(TWO YEARS) 2022-2023 AND 2023-2024

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Sustainability study AUDIT REPORT

Studied for Maris Stella College (Autonomous)

No.16 N.H.Service Road, Near Benz Circle, Beside Lepl, Vijayawada 520008, India

Studied in the capacity of

Accredited and Certified GBP



Website: https://thegreenviosolutions.co.in/ Email: greenviosolutions@gmail.com

Disclaimer

The Audit Team has prepared this report for the **Maris Stella College (Autonomous)** located at <u>No.16 N.H.Service Road, Near Benz Circle, Beside Lepl, Vijayawada 520008, India</u> based on input data submitted by the Institute analysed by the team to the best of their abilities.

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

These can be implemented phase wise or as a whole depending on the decision taken by the internal team. 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.

Ar. Nahida Abdulla **Greenvio Solutions**

Developing Healthy and Sustainable Environments So We are an Environmental and Architectural Sustainable Academe is our department for Palghar District, Maharashtra- 401208 Sustainableacademe@gmail.com



Acknowledgement

The Audit Assessment Team extends its appreciation to the **Maris Stella College (Autonomous), Andhra Pradesh** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

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

Our heartfelt thanks extended to Chairpersons of entire process **Dr.Sr.Kulrekha Mudartha**, (Principal) and **Dr.Sr.Leena Quadras**, (Correspondent) for the valuable inputs.

We are also thankful to Institute's Task force who have played a major role in data collection.

- Teaching members Dr.G.Little Flower, Professor; Dr.C.Krishnaveni, Professor; Dr.Sr.P.Japamalai, Professor; Dr.Sr.K.Ramana, Asso.Professor; Sr.Sahaya Arokia Mary, Asst.Professor
- Non-teaching staff members Mr.Yunus, Mr.Moses, Electrician and Mrs.Aruna, Sweeper
- Admin staff members *Mrs.K.V.L.Prasuna, Admin*

We appreciate the cooperation of the **entire Teaching**, **Non-teaching**, **and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208



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On-site investigation and physical verification

| 21 February 2024 |
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| Institute: Maus Sirlia Colley (A | ilding up gradation of the premises Freegy audit Defension of the premises Defension of the premis |
|--|---|
| Document objective: Ir | iferences of the Site visit |
| Observations (Positive aspects) | Suggestions (Improvement aspects) |
| Green | Audit |
| - Waste management 2 outreach program thorough compost 2, agriculture department - Water harvesting, bio-remedition | - confinue with current practice Increase documentation 3/ reflectance practice |
| 3 excellent water management | |
| Energy | y Audit |
| - Approx. Rs. 5,0001-awarded energy year (2021) for concurptions - Approx. 75%. Lighting are energy efficient fans | - Continue with the aurent practice z undertate smart z sensor based facilities |
| Environm | nent Audit |
| - Good green coner 24 pocket landscapes all ours camps - Excellent maintanance 24 well managed premises | - Continue the green conce expansion all oner premises |
| Signature & round seal Name: Dr. Kultruktu Designation: Principal For the said Institute | enviosolutions.co.in Email: greenviosolutions@gmail.com |



On-site investigation and physical verification





1. Introduction

1.1 About the statements of the Institute

1.1.1 Vision

The Institute proposes <u>"Empower, Enrich, Excel, Transform: To contribute to a just and</u> <u>equitable society through quality education for leadership and social responsibility in an</u> <u>environment of academic excellence and sound values."</u>

1.1.2 Mission

The Institute adheres and focuses <u>"To empower young women through a transformative</u> <u>education to form intellectually competent, morally upright, socially committed and spiritually</u> <u>inspired women imbued with the values of humanism in the service of society."</u>

1.2 Assessment of the Institute

1.2.1 Affiliations

The Institute is affiliated to **Krishna University**, a state university at Andhra Pradesh, India.

1.2.2 Certification

The College has received the following Certifications

- AISHE The All India Survey of Higher Education code is C-25318
- ISO Received the ISO 9001,14001 and 50001 Certifications

1.2.3 Recognitions

The College has been recognized under section <u>2(f) and 12(B) of the UGC Act, 1956 by</u> University Grants Commission, New Delhi.



