IGNITE ENGINEERING

COMPLIANCE VERIFICATION

This is to certify that

Ambiga College of Arts and Science

Annanagar, Madurai - 625020, Tamilnadu, India

Has been assessed and found to be in accordance with the requirements of detailed below

Green Audit

Certificate Number: IE/GA/10172/21

Latest Issue: 07.01.2021 Valid Until: 06.01.2024

Validity of this certificate is subject to annual surveillance audit to be done successfully on or before 06/01/2022 and 06/01/2023 respectively. In case if surveillance audit is not allowed to be conducted; this certificate shall be suspended/withdrawn.

IGNITE Engineering
THE SPARK OF SOLUTIONS

AIAO-BAR ★★★★★ ACCREDITED

CERTIFIED ISO14001

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

HEAD – QHSE

FOR IGNITE ENGINEERING

IGNITE ENGINEERING
No. 28, Kuttiappa Nagar, S.Kodikulam, K.Pudur, Madurai – 625 007, Tamilnadu, India

GREEN AUDIT REPORT

Ambiga College of Arts and Science

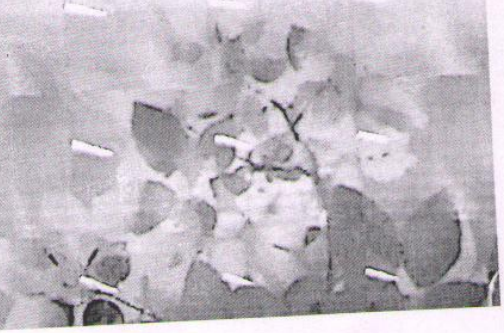
Anna Nagar,Madurai-625020

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

05 JAN - 06 JAN 2021

IGNITE ENGINEERING

Madurai



GREEN AUDIT REPORT

Ambiga College of Arts and Science

Anna Nagar,Madurai-625020

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

05 JAN – 06 JAN 2021

IGNITE ENGINEERING

Madurai

TABLE OF CONTENTS

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Executive Summary

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will pave way for sustainable development.

Ambiga college of arts and science believes that there is an urgent need to address these fundamental environmental problems and reverse the trends. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution.

It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, and Alternative Energy. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student health and learning college operational costs and the environment. The criteria, methods and recommendations used in the audit were based on the identified risks.

Introduction

Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It is known as the systematic identification, quantification, recording, reporting and analysis of components of environmental diversity.

It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation. The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

About the College

Ambiga college of Arts and Science is an a self financing science college affiliated to Madurai Kamaraj University It has been recognized as a premier institution of higher learning for job-oriented courses.

The campus is spread over an area of 4 acres of land with in the hot of city in madurai The college offers 13 Under Graduate Courses and 4 Post Graduate courses. There are 1586 students and 66 teaching faculty in the college which is promising to grow rapidly.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

The College offers job-oriented courses, extra-curricular activities and technologically advanced facilities accessible to the faculty, the students and the support staff. Here, each individual is encouraged to step beyond the confines of academic and administrative disciplines to explore and intervene in the larger interests of the community that thrives on participation and the desire to venture into newer vistas.

Objectives of the Study

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To introduce and aware students to real concerns of environment and its
- Sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use of the campus.
- To establish a baseline data to assess future sustainability by avoiding the
- Interruptions in environment that are more difficult to handle and their corrections requiring high cost.
- To bring out a status report on environmental compliance.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Benefits of green audit

- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college.
- Impart environmental education through systematic environmental Management approach and Improving environmental standards
- To create a green campus.
- To enable waste management through reduction of waste generation, solid- waste and water recycling.

