

# ENVIRONMENT AUDIT

2019-20 & 2020-21

## AUDIT REPORT

Studied for

**Government College for  
Women (Autonomous)**

Sambasiva Pet, Guntur. Pin- 522001,  
Andhra Pradesh, India

Analysed by



**19 March 2022**

# Disclaimer

The Audit Team has prepared this report for the **Government College for Women (Autonomous)** located at Sambasiva Pet, Guntur. Pin- 522001, Andhra Pradesh, 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 has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than 45 lakhs+ sq. ft. of Built-up area audited till date Pan India 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](mailto:sustainableacademe@gmail.com)

## Acknowledgement

The Audit Assessment Team thanks the **Government College for Women (Autonomous), Guntur, Andhra Pradesh** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **everyone from the Management.**

Our heartfelt thanks to Chairperson of the entire process **Dr. V. R. Jyotsna Kumari**, Principal, for the valuable inputs.

We are also thankful to **College's Task force the faculty members - Green Audit Coordinators** who have collected data required **Dr. A. V. Kavitha**, Vice Principal, IQAC coordinator; **Dr. K. Padmaja**, Academic Coordinator; **Dr. G. Padmini Devi**, Lecturer in Home Science; Home Science Department (**Special mention for the excellent coordination**) and **P. Nirmala Kumari**, Lecturer in Mathematics.

We highly appreciate the assistance of **G. Gopala Krishna**, Administrative Officer 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

<b>1. Introduction.....</b>	<b>4</b>
<b>2. Institution overview .....</b>	<b>8</b>
<b>3. Green Building Study Audit.....</b>	<b>11</b>
<b>4. Site Study.....</b>	<b>12</b>
<b>5. Ecological (Environmental) Audit .....</b>	<b>13</b>
<b>6. Towards a Healthy &amp; Sustainable Institution.....</b>	<b>25</b>
<b>7. References .....</b>	<b>27</b>

# 1. Introduction

## 1.1 About the functioning of the Institution

Government College for Women (A), Guntur established in 1942, in 10 acres, is fully equipped with laboratories and ICT enabled classrooms. It has completed 76 years of committed service enabling the rural women students in terms of education and employability.

The staff of the institution are qualified and selected through College Service Commission and work with commitment, dedication, and research orientation. A great number of the staff of this College are Ph.D holders and are acting as Resource Persons, Content Generators, Authors and Research Supervisors.

From 2011 to 2017, seven MRPs were completed and six more projects are going on. The teachers are highly committed, follow student-centered methods and most of them are honoured as the best teachers by the State Government and other agencies.

The institution is conscious of the eco system and from time to time enough focus is laid on campus cleanliness and beautification through measures like avoiding plastic on the campus. Green cover is maintained and rain - water harvesting is taken up to preserve the water tables during summer.

The staff and the students along with the NSS and NCC units of the College adopt villages and spread the green consciousness among villages that surround the institution. The staff and the students of the College campaigned against Open Defecation System in the surrounding villages as part of the Swatch Bharat programme.

The College is an autonomous institution, a District Resource Centre, it has a separate Placement Cell (Jawahar Knowledge Centre), which trains the students in Communication Skills and Soft Skills, the institution has MOUs with employing agencies. Fibergrid, a digital networking platform is sanctioned to this College to connect it digitally to other government colleges to provide extended academic support to other institutions using the expertise of the staff of this institution.

The core strengths of the College lie in the **transparent administrative measures, good teaching-learning and evaluative practices, professional ethics, graduation outcomes and outreach activities.**

## 1.2 Statements of the Institution

**Vision** - To empower women students of first generation families from marginalised sections with 21st century skills to grow as global citizens with values for a holistic personality.

