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PAHALWAN GURUDEEN MAHILA MAHAVIDYALAYA

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GREEN AUDIT REPORT

PREPARED BY

2023-2024

B.S.ENVITECH PVT LTD

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B.S. ENVI – TECH PVT. LTD.
CONSULTANTS – ENVIRONMENT & ENERGY

AUDIT CERTIFICATE

This to Certify that B.S.ENVITECH PVT LTD (BSET), has conducted the **GREEN AUDIT, ENVIRONMENT AUDIT AND ENERGY AUDIT OF PAHALWAN GURUDEEN MAHILA MAHAVIDYALAYA, PANARI , LALITPUR** during June 2023.

The Audit of the premises, review of data and implementation of measures by the management was done by BSET.

The implementation of **GREEN MEASURES** by the Management, Faculty and Student towards Environment Sustainability is commendable and Satisfactory.

Date : 25 June 2023

Place : Lalitpur




Y.B.S. MOORTHY,

**QCI/NABET APPROVED EIA COORDINATOR,
CII CERTIFIED RESOURCE EFFICIENCY AND
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ACKNOWLEDGEMENT

B.S.ENVITECH PVT LTD (BSET) would like to thank the management of Pahalwan Gurudeen Mahila Mahavidyalaya for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

We would also like to thank **Mr. Vishal Kanojia – Coordinator, IQAC**, for her continuous support and guidance, without which the completion of the project will not be possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

Dr. Vandana – Member, IQAC

Ms. Preeti Shukla – Member, IQAC

Mr. Ramesh Chandra Patel – Member, IQAC

Mrs. Sadhna Nagal – Member, IQAC

Dr. Prakash Khare – Member, IQAC

Mrs. Ranjana Shrivastav – Member, Eco-Club

Mr. Satyam Dwivedi – Member, Eco-Club

Mr. Raghvendra Singh – Section Officer, Admin

Mr. Kunjan Raja – Site Engineer

Last but not the least, we would like to thank **Dr. Sufia (Principal)**, Pahalwan Gurudeen Mahila Mahavidyalaya for giving us an opportunity to evaluate the environmental performance of the campus.

DISCLAIMER

B.S.ENVITECH PVT. LTD. (BSET) Energy Audit Team has prepared this Green Audit Report for Pahalwan Gurudeen Mahila Mahavidyalaya based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express 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.

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Y.B.S. MOORTHY,
Lead Auditor



1. INTRODUCTION:

The green audit aims to analyse environmental practices within and outside the college campuses, which will have an impact on the eco-friendly atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of college environment. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the green audit, a direction as how to improve the structure of environment and there are include several factors that have determined the growth of carried out the green audit.

1.1. NEED FOR GREEN AUDITING

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling resources carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

1.2. GOALS OF GREEN AUDIT

College has conducted a green audit with specific goals as:

1. Identification and documentation of green practices followed by College.
2. Identify strength and weakness in green practices.
3. Analyze and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness throughout campus
6. Identify and assess environmental risk.
7. Motivates staff for optimized sustainable use of available resources.
8. The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem



Vision Statement of the College

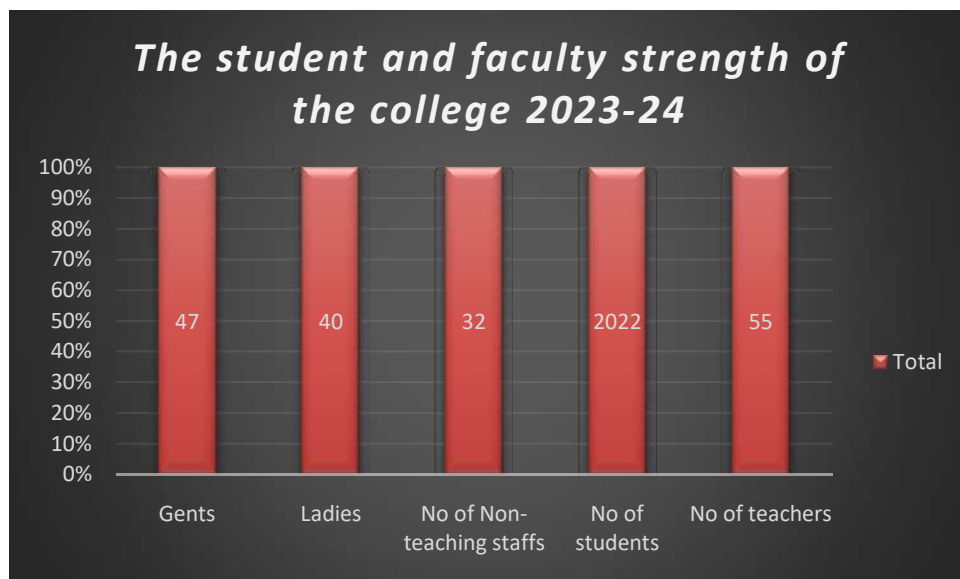
Mission Statement of the College

Courses offered by the College

UG/PG Courses:-		
MA	MASTERS OF ART	SPECIALISATION:- • PSYCHOLOGY • HOMESCIENCE • HINDI • SOCIOLOGY • POLITICALSCIENCE
UG Courses:-		
BA	BACHELOR OF ARTS	SUBJECTS SPECIALISATION:- • HINDI • SOCIOLOGY • POLITICALSCIENCE • MUSICVOCAL • GEOGRAPHY • ENGLISH • HISTORY • HOMESCIENCE • EDUCATION • PSYCHOLOGY • SANSKRIT • ECONOMICS
B.ED	BACHELOR OF EDUCATION	SPECIALISATION:- • COMMERCE • ARTS • SCIENCE
B.COM	BACHELOR OF COMMERCE	• COMMERCE
B.Sc	BACHELOR OF SCIENCE	• MATHS • BIOLOGY

The student and faculty strength of the college is listed below:

No. of students	2022
No. of teachers	55
No. of Non-teaching staffs	32
Gents	47
Ladies	40
Total	2196



Physical Structure

The college is located in about 9.5 acres of land.

LAND USE (BUILT UP AREA) ANALYSIS:

CATEGORIES OF LAND USE (BUILT UP AREA)	AREA IN SQMETRES
PLAY GROUND	8000
MAIN FACULTY BUILDING WITH ADMINISTRATIVE BLOCK	5000
AUDITORIUM	No
N.C.C AND CANTEEN	Yes
INDOORSTADIUM	No

Departments	5
Laboratories	9
Conference halls	1
Libraries	1
Auditorium	0

OBJECTIVES OF GREEN AUDIT

The main aim objectives of this green audit is to assess the environmental quality and themanagement strategies being implemented in the College, Pala. The specific objectives are:

1. To assess the water resources and its quality
2. To understand nature of the soil in the college campus
3. To record the energy sanction and monitor the energy consumption pattern
4. To record the energy policy and its implementation, energy conservation,
5. To quantify the liquid and solid waste generation and management plans in the campus.
6. To assess the carbon foot print of the college
7. To assess whether the measures implemented by College have helped to reduce the Carbon Footprint.
8. To impart environment management plans and initiatives to the college
9. To assess the extracurricular activities, training to the students of the Institution support the collection, recovery, reuse and recycling of solid wastes.
10. To identify the gap areas and suggest recommendations to improve the Green Campus Status of the College.

STEPS FOR GREEN AUDIT

1. Plan the **audit**.
2. Select the **audit** team.
3. Schedule the **audit** facility.
4. Acquire the background information.
5. Visit the site

Audit of water resources

SR. NO	PARAMETERS	Response	NO.
1	What are the Source of drinking water	RO WATER WITH COOLERS	1
2	How safe is the drinking water	HARDNESS 150PPM	2
3	Do you have RO/Water purifiers at each floor	No	3
4	How do you utilize RO waste water	FOR GARDENING	4
5	How many Tube well in the college	1	5
6	No. of Water tanks with capacity	4 1000L EACH	6
7	Is there any water treatment system	SEWAGE TREATMENT SYSTEM	7
8	Water Booster with power	NO	8
9	Quantity of water pumped every day	10,000 L	9
10	Any water wastage/why?	NO SUCH WATER WASTAGE	10