Methodology

In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

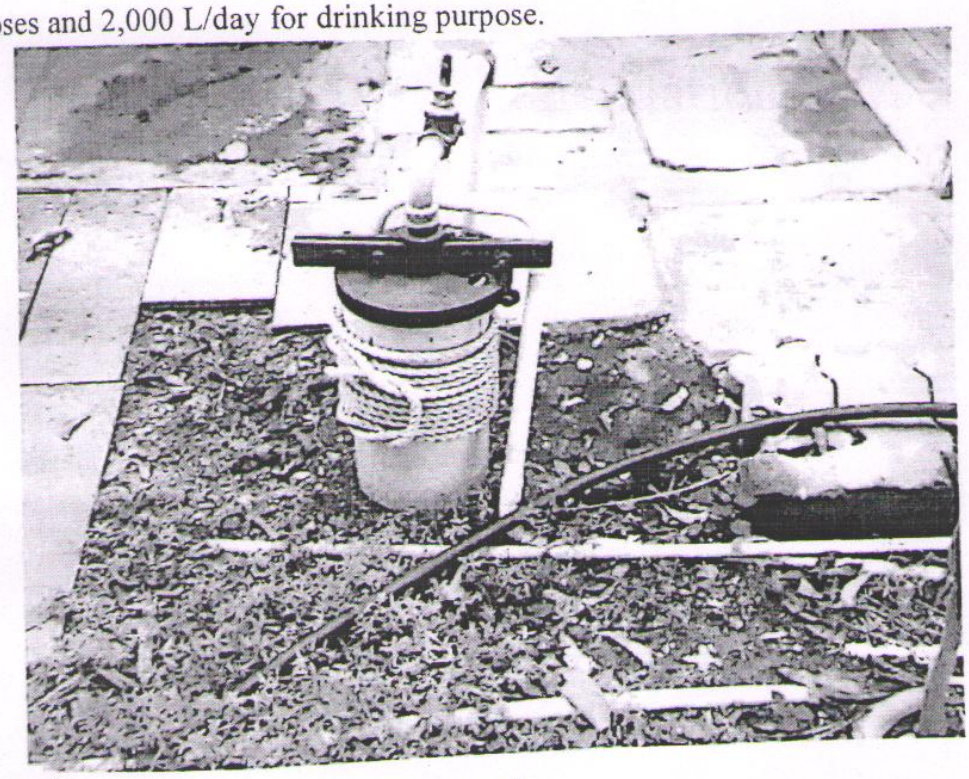
- Water management
- Energy Conservation
- Waste management
- E-waste management
- Green area management
- Environment Monitoring

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Observations and Recommendations

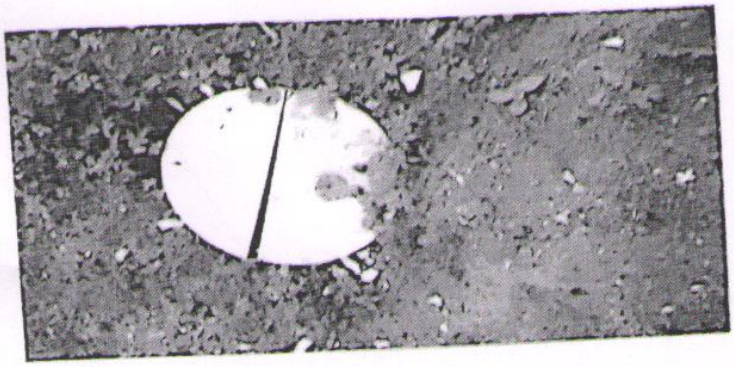
Water Use

The study observed that the main source of water for the institute is received from two bore wells. Water is used for drinking purpose, toilets and gardening. The waste water from the RO water purifier is used for gardening purpose. During the survey, no loss of water is observed, neither by any leakages, or by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 12000L/day, which include 10,000 L/day for domestic, 2,000 L/day for gardening purposes and 2,000 L/day for drinking purpose.



Bore well

Rain water harvesting units are also functional for recharging ground water level. There are soaking pits available widespread all over the campus.