### **Mission**

- 1) Imparting knowledge, skills and values through need based and flexible curriculum through student - centered teaching methods
- 2) Facilitating research temper, critical and creative thinking skills among teachers and learners through digital resources
- 3) Providing an objective and participatory atmosphere and facilities for developing self-confidence, self-esteem, employability, entrepreneur skills and overall development
- 4) Integrating a serving spirit, integrity, accountability, dedication and commitment among the teaching and non-teaching staff and the students through transparent and participative administration.
- 5) Creating an eco-friendly ambience through green practices, and offering value based education through community help and extension activities.

## 1.3 About the Institution

The aim of the College is to continuously enhance the teaching methods in order to provide students with an opportunity for their all-round development. It also strives for excellence in academics and makes an effort to induce passion for learning along with the inspiration for decisive thinking and assessment, thereby helping them to become the best professionals in their chosen careers. **The Institution is an Autonomous Organization and it offers the following courses.**

- **Graduation** – It offers the following Undergraduate courses.
  - Faculty of Humanities - H.E.P. (History, Economics, Political Science), H.ST.Soc.(History, Spl. Telugu, Sociology), E.P.CE.(Economics, Political Science, Communicative English), H.SE.TTM.(History, Spl .English, Tourism & Travel Management), E.P.Psy.(Economics, Political Science, Psychology), H.P.FE(History, Political Science, Financial Economics)

- Faculty of Commerce - B.Com.(General), B.Com.(Computer Applications) , B.Com. B.F.I.(Banking, Financial Services, Insurance and Exim trade), B.Com. (Accounting and Taxation)
- Faculty of Science & Technology - M.P.C.(Maths, Physics, Chemistry), M.P.Cs.(Maths, Physics, Computer Science), M.St.Cs.(Maths, Statistics, Computer Science), M.P.E(Maths, Physics, Electronics), M.E.Cs.(Maths, Electronics, Computer Science), M.Cs.Mm.(Maths, Computer Science, Multimedia), M.Cs.Cc.(Maths, Computer Science, Cloud Computing), CS.St.DS(Computer Science, Statistics, Data Science), Chemistry (Honours), B.Z.C.(Botany, Zoology, Chemistry), Mb.B.C.(Micro-Biology, Botany, Chemistry) , Mb.Z.C.(Micro-Biology, Zoology, Chemistry), B.Bc.C.(Botany, Bio-Chemistry, Chemistry), Z.Bc.C.(Zoology, Bio-Chemistry, Chemistry), B.Bt.C.(Botany, Bio-Technology, Chemistry), Bt.Bc.C.(Bio-Technology, Bio-Chemistry, Chemistry), HS.(Home Science (Clinical Nutrition and Dietetics)), B.Z.C.(Botany, Zoology, Chemistry), C.Z.At.(Chemistry, Zoology, Aquaculture Technology), Bc.Mb.Ft.(Bio-Chemistry, Micro-Biology, Food Technology)
- UGC Vocational Degree Programmes (B. Voc) - B.Voc. Multimedia and Animation, B.Voc. Software Development
- **Post-Graduation** – It offers the following Post Graduation courses.
  - Faculty of Humanities - Masters of Arts (M.A.) in Telugu, Economics and English
  - Faculty of Science & Technology – Masters of Science (M. Sc) in Chemistry and Zoology

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

## 1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Guntur district of Andhra Pradesh State** with immense peace and calmness in the surroundings. The College is surrounded by Educational Buildings on the North side, Residential and Commercial areas on the macro front from all the sides. There is a frontal approach which provides quite a



beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhances the micro climate of the region. The location of College is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station.

## 1.5 Assessment of the College

### 1.5.1 Certification

The institute has received the following Certifications

- ISO – The College has received ISO 9001:2015 Certification for providing educational services in August, 2021.
- NIRF – The College applies every year for the National Institutional Ranking Framework (NIRF).
- AISHE – The College's code is C-32670

### 1.5.2 Accreditation

**NAAC** – The College has completed 3 cycles of NAAC and it received a CGPA of 2.92 with a B++ Grade in its third cycle of Accreditation. The College is due to enter its fourth cycle of NAAC soon.