2. Overview

2.1 Summarised Populace analysis for 2023-2024

2.1.1 Students data

The data (shared by the Institute) shows there were **1,703 students.**

2.1.2 Staff data

| S. No. | Туре | Male | Female | Total |
|----------|--------------------|------|--------|-------|
| 1 | Admin staff | 05 | 14 | 19 |
| 2 | Teaching staff | 12 | 59 | 71 |
| 3 | Non-Teaching staff | 17 | 18 | 35 |
| Total St | aff Members | 34 | 91 | 125 |

Table 1: Staff data of the Institution for 2023-2024

The staff data shows the Institute premises **125 Staff Members**.

2.2 Summarised Populace analysis for 2022-2023

2.2.1 Students data

The data (shared by the Institute) shows there were **1,857 students**

2.2.2 Staff data

| S. No. | Туре | Male | Female | Total |
|-----------|--------------------|------|--------|-------|
| 1 | Admin staff | 05 | 15 | 20 |
| 2 | Teaching staff | 12 | 58 | 70 |
| 3 | Non-Teaching staff | 13 | 17 | 30 |
| Total Sta | aff Members | 30 | 90 | 120 |

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

The staff data shows the Institute premises had **120 Staff Members.**



2.3 Total site and building spread area

The total site area is 20 and the total Built-up area of the Institute is 3,10,065 sq. ft.

2.4 Establishment

The Institute was established in **1962**.

2.5 **Operation and Maintenance of the premises**

The interview session was held with the staff regarding the operation and working hours. The Institution is open for 290 working days with the timings being 09:00 hours to 17:00 hours.



3. Research

3.1 About the Green Building Study Audit

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

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- Investigation
- Technical discussion with team
- Observations
- Inferences

3.3 Strategy adopted for Green Building Study Audit

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

3.4 Activities undertaken for the Green Building Study Audit

- Discussion with the Institute
- Allotment and Initiation by the Institute
- Site visit at the Institute
- Submission of the files



On-site investigation and physical verification

Evidence of visit on 21 February 2024

| Insti | Evidence docume Audit tean Accredited & Audit objec Audits covered: I Grea tute: MAMS STELLA CE | ents for Si n headed by extent certified Green trive: Green Buik en audit | te visit of external au ernal expert - Ar. Nahida Abdulla Building Professional, ISO IA (IMS) ding up gradation of the premises ローEnergy audit ローEnviro いたいりついり、Date: | dit team onment audit $21 \int 02 \int 2022$ |
|--------|--|---|--|---|
| | Document object | ive: Inductio | on Meeting attendance sh | eet |
| S. No. | Name | Committee | Designation | Signature |
| 1. | Mrs. F. A. Shaikh | External | Project Coordinator | Joh . |
| 2. | Ar. Nahida Abdulla | External | Project Head | (And |
| 2 | Dr. Sr. Leone Indica | | Converspondent. | C. |
| 4 | Dr. Sr. Kerlvelahe Mudarika | | Brincol | 1 1 M |
| S | Dr. C. Cviphnaven | | 20Ar condendor | Cillular |
| 6 | MS. G. Ushe Kemar | | Vice - Principal | liluho |
| 7 | Dr. g. Little flower | | Dean Student- Affeirs | Rus |
| 8 | Dr. J. N. Margadeut | | h u | Vinders |
| 5 | Dr. S-Vanilehe | | Dean, Acedonic Alters | S.W. I.ll |
| 10 | Dr. Sr. p. Japanale | | 4 4 | &.P. Japla |
| 1 | Sr. A. Sahaya Flory | | Superior, they pept of SW | Sahaya |
| 12 | Dr. g. Bennen pr. Sunande | | thead dept of the slow | apriller . |
| 12 | Di the south product | | theed Dept- of Arts) | 1 De Datame |
| 13 | Is but brokine " | | A diverse land a de | I V V CINDAU |
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* MAR Signature & round seal Name: Dr. Kulreth Designation: Pr. hui port For the said Institute



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On-site investigation and physical verification

Evidence of visit on 21 February 2024



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Greenvio



4. Evidence



Plate 1: Discussion with the team



Plate 2: Investigation of the system



Plate 3: Seminar on subject related to Sustainability for the stakeholders

Note: the text mentioned in *maroon colored italics bold font* represents a suggestion.