Soak pit

Recommendations

- There is a need for monitoring and controlling overflow and periodically supervision drills should be arranged.
- Minimize wastage of water and use of electricity during the reverse osmosis process and ensure that the equipment used are regularly serviced and in good condition.
- The cleaning products used by staff should have a minimal detrimental impact on the environment. They should be biodegradable and non-toxic.
- Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. they are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations.
- Gardens should be watered by using drip/sprinkler irrigation system to minimize water use.

Energy Management

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. The study carried out also analyzed the use of alternate energy resources that are eco-friendly.

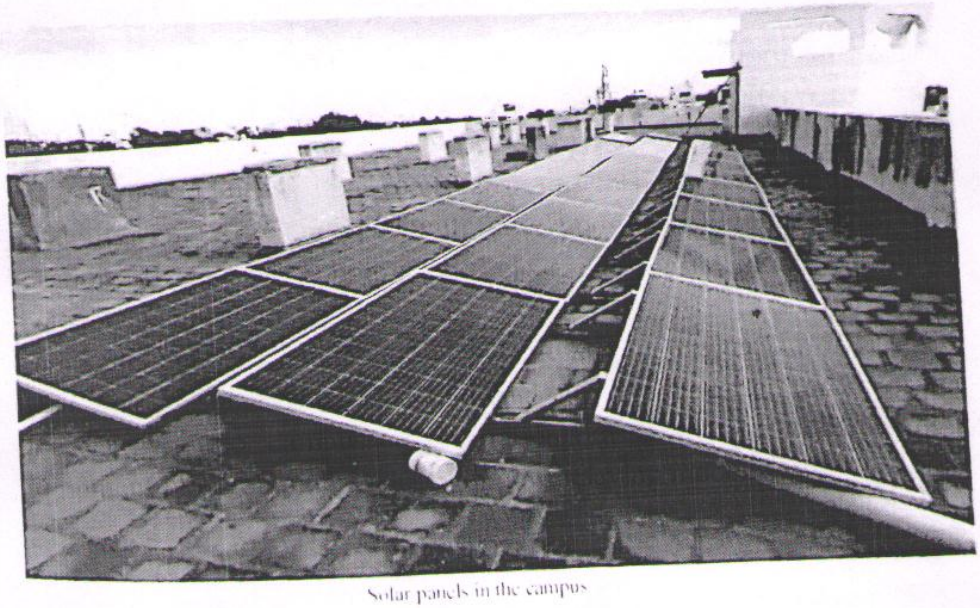
Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Observations

The source of energy for all the buildings within the campus is through electricity only. The institution consumes about **2410kW/day**. However **9.76kW** of the daily electricity requirement is supplied from **solar energy**.

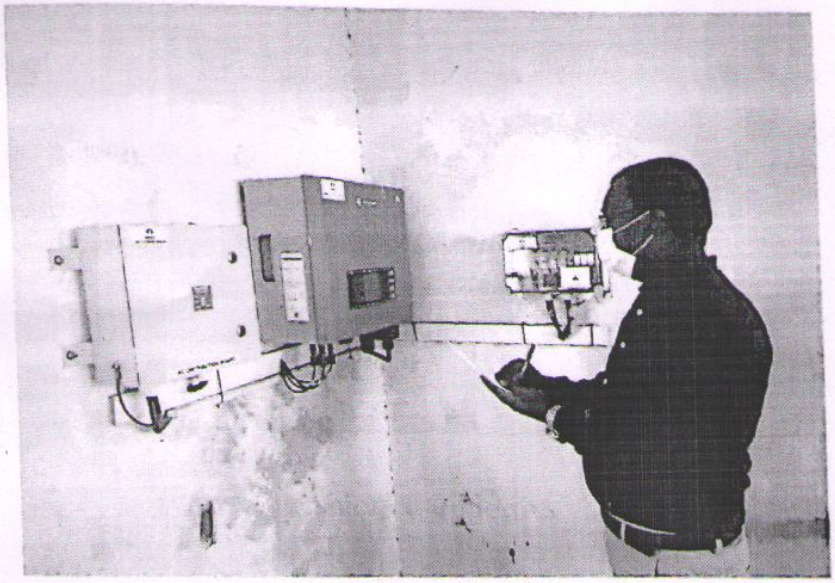
The campus contains Lights and fans in use. The entire campus including common facility centers are equipped with LED lamps and LED tube lights, except at few locations. Besides this, photovoltaic cells are also installed in the campus as an alternate renewable source of energy.