### 1.5.3 Recognitions

**The College has achieved the following recognitions:**

- University Grant Commission (UGC) under section 2 (f) & 12 (B) of the UGC Act, 1956 by University Grants Commission, New Delhi.
- The College has been granted the **Autonomous status by UGC**

## 1.6 Achievements of the College

The College has a tremendous track record of excellence in Built form and educational services provided and it recognized as the **"College with Potential for Excellence (CPE)"** by UGC for a period of five years in 2016



## 2. Institution overview

### 2.1 Populace analysis for Academic year 2019-20

#### 2.1.1 Students data

The student data (shared by the College) shows there were a total of **2,097 Girls** students in the premises.

#### 2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	07	02	<b>09</b>
Teaching Staff	23	60	<b>83</b>
Non-Teaching Staff	17	21	<b>38</b>
<b>Total Staff Members</b>	<b>47</b>	<b>83</b>	<b>130</b>

*Table 1: Staff data of the Institution for 2019-20*

The staff data shows the premises had a total of **130** Staff Members.

### 2.2 Populace analysis for Academic year 2020-21

#### 2.2.1 Students data

The student data (shared by the College) shows there were a total of **2,414 Girls** students in the premises.

#### 2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	7	2	<b>9</b>
Teaching Staff	27	64	<b>91</b>
Non-Teaching Staff	13	21	<b>33</b>
<b>Total Staff Members</b>	<b>47</b>	<b>87</b>	<b>133</b>

*Table 2: Staff data of the Institution for 2020-21*

The staff data shows the premises had a total of **133** Staff Members.

## 2.3 Total College Area & College Building Spread Area

The **total site area is 10.8 Acres** and the **total Built-up area of College is 54,467 sq. ft.** for a **total of 2,547 footfalls.**

## 2.4 College Infrastructure

### 2.4.1 Establishment

**The College was established in 1942.** The College is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

### 2.4.2 Spatial Organisation

The overall ambience 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 colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

### 2.4.4 Operation and Maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institutions are open Monday to Saturday for full day. Sunday is an off for all. Below mentioned in the table are the average working hours. The detail wise timing for each is mentioned below.

S. No.	Section	Spaces	Time	Hours / day	Days in a year
<b>1</b>	Main Institutional College	Student areas and Teaching faculty	Monday to Friday (10:00 a.m. to 05:00 p.m.)	7	280
<b>2</b>	General areas	Admin areas and library, Passage, staircase, toilet	Monday to Friday (10:00 a.m. to 05:00 p.m.)	7	300

***Table 3: Schedule of the timings of the premises***

## On-site investigation and physical verification

### The Beautiful and Eminent Institution Building and 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 for 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 Rain water harvesting and Waste water treatment in campus
- 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 campus
- Analysis of the flora and fauna of campus
- 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 admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collected and preparation of the Report.

### 3.4 Timeline of the activities for Green Building Study Audit

- 08 March 2022 – Discussion with the College
- 10 March 2022 – Allotment and Initiation by the College
- 10 March 2022 – Induction Meeting
- 12 March 2022 – Survey of the Student and staff submitted
- 15 March 2022 – Data submitted by College
- 19 March 2022 – Submission of the Report

## 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 Government College for Women (Autonomous) is located at SambasivaPet, Guntur. Pin- 522001, Andhra Pradesh, India and falls under the Guntur Municipal Corporation is the civic body that governs the Guntur City in the Indian state of Andhra Pradesh which is one of the oldest municipalities and the third largest municipal corporation in the state.
- **Neighbourhood context** - The premises is surrounding by open spaces and Residential, Commercial and Educational areas on the immediate surroundings of the site.
- **Natural physical features** – The premises includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major different in the land levels (contours).
- **Manmade features** – The premises is situated in a urban area surrounded by commercial area and educational institutions. There is sufficient appreciation space for 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 is parked.
- **Climate** – This city has a tropical climate. In winter, there is much less rainfall than in summer. The Köppen-Geiger climate classification is Aw. The average annual temperature is 28.1 °C | 82.6 °F in Guntur. In a year, the rainfall is 966 mm | 38.0 inch.