5. Documentation

5.1 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.

5.1.1 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.

- Plants as a gift As a kind gesture, the guests visiting the premise are asked to plant a small sapling on the premise itself, this is a special feature adopted by the Institute.
- Social awareness The Institute has taken up awareness drives on various social issues for rural upliftment and regeneration in the Institute and surrounding villages.
- Fresh environment The Institute 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 institute is inviting and gives the stakeholders an opportunity to explore indoor and outdoor learning to a great extent.



Plate 4: Well-maintained green cover in the campus



Team work – The best quality of the Institute which sets it apart from other institutes is its coordinating and cooperative staff members, as for a building the foundation plays the most important role for its future similarly for an educational institute its staff members do.



Plate 5: Investigation with the internal team of the campus

Signages on the plants mentioning scientific names - The practice of having the names of each plant and tree is executed by the Institute and is very beneficial.

Plate 6: Team of the campus

Hygiene committee - The Institute has a hygiene committee which undertakes multiple programs and necessary actions towards the maintenance of cleanliness in the premises.

Plate 7: Well-maintained green cover in the campus

Eco club – The Institute has an active Eco Club which is one of its kind program, through this the club undertakes a lot of initiatives.

Plate 8: Seminar organized by the Eco-club of the campus

Garden committee and organic farming practice – The Institute has a distinguished committee responsible for the beautification for the premises. This team undertakes a lot of activities related to the enhancement of the landscape features and organic farming along with the department of the premises.

Plate 9: Organic farm garden in the campus

5.1.2 Community development

The details of *extension initiatives* under various heads in Institute are documented below:

| S. No. | Туре | Coordinator name | | |
|--------|--|--------------------------------------|--|--|
| 1 | National Service Scheme (NSS) | Mrs.LMR Swaroopa Rani, Mrs.Y.Supriya | | |
| 2 | National Cadet Corps (NCC) Capt.N.Sailaja, Sub Lt.V.Swapna | | | |
| 3 | National Green Corps | Dr.Sr.K.Ramana | | |
| 4 | Earn while you learn scheme | Dr.B.Josephine S.Rani | | |
| 5 | Employability Skills centre | Dr.G.Malathi, Mrs.Ch.Madhavilatha | | |
| 6 | Neighborhood development scheme | Sr.A.Sahaya Mary | | |
| | Table 3: Details of the extension | initiatives by the Institute | | |

tails of the extension initiatives

The study suggests to continue the initiatives and its documentation.

The details of the *environmental activities* by the Institute documented below:

| S. No. | Initiative | Particulars | Туре | Date | | | | |
|----------------------------|-------------------------|--|----------|--------------------------------|--|--|--|--|
| | Academic year 1 | | | | | | | |
| 1 | Eco Ambassadors Me | eting | Physical | 10.03.2022 | | | | |
| 2 | Guest Lecture | Ecological Crisis | Physical | 13.04.2022 | | | | |
| | Academic year 2 | | | | | | | |
| 3 | Green Club Activity | Interaction of Eco Ambassador Students with Foreign Eco Enthusiasts | Physical | 02.08.2022 | | | | |
| 4 | Energy Literacy Week | Conducted certificate course in energy literacy | Physical | 20.01.2023 | | | | |
| 5 | Workshop | Sustainable Electronic Waste Management | Virtual | 22.02.2023 | | | | |
| 6 | World Water Day | Awareness Programme and celebrations | Physical | 21.03.2023 | | | | |
| 7 World Environment Day | | conducted quiz competition. 144 students participated from different high schools, colleges across the world | Virtual | 05.06.2023 | | | | |
| 8 | Energy Literacy Week | Conducted certificate course in energy literacy | Physical | 15.01.2024 to 20.01.2024 | | | | |

le 4: Environmental initiatives undertaken by the Institute

The study suggests to increase the initiatives and its documentation.