Computers are set to automatic power saving mode when not in use. Solar water heaters are installed in hostel buildings and staff quarters as to promote renewable energy. Also, campus administration runs switch–off drill on regular basis. Equipment like Computers is used in power saving mode.



Solar panels in the campus

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020



Photovoltaic cells control unit

Recommendations

- The management should support more of renewable and carbon-neutral electricity options on any energy- purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- More LED lights should be installed to reduce power consumed for lighting.
- The campus administration should run switch–off drill on regular basis.
- In campus premises electricity should be shut down from main building supply after occupancy time, to prevent power loss due to eddy current.
- 5–star rated Air Conditioners, Fans and CFLs should be used.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Waste Management

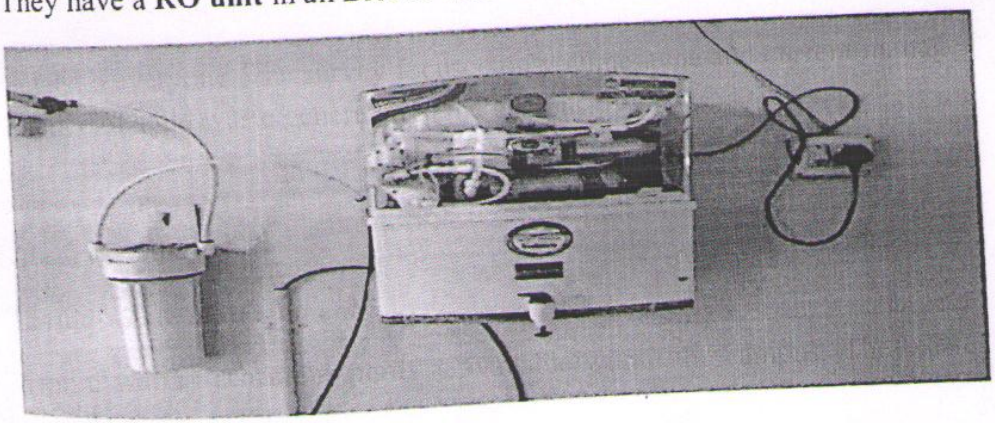
This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.

Observations

Liquid waste management

A mini **water treatment plant** is available within the campus. The waste water from domestic usage (grey water) is recycled and used for gardening. This is one of the greening initiatives taken by the management.

They have a **RO unit** in all Blocks which easily accessible to students.



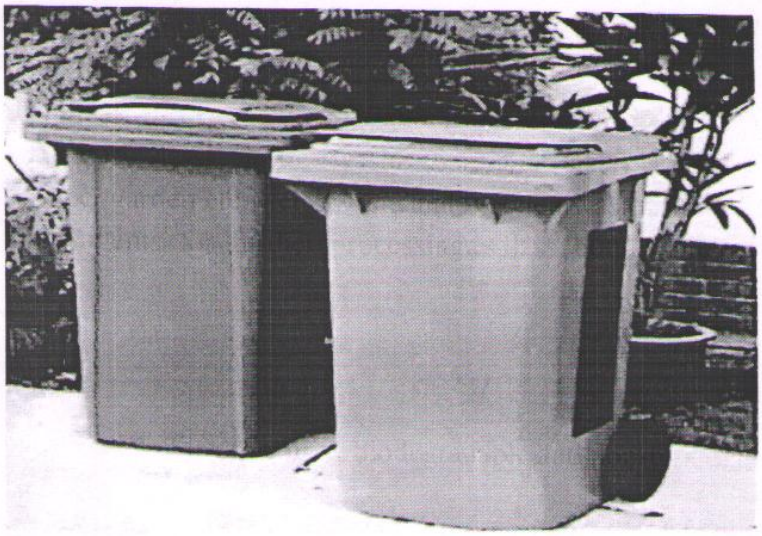
Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Solid waste management