11	Water usage for gardening	5000 L/APPORXDAILY	11
12	Waste water sources	TOILET WATER, LABORATORY, RO WASTE WATER	12
13	Use of waste water	RO WATER DIRECTLY USED FOR GARDENING OTHER WASTE WATER TREATED AND THEN ALLOWED TO PERCOLATE	13
14	Do you have water conservation Club	NO	14
15	Any wastewater treatment for lab water	YES	15
16	Rain water harvesting pits in the college	YES AVAILABLE	16
17	No. of Rain water harvesting pits	10	17
18	No of units and amount of water harvested	DATA NOT AVAILABLE	18
19	Any leaky taps	NO	19
20	Amount of water lost per day	NEGLIGIBLE	20
21	Any water management plan used?	REUSE OF WATER	21
22	Any water saving techniques followed?	DRIP IRRIGATION FOR GARDENING	22
23	Do you aware students about water conservation	YES	23

RAIN WATER HARVESTING



Waste Management

College has Campus Maintenance and Development Committee

Solid waste can be divided into three categories:

Bio-degradable wastes -includes food wastes, canteen waste, wastes from toilets etc. Bio-degradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology.

Non-biodegradable wastes- include what is usually thrown away in homes and schools such as plastic, tins and glass bottles etc. Non-biodegradable waste can be utilized through recycling and reuse.

Technological waste-Solid waste -Thus the minimization of solid waste is essential to a sustainable college. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

Waste management

Approximate quantity of waste generated per day (in kg)

Office				
Approx	Biodegradable	Non-biodegradable	Hazardous	Others
<1Kg			✓	
2-10Kg		✓		
>10Kg	✓			

Laboratories				
Approx	Biodegradable	Non-biodegradable	Hazardous	Others
<1Kg	✓	✓	✓	
2-10Kg				
>10Kg				

Canteen/kitchen				
Approx	Biodegradable	Non-biodegradable	Hazardous	Others
<1Kg			✓	
2-10Kg		✓		
>10Kg	✓			

How the waste generated in the college is managed?

A)Composting/ Vermicom posting	YES	Remark
B)Recycling	YES	
C)Reusing	YES	
D)Other ways	CONVERTING INTOCRAFTS	

Waste generated in the college?

E-waste		
Hazardous waste	✓	Chemicals used in labs
Solid waste	✓	
Dry leaves	✓	
Canteen waste	✓	
Liquid waste	✓	
Glass		
Unused equipment	✓	
Napkins	✓	
Others(specify)		

Do you use recycled paper in college?	yes
Any waste management methods used?	yes



Auditing for Green Campus Management

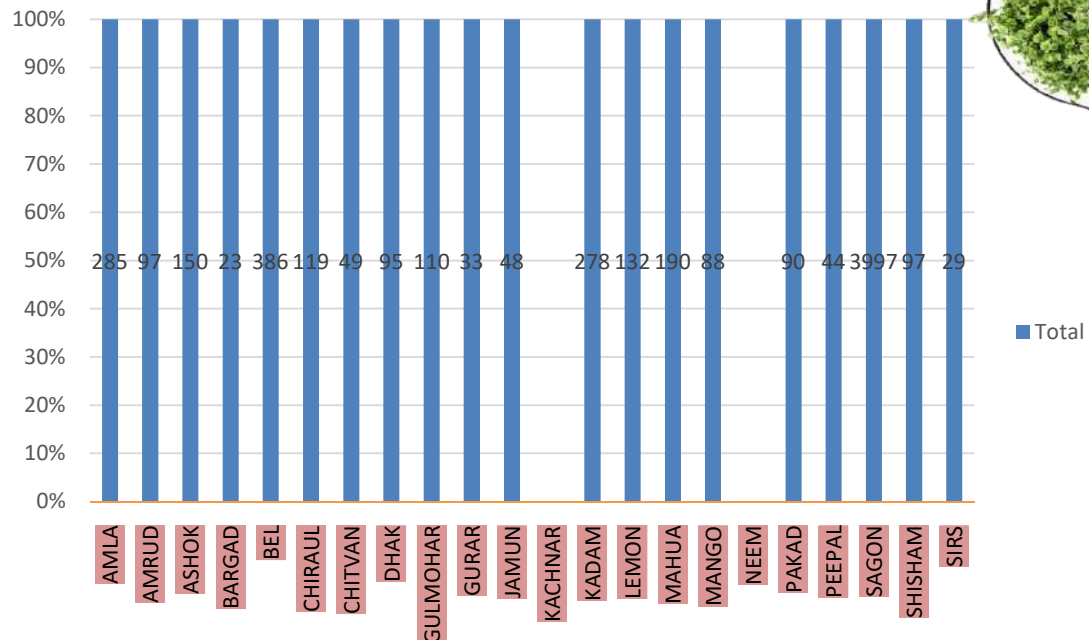
Trees play an important ecological role to support improved public health controls pollution, soil erosion and provide many other aesthetic benefits to urban and rural life and absorb carbon dioxide and release oxygen to keep us healthy . The amount of trees in the campus defines the amount of oxygen released in the campus..