5.2 Waste Audit

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

5.2.1 Waste produced

| S. No. | Туре | Current disposal | Proposal disposal |
|--------|---|---|---|
| 1 | Solid waste (Toilets) | Solid waste from building toilet waste pipeline led into storm water drains | <i>Biogas plant can be designed</i> |
| 2 | Organic waste (Regular) | Vermicomposting unit is established to produce organic manure of exceptional quality for the organically starved soil by using college campus plant refuse agricultural wastes; garden wastes, office paper waste, hostel kitchen waste and canteen waste and animal farms waste are usually dumped into at places resulting in a foul mess. Preparation of manure for plants and other agricultural plants | Continue with the current practice |
| 3 | Liquid waste (Toilets, wash basins) | Department of Agriculture and Rural development established wastewater treatment by bioremediation process by used lotus plant in waste water collecting pits, Maris Stella College in 2022. There is a lot of wastewaters in the college campus sources from students' hostel, department laboratories, RO drinking water system and others. | Continue with the current practice |
| 4 | Chemical waste from laboratories | ΝΑ | <i>Neutralize well and dig a pit 20 ft. from the main</i> |
| 5 | Toxic waste from laboratories | | <i>building where the waste can be disposed</i> |
| 6 | E-waste | We have an MoU with Green waves and DBA Technologies for selling e-waste | Continue with the current practice |
| 7 | Plastic waste | Non-degradable use of plastic is banned on campus | Tie up with Bisleri company's |

There are 329 dustbins in indoor areas and 14 in outdoor areas (large bins).

| | | | Bottles for change programme |
|----|---|---|------------------------------------|
| 8 | Bio-waste (Sanitary) | | |
| 9 | Medical waste (Pharmacy etc.) | NA | |
| 10 | Construction waste and reuse (Only if applicable) | Transforming Construction Debris into Sustainable Poultry Shed: Using recycled construction waste for building poultry sheds at Maris Stella College is a great idea. It promotes sustainability by reducing waste and lowering construction costs. | Continue with the current practice |

Table 5: Details of the waste management practices

Plate 10: Vermin compost unit in the campus

Plate 11: Dustbins in the campus

5.3 Water Audit

Water is one of the basic needs. Pure drinking water is a resource that needs to be preserved efficiently. A water audit helps to identify the sources of water consumption, and the water requirement by the premises is met by these sources. The effective usage of water without any wastage should be a mandatory practice. Understanding the techniques as per site context to increase water conservation in terms of awareness and practice can be identified and executed as part of this exercise.

5.3.1 Water availability and consumption

5.3.1.1 Source of Primary water supply

The Institute requires water from the Local Municipality for drinking water purposes. <u>The</u> available facilities documented below:

| S. No. | Туре | Size | Capacity (litres) | Nos. |
|--------|-------------|-------------|-------------------|------|
| 1 | Underground | 6x14, 10x10 | 20,000 and 15,000 | 2 |
| 2 | Overhead | NA | 52,000 | 23 |
| 3 | Fire tank | 10x15 | 40,000 | 1 |
| 4 | RO plant | - | 12,000 | 3 |

Table 6: Details of the water facilities in the premises

Plate 12: RO plant and water cooler facility in the premises

The study suggests that the space requires of tanks can be documented with mention of size, capacity usage, Institute name, colour coding and last maintenance date mentioned on each facility.

5.3.1.2 Source of Secondary water supply

The Institute uses the following sources of water supply for secondary usages such as watering plants, kitchen, toilets, and wash basins and other spaces. <u>There are six bore</u> wells and six tube wells available in the premises.

Plate 13: Bore wells in the premises

5.3.1.3 Source of Tertiary water supply

The tertiary source of water is source of water harvesting. However, it is under process and requires a lot of up gradation.

Plate 14: Water harvesting pits in the premises

The study suggests the current practice are good, however painting, notifying pipes and pits with nos. etc. will be beneficial for sensitization with manual display

5.3.1.4 Source of Reusing waste water

This initiative is practiced through wastewater treatment by bioremediation process by used lotus plant in waste water collecting pits since 2022 by Department of Agriculture and Rural development. The study suggests to continue the initiatives and its documentation.

