening System on the Terrace area

The College can undertake a Smart Gardening system using IoT Technology such as an automated watering system. This will result in saving time by scheduling time for watering; Saving money and water as smart irrigation systems have automated water schedules in addition to tracking dampness of soil which helps the irrigation system know when and how much the garden needs. It also helps in healthier plants as with the help of apps, smart irrigation systems, or even smart growing containers, these tasks can be provided evenly and allow the plants to be healthier and more productive. More information on this system can be checked here

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

On-site investigation and physical verification

The ecologically friendly ambience with facilities such as vegetation cover



6. Towards a Healthy & Sustainable Institution

6.1 Recommendations based on the study

In addition to the recommendations provided in each section; the College can adopt the following strategies for Healthy and Sustainable Institution practices.

- a) **Cutlery in the Canteen** – The regular plastic and steel plates, and spoons used in the Canteen can be replaced with eco-friendly/ organic leaves, paper straws, disposable plates, and edible spoons made out of sugarcane waste or bamboo.
- b) **Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially-abled students.
- c) **Eco clubs** – In addition to the NSS, there can be an eco-club with school and college students operating together which will help the collaboration to yield results right from the micro-level.

6.2 Survey Results

An online survey was conducted to analyze the student and staff views about changes for Green audit improvement. **Some of the suggestions are listed below:**

- By putting more plants such as placing medicinal plants.
- I feel that campaigns and seminars on green audit improvement will bring more awareness among students.
- Planting trees and watering every day, instructing the students to keep theory surroundings clean and best, awareness about the trees plantation.
- Maintaining a nursery on the top floor of premises building.
- Parking of bikes in premises and water facilities need to improve.
- Planting and preserving trees and landscaping in the campus, and maintains them throughout the year.

However, it should be noted that because of the pandemic the students have not visited the premises physically so some of these points are not mandatory.

7. References

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6. Climate data <https://en.climate-data.org/asia/india/warangal/warangal-968182/>
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