(Source: <https://en.climate-data.org/asia/india/andhra-pradesh/guntur-4945/>)

# Ecological (Environment) Audit



Background reference image Yugal Shrivastava on pexels



## 5. Ecological (Environmental) Audit

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.

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 inside the city the appreciation space towards the main entrance provides a welcoming approach to the College.

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

### 5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premises and the open/vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. The design on the entire is such that the landscape and softscape spaces are very well oriented and located thus being extremely useful to Institutions in the site. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are adequate numbers of Maintenance staff allotted for the upgrading the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the College has taken special provisions for the same. The spaces are watered daily in summer. **The efforts to maintain the existing space are commendable.**

## 5.2 Flora and fauna audit

### 5.2.1 Flora Audit

A flora survey was carried out to identify the total numbers of plants and trees every year. The landscape area has a variety of plantations constituting hundreds of surveyed trees in premises in the last few years as follows with detail description of each.

S. No.	Plant Name	Type	Nos.	Planted By
1	Duvvenakaya	Herb	4	Staff
2	Muripinda	Herb	5	Natural
3	Desert Rose	Shrub	Many	Students
4	Kondapindaku	Herb	3	Natural
5	Chinese Evergreen	Shrub	4	Natural
6	Golden Trump	Climbing Shrub	1	Staff
7	Benda	Shrub	2	Students
8	Sithaphal	Tree	3	Staff
9	Satavari	Herb	5	Staff
10	Uttareni	Herb	8	Natural
11	Addasaramu/Vasaka	Shrub	6	Natural
12	Nidra Ganneru	Tree	5	Staff
13	Kalabandha	Herb	3	Staff
14	Vepa Chettu	Tree	10	Natural
15	Veduru	Shrub	2	Natural
16	Atikamamidi	Herb	3	Natural
17	Ranapala	Herb	5	Natural
18	Peacock Flower	Shrub	4	Natural
19	Jilledu	Shrub	6	Natural
20	Metta Tamara	Shrub Withrhizome	4	Natural
21	Budda Kakara	Creeper	5	Students
22	Tella Billaganneru	Shrub	6	Natural
23	Erra Billaganneru	Shrub	3	Natural
24	Nalleru	Creeper	7	Natural
25	Kukkavaminta	Herb	3	Natural
26	Sankupushpum	Creeper	5	Staff

27	Coconut	Tree	6	Staff
28	Multicolour Croton	Shrub	6	Staff
29	Vamaku	Herb	4	Staff
30	Nirukassuvu	Grass	8	Staff
31	Chengalva	Shrub	3	Students
32	Pasupu	Shrub Withrhizome	6	Students
33	Japanese Sago Palm	Tree	4	Students
34	Lemon Grass	Grass	4	Staff
35	Garika		8	Natural
36	Ummetta	Shrub	5	Natural
37	Gulmohar	Tree	6	Natural
38	Female Dragon	Small Tree	5	Natural
39	Song Of India	Small Tree	3	Students
40	Areca Palm	Tree	7	Students
41	Dumb Cane	Shrub	6	Students
42	Golden Duranta	Shrub	7	Students
43	Guntakalagara Aku	Herb	6	Staff
44	Money Plant	Climber	3	Staff
45	Pachabotlu	Herb	5	Staff
46	Pullala Jamudu	Shrub	4	Students
47	Medi Chettu	Tree	7	
48	Banyan/Marri Chettu	Tree	4	Students
49	Raavi Chettu	Tree	3	Natural
50	Kukka Vaminta	Herb	5	Natural
51	Mandaram	Shrub	4	Natural
52	Spider Hibiscus	Shrub	7	Natural
53	Kentia Palm	Shrub	8	Natural
54	Neelimandu	Shrub	4	Students
55	Nooruvarahalu	Shrub	4	Students
56	Gorintaku	Shrub	6	Students
57	Subabul	Tree	5	Students
58	Mango Tree	Tree	7	Staff
59	Munaga Chettu	Tree	4	Staff