Waste generated from tree droppings and lawn management is major solid waste generated in the campus. Separate dustbins are provided for Bio-degradable and Plastic waste in order to segregate them at the source itself. Single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Important and confidential reports/ papers are sent for pulping and recycling after completion of their preservation period.

Chemical waste generated in laboratories that are potentially hazardous are segregated. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc Metal waste and wooden waste is stored and sent to authorized scrap agents for further processing. Glass bottles are reused in the laboratories.

The college has separate bins to collect biodegradable and non-biodegradable waste generated in the campus.



Separate bins Degradable &Bio Degradable Waste

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Recommendations

- The amount of waste generated from classrooms and staff rooms can be minimized.
- Full use of all recycling facilities provided by City Municipality and private suppliers can be utilized for waste disposal.
- Sufficient, accessible and well-publicized collection points can be made available for recyclable waste, with responsibility for recycling clearly allocated.

E-waste Management

E-waste is a consumer and business electronic equipment that is near or at the end of its useful life. This waste makes up about 5% of all municipal solid waste worldwide. It is hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

Observations

E-waste generated in the campus is of minimal quantity. It is being effectively managed, keeping in mind the environmental hazards that may arise if not disposed properly.

The cartridges of laser printers are refilled outside the college campus. Administration Awareness programmes are being conducted regarding E-waste Management in various departments. The E- wastes and defective items from computer laboratories are being stored properly.

The dismantled hardware of personal computers are used in PC trouble shooting lab. This is put to use to conduct practical courses for B.Sc (Computer Science). The dismantled electronic spare parts are immediately sold for reuse. The minimal amount of e-waste that is generated taken by external vendor with Proper MOU.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Recommendations

- Use reusable resources and containers and avoid unnecessary packaging wherever possible.
- The management should take an initiative to purchase recycled resources when they are available.
- Recycle or safely dispose of white goods, computers and electrical appliances.

Green Area Management

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy enacted, enforced and reviewed using various environmental awareness programmes.

Observations

Campus is located in the vicinity of many trees (species) to maintain the bio-diversity. Various tree plantation programs are being organized at college campus and surrounding villages through NSS (National Service Scheme) unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various type of indigenous species of ornamental and medicinal wild plant species.

The college cultivates vegetables for its own use through organic farming initiatives.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