List of plants in the campus

S. No	Common/local name	Scientific Name	No. of trees
1	MANGO	<i>Mangifera Indica</i>	88
2	LEMON	<i>Citrus Lemon</i>	132
3	SAGON	<i>Tectona Grandis</i>	3997
4	NEEM	<i>Azadirachta Indica</i>	190
5	MAHUA	<i>Madhuca Latifolia</i>	29
6	KACHNAR	<i>Bauhinia Variegata</i>	150
7	SIRS	<i>Albizia Lebbeck</i>	33
8	ASHOK	<i>Saraca Asoca</i>	95
9	GURAR	<i>Diptero Carpus Turbinatas</i>	129

10	AMRUD	<i>Pridium Guajava</i>	97
11	AMLA	<i>Emblca Officinalis</i>	285
12	PAKAD	<i>Ficus Virens</i>	97
13	KADAM	<i>Neelamarckia Cadamba</i>	30
14	SHISHAM	<i>Dalbergia Sisso</i>	386
15	JAMUN	<i>Syzygium Cumini</i>	48
16	BEL	<i>Aegle Marmelos</i>	23
17	PEEPAL	<i>Ficus Religiosa</i>	119
18	BARGAD	<i>Phycus Benghalensis</i>	95
19	CHIRAU	<i>Holaptelea Integrifolia</i>	110
20	DHAK	<i>Butea Monosperma</i>	49
21	GULMOHAR	<i>Delanix Regia</i>	107
22	CHITVAN	<i>Alstonia Scholaris</i>	88

PLANTS IN THE CAMPUS 2023-24



GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes, about 10590.78 Sq meters areas are developed as Gardens.

2. Do students spend time in the garden?

Yes, students spend around 2-4 Hours during winters.

3. Is the PGMM campus having any Horticulture Department? (If yes, give details)

Yes, Total 87 staff
deployed in horticulture 1 - Head 1 – Supervisor 1 – gardeners

Auditing for Carbon Footprint

Burning of fossil fuels (such as petrol) , use of generator has an impact on the environment The most common greenhouse gases are carbon dioxide, water vapors, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, Vehicular emission is the main source of carbon emission in the campus, hence to assess the method of transportation that is practiced in the college is important.

1. Carbon foot print analysis

- 1 Total number of vehicles used by the stakeholders of the college.(per day)
- 2 No of cycles used
- 3 No of two wheelers used (average distance travelled and quantity of fuel and amount used per day)
- 4 No of cars used (average distance travelled and quantity of fuel and amount used per day)
- 5 No of persons using public transportation
- 6 No of persons using college conveyance
- 7 No of generators used per day
- 8 Amount of fuel used
- 9 Number of LPG cylinders used in canteen/labs
- 10 Use of any other fossil fuels in the college

METHODOLOGY ADOPTED

The methodology adopted to conduct the Green Audit of the Institution had the following component

Visit to the Sites

Green Audit Team made a visit to the various locations and sites of the college to assess the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc. The sample collection (water, soil) was carried out during the visits. The water samples from two tap water sources and soil samples from three different places of the campus was collected. The sample collection, preservation, and analysis were done in the scientific manner as prescribed by the standard procedures.

Group Discussion/Interaction

The Group discussions with the Members of various committees, club, club, staff members and the management focusing various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local level.

Energy, waste management and Carbon foot print analysis Survey

With the help of teachers and students, the audit team has assessed the energy consumption pattern and waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method.

GREEN AUDIT REPORT

Water Quality assessment

College has municipality supply of tap water which caters to the need of student and is purified through RO system. The other source is the ground water drawn from tube well for meeting the needs of plantation, grounds, trees, and horticulture etc at different locations. Samples were collected and analyzed for its quality parameters. The samples includes two tube well water which are the main water source of the college campus and two tap water samples which is used for canteen and drinking water cum cooler systems. The samples were collected and tested. The major parameters analyzed include dissolved oxygen, acidity, alkalinity, chloride, hardness etc..

Water Management

The sources of water used in the College are two wells present in the campus. These wells are recharging with rainwater from the roof.