60	Curry Leaves	Tree	2	Staff
61	Banana	Tree	3	Students
62	Nerium	Tree	4	Students
63	Paarijatham	Tree	5	Students
64	Kukka Tulasi	Shrub	6	Students
65	Karpura Tulasi	Shrub	3	Students
66	Rama Tulasi	Shrub	3	Natural
67	Krishna Tulasi	Shrub	4	Natural
68	Vennela Vemu	Herb	3	Natural
69	Erra Tegada/Nalla Tegada	Climber	4	Natural
70	Vayyaribhama	Herb	6	Natural
71	Pedda Usirika	Tree	6	Staff
72	Nela Usiri	Herb	3	Students
73	Amla/Indian Goseberry/Vusiri	Tree	3	Students
74	Nelavusiri	Herb	3	Students
75	Vaamaku	Herb	4	Staff
76	Temple Tree	Tree	2	Staff
77	White Frangipani	Tree	7	Natural
78	Red Frangipani	Tree	4	Natural
79	Ganuga Chettu	Tree	4	Natural
80	Naramaamidi	Tree	5	Staff
81	Guava	Tree	5	Staff
82	Danimma Chettu	Tree	2	Students
83	Sarpagandha	Small Tree	4	Students
84	Lady Palm	Tree	3	Students
85	Purple Leaved Spider Wort	Herb	4	Natural
86	Aamudamu Chettu	Small Tree	4	Natural
87	Roja	Plant	3	Natural
88	Chaga	Shrub	5	Natural
89	Dragon Fruit	Tree	1	Students
90	Chilakathotakura	Herb	2	Students

91	Chirubenda	Herb	2	Students
92	Arrow Leaf Sida	Herb	1	Students
93	Vankaya	Shrub	1	Staff
94	Kamanchi	Herb	1	Staff
95	Jamun Tree/Neredu	Tree	2	Staff
96	Nandivardanam	Shrub	2	Staff
97	Marigold	Herb	2	Staff
98	Suvarna Ganneru	Tree	2	Natural
99	Teak	Tree	3	Natural
100	Almond	Tree	2	Students
101	Ganga Ravi	Tree	3	Students
102	Spider Wort	Herb	4	Natural
103	Tuber	Creeper	3	Natural
104	Tippa Teega	Creeper	3	Natural
105	Gaddi Chamanthi	Herb	4	Natural
106	Vaavili	Tree	3	Natural
107	Garuda Kammi	Herb	4	Natural

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

At present there are more than 445+ 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.

### 5.2.2 Fauna Audit

**It is a beautiful site to have the birds chirping around the College premises. It highlights the ecological co-existence concept in the most beautiful way.** The surveyed data of the fauna shows that there are Butterflies, Moths, Culex Mosquito, Anopheline Mosquito, Fruit Fly, Muska, Grus, Ants, Spiders, Corvus, Columbo, Alcedo, Myna, Sparrow, Parrot, Dragon Fly, Honey Bee, Squirrel, Lizard, Calotes, Millipede, Centipede, Mabuya, Canis and ticks available in the premises

## 5.3 Noise Audit

### 5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. The College is located at the center of the city surrounded by commercial area. **Overall the moderate noise levels are observed as per our analysis on 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. There are bare minimum parking provisions provided in the premises which causes bare minimum noise as they are situated near the entrance which is a bit away from the College building. 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 are low which is a good approach.**

## 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 close proximity to public transport the access is very feasible and walk able.
- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 40-60%
- **Vehicles details** – The provision provided by College includes s vehicle parking is allowed at present as follows.

S. No.	Type	Nos.	For (student/ Staff)
1.	Cars	5-8	Staff
2	Bikes	15-20	Staff and Students
3	Cycles	50-60	Students
4	Electric vehicles	1-2	Staff and Students

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

- **Commute details** – The students and staff commute from multiple places. The details are summarised below.