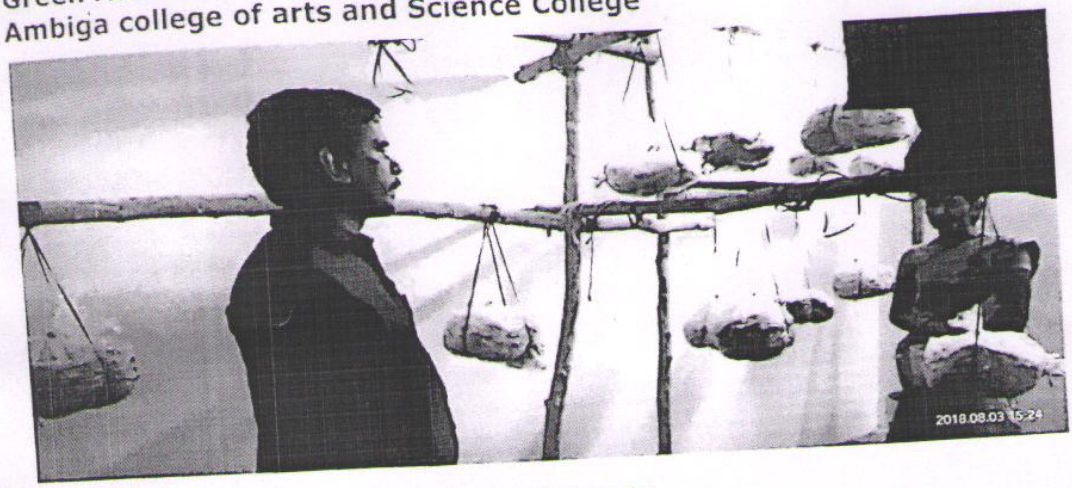
Organic farming

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Organic cultivation

gooseberry by organic farming

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020



Mushroom Cultivation in campus

List of Audited Plants

S.no	Plant name	Botanical name
1	Neem tree	*Azadirachta Indica*
2	Pure Jasmine	*Jasminum*
3	Night Jasmine	*Nyctanthes arbor tristis*
4	Mantharai	*Bauhina variegate*
5	Keezhaelli	*Phyllanthus niruri*
6	Hibiscus	*Hibiscus Rosa-Sinensis*
7	Oleander	*Nerium Oleander*
8	Aloe-vera	*Aloe barbadensis miller*
9	Jand tree	*Prosopis Cineraria*
10	Mullumuruku	*Erythrina Indica*
11	Paneer flower	*Withania Coagulans*
12	Guava	*Psidium Guajava*
13	Indian fig tree	*Ficus Carica*
14	Vagai tree	*Albizia Lebbeck*
15	Jamun fruit	*Syzygium Cumini*
16	Coconut tree	*Cocos Nucifera*
17	Arjun tree	*Terminalia Arjuna*
18	Golden shower	*Cassia fistula*
19	Banana tree	*Musa acuminate*
20	Auricula tree	*Calotropis procra*
21	White karisilankanni	*Eclipta alba*
22	Thuthuvalai	*Solanum trilobatum*
23	Indian copper leaf	*Acalypha Indica*
24	Curry tree	*Murraya Koenigii*
25	Mango tree	*Mangifera Indica*

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Organic Fruit Cultivation inside the campus

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Student involvement in green area management

Ornamental plants

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Use of Bicycles:

The Non teaching staff residing in and around the campus commutes to college by bicycles. The college has constructed one cycle shed for such employees to safeguard their vehicles. This also motivates the staff to come to the college by bicycle.

Public transport:

All the students make use of the college bus facility provide by the college. Approximately 90% students and 80% of staff use the college bus. The students do not use personal transport to attend the college. This transport pooling is a greening initiative by college to avoid environmental pollution.

Mud Roads:

All the roads in college are natural mud road allowing rainwater to seep through easily. This enables the easy recharge of ground water.

Plastic free campus

The usage of plastics in college is minimal. The staff and the students are not encouraged to use impermissible size plastic bags throughout the campus.

Paperless office

The college administration follows paperless office system. The President office, the principal office, all the Departments of the college, controller of examination office, and laboratories are very well connected with a good and efficient LAN network. Hence all the inter office correspondence is done through email. This reduces the use of papers.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Recommendations

- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Assign scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and take actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The
- Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- Indoor plantation to inculcate interest in students, Bonsai can planted in corridor to bond a relation with nature.
- Green library should be established.
- Establish Herbal Garden inside the college campus.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Environmental Monitoring

As part of green audit of campus, the Green Audit Assessment Team has carried out the environmental monitoring of campus. This includes Illumination, Noise level, ventilation and indoor Air quality of the class rooms. It was observed that Illumination and Ventilation is adequate considering natural light and air velocity present. Noise level in the campus is well below the limit.