A total of water is pumped out from the well every day (Wastage of water from the lab is reduced by adopting micro scale analysis. An average of.....L of water is used by the College per month.

Soil Quality assessment

Soil samples were collected from four locations of the campus and analyzed for the basic parameters. The results are tabulated and presented in the table 3.

Parameter	Location 1(fruit garden)	Location 2(ground)	Location 3(Teak plantation)	Location 4(Butterfly garden)
pH	7.3	7.1	7.5	7.3
Total Kjeldhal Nitrogen (mg/kg)	2.7	2.6	2.3	1.9
Total organic carbon(%)	1.4	1.1	1.2	1.4
Phosphate (mg/kg)	0.2	0.1	0.05	0.6

Energy Audit Report

S. No	Electrical appliances/instruments	Numbar	Pawer (W)/ unit
1	LED BULB	54	10
2	LEDTUBE	110	20
4	PROJECTOR	10	100
5	SPEAKERS	25	20
6	FAN	170	50
7	COMPUTER	57	50
8	LAPTOPS	12	30
9	PRINTERS	11	200
10	PHOTOSTAT MACHINE	1	500
11	SCANNER	3	25
12	UPS	18	50
13	INDUCTION	1	1000
14	A/C	2	2000
15	REFRIGERATOR	1	100
16	MIXERGRINDER	1	50

17	OVEN	1	1500
18	CENTRIFUGE	1	50
19	AUTOCLAVE	2	1.5kw
20	EXHAUST FAN	2	50
21	IRONBOX	1	750
22	COLOURBULB	28	0.5
23	INCUBATOR	1	40

Waste management

Waste management is important for an eco friendly campus. In a college different types of wastes are generated, its collection and management are very challenging. The following data provide the details of the waste generated and the disposal method adopted by the college.

Total number of stakeholders in the college: 2025

Total number of building (Class rooms, canteen, office, auditorium, library etc)36

Table 5. Different types of waste generated in the college and their disposal

Types of waste	Particulars	Disposal method
E-Waste	Computers, electrical and electronic parts	Direct selling
Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc	Direct selling
Solid wastes	Damaged furniture, paper waste, paper plates, food wastes	Reuse after maintenance energy conversion
Chemical wastes	Laboratory waste	Neutralize with water
Waste water	Washing, urinals, bathrooms	Soak pits
Glass waste	Broken glass wares from the labs	Direct selling
Sanitary Napkin	-	Napkin Incinerators

Waste management Practices adopted by the college

For the last few years, college is following zero organic waste protocol throughout the campus. The food waste generated by the students and staffs are taken by them to their own home, so that, minimum waste is generated inside the campus. In addition, the organic waste generated in the canteen is used as feed for biogas plant and the biogas is used as fuel in college canteen. Vegetable waste and other leaf litters were used to feed in the vermin-compost pit and the resulting vermin-cast is used as manure in the garden. The chemicals from the laboratories are disposed in a sealed tank along with water, so that the chemicals undergo neutralization with the water.

Green Campus

- Total number of plant species identified.....
- Total number of plants in the campus.....

Campus farming

Auditing for Green Campus Management

Trees play an important ecological role to support improved public health controls pollution, soil erosion and provide many other aesthetic benefits to urban and rural life and absorb carbon dioxide and release oxygen to keep us healthy. The amount of trees in the campus defines the amount of oxygen released in the campus.

Routine Green Practices

Every year college celebrates World Environment Day, World Water Day and Ozone Day in the campus. The programmes are conducted through seminars, poster presentation; quiz competition debates etc was to provide awareness to the students about the importance of the environment, its conservation and sustainable use of environmental resources.

SUGGESTIONS AND RECOMMENDATIONS

Energy management

The energy audit recommend to avoid the use of more energy consuming electrical appliances and. college has a very large roof area for installing solar panels so that it can be effectively used for generating power. The college has started steps in installing the solar panels for office.

It is recommended to install the following solar powered appliances in the campus;

Solar powered water heater and cooker in the college canteen

Solar powered street lights and LED display board

Green Campus

In order to increase the carbon credit and greenery of the campus, it is recommended to plant more indigenous and evergreen / fruit trees inside the campus.

Waste Management

E-WASTE MANAGEMENT

E-waste generated in the campus is disposed in scientific and eco-friendly manner.

-----THE END-----