S. No.	Name of all the place where student of staff comes from	Distance
1	Old Guntur, One town, NTR stadium, Bus stand, Ananda Rao pet, Srinivasa Rao thota, Saradha colony, Pattabhipuram, Chndramouli nagar, Gujjana gundla, Nagaralu, Gorentla	Within or less than 5 km radius from College
2	Palakaluru, Nallapadu, Tadikonda, Nallacheruva, Parimi, Tulluru, Anathavaram, Vadlamanu, Nekkalu, Pathipadu, Boyapalem, Bodampadu, Pothuru, Chodavarum	More than 5 km and up to 10 km radius from College

*Table 6: 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 Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

- **Exposed roof areas** – The terrace is a flat roof which is absolutely clean and well maintained. The Buildings are covered with white paint and the Maintenance staff along with College have taken ample measures to maintain the same. **There was no weathering of roof observed.** The current practices are well maintained.
- **Exposed non-roof hardscape areas** - There are pathway on all sides of the premises. These include some natural and potted plantations along the pathways. However, the trees are huge and the canopy is wide spread thus providing ample shade to the outdoor areas of the premises. Hence, there are no direct sunrays or similar effect affecting the students and staff. The College has an open space in the form of lush green carpet which acts as a solution for the urban heat island effect. This huge green space is a very good solution for reducing any harmful health consequences which may arise due to harsh sunlight.

**There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in 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 Universal Campus

*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 Handrails along staircase and low height risers in the Staircases as part of universal campus initiatives.** 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. The College has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the specially abled students. **The College can plan to have 100% lifts in the future depending on the situation and facilities in addition to universal toilet.**

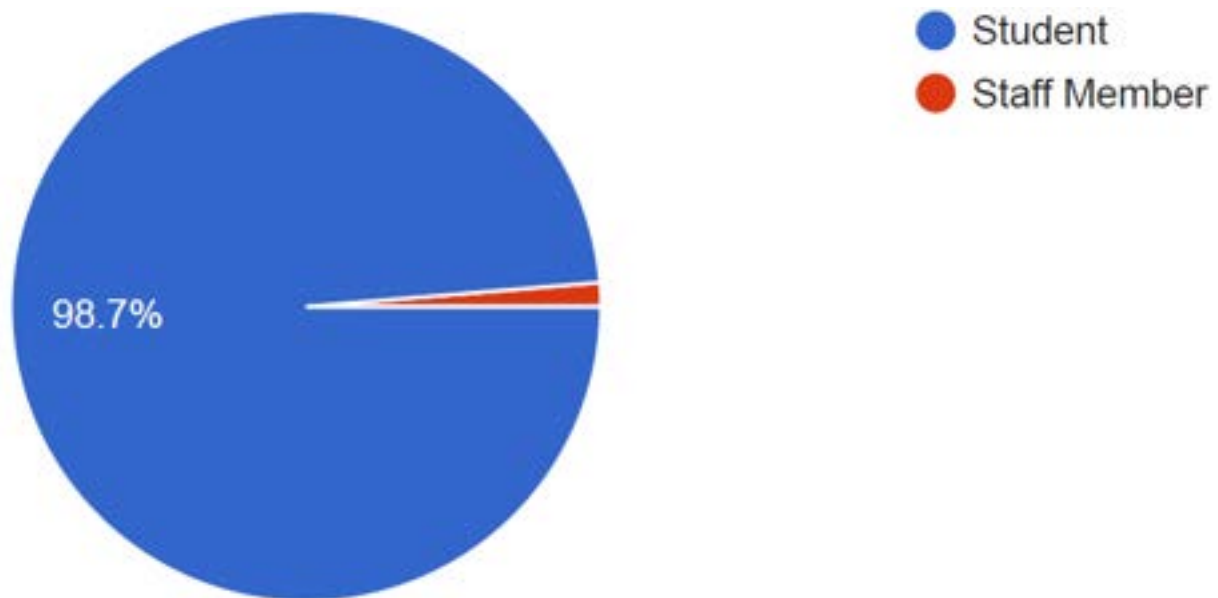
## 5.6 Fire Safety

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 analyse the views about the premises, following are some of the reviews.