The following surveys were conducted:

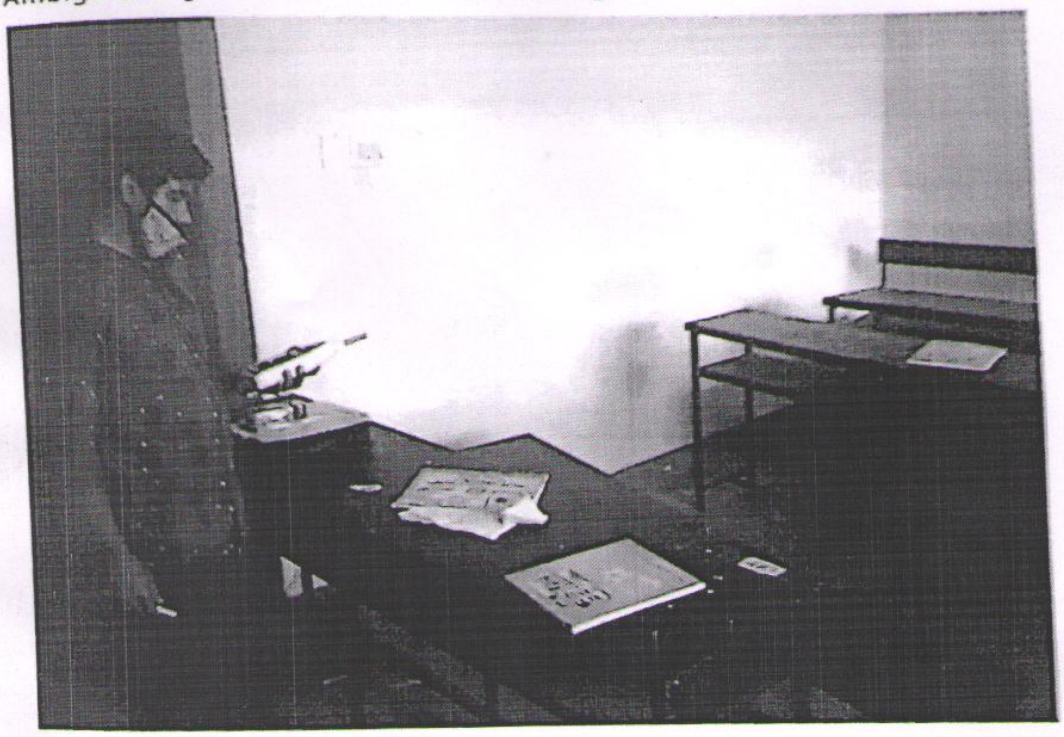
1. Lux monitoring – Annexure 1

2. Noise monitoring – Annexure 2

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Lux monitoring at Campus

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020



Noise monitoring at Campus

Conclusion

Though the institution is predominantly an undergraduate college, there is significant environmental research both by faculty and students. The environmental awareness initiatives taken by the management are substantial. The installation of solar system, paperless work system and organic farming pratices practices are remarkable. Besides, environmental awareness programmes initiated by the administration prove the campus is going green. Few recommendations are added for waste management and waste reduction using alternate eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus and thus aid in a sustainable environment and community development.

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Acknowledgement

We are grateful to the management and committee members Ambiga college of Arts and Science to award this prestigious project on green auditing. Further we sincerely thank the college staff for providing us the necessary facilities and co-operation during the audit. This ample co-operation helped us a lot in making this audit possible and successful.

FOR IGNITE ENGINEERING

ER.P.VIVEK M.E
LEED GREEN ASSOCIATE
CHARTERED ENGINEER

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Annexure - 1

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

EXCELLENCE LABORATORY™
KNOW THE UNKNOWN

ISO 9001:2015 & ISO 14001:2015 QMS
Implemented & Accredited Laboratory for Food & Environmental (Chemical & Biological) Testing Services

info@excellencelaboratory.com
www.excellencelaboratory.com 0452-4506252

TEST REPORT

ILLUMINATION MONITORING

Report No :	EL-NO-IN-4-01-2021	Report Date :	07.01.2021
Customer Name & Address M/s. Ambika College Of Arts And Science 4C, Anna Nagar Main Road, Anna Nagar, Sathamangalam, Madurai, Tamil Nadu – 625020.		Sample Reference No :	EL-NO-IN-4-01-2021
		Sample Description :	Light
		Monitoring By :	Laboratory
		Monitoring Date :	06.01.2021
		Data Received On :	06.01.2021
		Sampling Method :	IS 3646 (Part 1):1992 (Reaffirmed 2003)
		Monitoring Unit :	Lux