5.4 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.

5.4.1 Facilities available

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

5.4.2 Hygiene aspects

The campus is clean, pollution and garbage problems free.

6. Suggestion

6.1 Section-wise suggestions

The following suggestions are to be considered as a *first priority* for implementation. These **should be executed within the next 2.5 years from the date of Report submission.**

Water tanks in all areas

- o Include the information about size, capacity and usage
- Paint the tank in light blue colour
- Add <u>signboards</u> about the usage such as 'Drinking' or 'Secondary'
- Add *signboard and map* about the process/ system in practice

Carpets

- Green carpets could be placed outside drinking water and toilet blocks.
- This will add to hygiene areas and keep the water spillage under control.

Awareness displays

- E-waste management chart can be displayed in spaces that have computers such as offices and laboratories.
- Going paperless, Print less etc. awareness boards could be displayed.

6.2 General suggestions

The following are consolidated study related to 'entire Institute' should be considered as <u>second priority</u> once section wise recommendations are implemented.

6.2.1 Green practices audit

Environmental awareness - There can be various slogans in local and national language 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.

6.2.2 Waste Audit

Multi-colored waste management 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. Whereas a single type of dry waste dustbin should be available inside the teaching areas.

Reference suggestions 1: Twin litter dustbins in the premises

- Tie up with Bisleri International regarding their 'Bottles for change program' also with 'Thereco' for their waste management.
- Invite companies such as 'Thaely' and 'Recharkha' to undertake skill development workshops.

6.2.3 Water Audit

Manual about the functioning of the system – There should be manual such as follows to increase sensitization about the facility and its operations.

| | Roof R | ain wa For irrigati | ter Har | vesting | ; Syst | em | |
|--|---|--|---|---|--|---|--|
| Rainwater harve The rainwater i We have much p | sting is a technique us s collected from vario potential of roof rain w | sed for collectir us hard surface ater harvesting | ng, storing, and is such as rooft from which we | using rainwat ops and/or oth can collect this | er for lands er manmad s water and | scape irrigation le aboveground store it for diff | and other uses. hard surfaces. erent purposes. |
| In first phase w On that basis w water collectio | ve have collected the ve can estimate the a n which as follows | roof water 300 nnual | 00 sqft. | | | hin | |
| Roof Type | Co-efficient | | | | 1 | | |
| Slab | 0.8 to 0.9 | | | | 1 | | |
| Satara City annual i Rainwater Harvestin Rainwater Harvestin | rainfall in mm = 1200-150 g Potential (In Cum) = Area g $(3000 \text{ Sq.ft}) = \text{Area in Met}$ 278.7091 | D, Consider rainfal (in Sq,Meter) X Ann er X Annual Rainfal 1.3 | I -1300 mm. Kain ual Rainfall (m)X Co II (m) X Co-efficient 0.8 | o-efficient X Consta X Constant Co.eff 0.80 | ant Co.eff (0.8 | (0) | |
| Rainwater Harvestin | g (3000 Sq.ft) = 278.7091X = 231.885971 = 231885.971 ter for irrigation plantations | 1.3 X 0.8 X 0.80 2 Cum 2 in campus by using | g drip irrigation sys | tem | | | |
| We are using this wa | Reference of | suggestions | . Roof rain 1 | water harve | sting syst | om | |

6.2.4 Health and Hygiene Audit

- Avoid burning waste The waste produced on the premises should not be burned as it is dangerous to the health of students and staff
- Signboards The Institute should have multiple signboards about 'No smoking' and 'Healthy premises' at every nook and corner of the Institute.
- Compound wall The compound wall should have awareness messages about 'No Smoking' and 'No Tobacco'

7. Compilation

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

- Uniform Plumbing Code India, 2008
- IGBC Green Existing Buildings Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013
- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST Canada
- Used only for understanding Universal design Universal accessibility Guidelines for Pedestrian, Non-motorizes vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.

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