### 5.7.1 Participation



*Figure 1: Participation analysis in the survey*

A total of **153 responses** were received out of which 99% 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.

- Growing new plants
- Clean maintenance
- Planting and surviving of newly planted plants
- Neatness, cleaning of rooms time to time.
- Every day watering the plants.

## **5.8 Positive site features as per our study**

### **a) Avoid using plastic in premises**

There are provisions for ban on the use of plastic bags or products in the Premises.

### **b) OPAC system**

The system in the library is beneficial for the students.

### **c) Paperless technologies**

The College has gone technology friendly and paperless in the functioning of the Premises.

### **d) Universal Toilet**

There are toilets for the specially abled people as per guidelines prescribed by National Building Code 2016.

### **e) Resting places**

There are provisions for resting places in premises in outdoor and indoor.

### **f) Avoid using plastic in premise**

There are provisions for ban on the use of plastic bags or products in the Premise.

### **g) No vehicle days practiced**

The College practices no vehicle day in the premise on a periodical basis.

### **h) Ample greenery**

There are provisions for herbal garden, plenty of lawns with traditional trees and greenhouse in the premises.

## 5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

### Site beautification

#### a) Low VOC Paints and Adhesives

Whenever the College undergoes repairs or renovations there should be use of materials with low emissions so as to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

#### b) Additional facilities for birds

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

#### c) Nutrition pits

Certain pits can be demarcated as 'Nutrition pits' where the organic food from kitchen and Canteen fruit peels and fruits or vegetables can be degraded for making nutrition rich soil

### Universal Campus

#### a) User friendly movability in premises

There should be provision of Kerb Ramp near the main entrance of the Building premises, also low height hand rail for ease of access.

### 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 space along with battery charge points, this would inspire students to change mode of transportation and adopt sustainable practices.

#### b) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

## Smart and responsible environment systems

### a) Smart Gardening System

The College can undertake 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 ramps, parking, greenhouse and botanical gardens.



## 6. Towards a Healthy & Sustainable Institution

### 6.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

- a) Kitchen garden** - There can be provision of kitchen garden practices in a designated area of the open space this would enhance the biodiversity and be useful in training students and staff about the healthy practices and vegetables grown which would be used in Canteen. It helps in capacity building. The smaller steps taken have huge impacts when each student would adopt these practices in their homes or societies and grow kitchen garden, terrace garden there will be a long term benefit for the environment as a whole.
- b) Cutlery in the Canteen** – The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.
- c) Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the specially abled students.
- d) Waste vio** – Stepping up a little further an initiative can be undertaken wherein College can tie up with an organisation and students can be encouraged to collect dry waste and electronic waste such as newspapers, old computers and others and hand over to organisation on a weekly or monthly basis thereby making a waste reduction approach in the community. This has benefits such as awareness, eco-friendly habits in becoming a responsible citizen.



## 6.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premise and activity, some of the key responses are listed below. Whereas many responses **stated there were no changes requires because the present practices are excellent.**

- College is present very beautiful
- No changes, it was going wonderfully

**Some of the suggestions by the Students and staff are listed below:**

- The College should sweep every day....or at least one time per two days
- More dustbins and also cleaning the corridors along with classes
- They should have to promote frequently about green awareness programs

**However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the campus so many of these points are not mandatory at the moment.**

## 7. References

1. Uniform Plumbing Code – India, 2008
2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
3. IGBC Green Landscape Rating system, March 2013
4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST - Canada
5. Climate data <https://en.climate-data.org/asia/india/andhra-pradesh/guntur-4945/>
6. 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.