S.No.	Name of the Location	Monitoring Distance in m	Monitoring Time	Day Time (6.00 a.m - 10.00 p.m)		
				Minimum	Maximum	Average
1.	Class Room – I BSc	0.9	3.00PM-04.00PM	510	4250	2380
2.	Computer Lab	0.9	3.00PM-04.00PM	110	340	225
3.	Microbiology Lab	0.9	3.00PM-04.00PM	70	91	81
4.	Principal Room	0.9	3.00PM-04.00PM	139	865	502
5.	Seminar Hall	0.9	3.00PM-04.00PM	172	994	583
Permissible Limit for Light as per the Factories Rules, 1950.				Minimum 65		

<--- End of Report --->

Notes :
The above locations light levels are fulfill the necessities of Factories Rules 1950 standard.

Report Confirmed By :

R.REVATHI
Technical Manager

For EXCELLENCE LABORATORY

Authorized Signatory
R.S.DINAKARAN
Quality Manager

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Excellence Laboratory Madurai-625 010

Ram Nagar, S.S. Colony, Madurai - 625 010
Second Street, Ram Nagar, Tiruppur - 641 602

Annexure – 2

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

EXCELLENCE LABORATORY™
KNOW THE UNKNOWN

ISO 9001:2015 & ISO 14001:2015 QMS
Implemented & Accredited Laboratory for Food & Environmental (Chemical & Biological) Testing Services

ISO

✉ Info@excellencelaboratory.com
● www.excellencelaboratory.com ☎ 0452-4506252

TEST REPORT

NOISE MONITORING

Report No :	EL-NO-NE-8-01-2021	**Report Date :**	07.01.2021
Customer Name & Address		**Sample Reference No :**	EL-NO-NE-8-01-2021
		Sample Description :	Sound
M/s. Ambika College Of Arts And Science 4C, Anna Nagar Main Road, Anna Nagar, Sathamangalam, Madurai, Tamil Nadu – 625020.		**Monitoring By :**	Laboratory
		Monitoring Date :	06.01.2021
		Data Received On :	06.01.2021
		Sampling Method :	IS:9989-1981(Reaffirmed 2001)
		Monitoring Unit :	dB (A)

S.No.	Name of the Location	Monitoring Distance in m	Monitoring Time	Day Time (6.00 a.m - 10.00 p.m)		
				Minimum	Maximum	L Equivalent
1.	Class Room – I BSc	Site	3.00PM-04.00PM	64.6	67.7	64.7
2.	Computer Lab	Site	3.00PM-04.00PM	67.6	71.9	68.9
3.	Microbiology Lab	Site	3.00PM-04.00PM	63.9	68.5	65.5
4.	Principal Room	Site	3.00PM-04.00PM	63.0	69.8	66.8
5.	Seminar Hall	Site	3.00PM-04.00PM	66.2	74.0	71.0
Permissible Limit for Noise as per the TNPCB Norms, 2020.				Maximum 75.0		

<--- End of Report --->

Notes :
The sound levels tested in the above locations are within the prescribed limits of **TNPCB standard limits, 2020.**

Report Confirmed By :

R.REVATHI
Technical Manager

For EXCELLENCE LABORATORY

Authorized Signatory

R.S.DINAKARAN
Quality Manager

Principal
Ambiga College of Arts and Science For Women
Anna Nagar, Madurai-625 020

Excellence Laboratory Madurai-625016