

GREEN AUDIT REPORT 2024–2025



VASANT KANYA MAHAVIDYALAYA (Admitted to the Privileges of Banaras Hindu University) KAMACHHA-221010 VARANASI



Prepared by

PROF. KAVITA SHAH

INSTITUTE OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT
BANARAS HINDU UNIVERSITY
VARANASI – 221005

काशी हिन्दू
विश्वविद्यालय



BANARAS HINDU
UNIVERSITY



Dr. Kavita Shah
Professor

Institute of Environment and
Sustainable Development
Banaras Hindu University, Varanasi,
Uttar Pradesh, India, 221005

CERTIFICATE

This is to certify that **"Green Audit"** for **VASANT KANYA MAHAVIDYALAYA (Admitted to the Privileges of Banaras Hindu University) Kamachha-221010, Varanasi, Uttar Pradesh** has been conducted in July 2024-June 2025 to assess the environmental impact and green initiatives, planning and efforts made to implement them in the college campus based on institutional working framework. The Green initiatives carried out by the Institution was found to be satisfactory. The efforts taken by the management and faculty towards sustainable environment on-campus is appreciable.

Prof Kavita Shah

Date: 22.06.2026

Place: Varanasi

Institute of Environment and
Sustainable Development
Banaras Hindu University

Acknowledgement

Green Audit Assessment Team wishes to acknowledge the management of Vasant Kanya Mahavidyalaya for entrusting this important work on us. We appreciate the cooperation of the faculty and staff of the college for their help in data collection and information as and where required. Our special thanks to Prof. Rachna Srivastava, Principal, Vasant Kanya Mahavidyalaya, Prof. Shashikala, Co-ordinator, IQAC, Dr. Nairanjana Srivastava, Co-cordinator, IQAC, Dr. Shashiprabha Kashyap, Member Go-Green Committee, Ms. Bharati Chattopadhyay, Section officer and Mr. H. Ambarish, Technical Assistant, Vasant Kanya Mahavidyalaya for giving us necessary inputs to carry out the vital yet comprehensive exercise of green audit.

Green Audit Team

The external assessment team for Green Audit consisted of

Prof. Kavita Shah	Institute of Environment and Sustainable Development, Banaras Hindu University
Mr. Naveen Kumar	Member, IESD, Banaras Hindu University
Ms. Sudeepa Kumari	Member, IESD, Banaras Hindu University
Ms. Pragati Gupta	Member, IESD, Banaras Hindu University

Disclaimer:

Green Audit Team has prepared this report of 2024-25 for Vasant Kanya Mahavidyalaya, Kamachha, Varanasi based upon the input data collected on site or provided 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 provided and gathered onsite. It is further informed that the calculations arrived at, are based on the best estimates and no representation, warranty or undertaking, expressed or implied are levied on the audit team. The Audit Team has no responsibility towards any direct or consequential loss arising from the use of any information, statements or projections in the report.

Prepared by:
Prof. Kavita Shah
IESD, BHU

Technical Review by:
Prof. Kavita Shah and
Team

Contents

	Page No.
Executive Summary	
1. Introduction	1
2. Need for Green Audit	4
3. Objectives of Green Audit	5
4. Audit Methodology	6
5. Water Audit and its Management	7
6. Energy Audit and its Management	11
7. Carbon Footprint	18
8. Waste Audit and its Management	20
9. Green Campus Management	22
10. Conclusion and Recommendations	37

Executive Summary

Contemporary educational institutions are demonstrating heightened sensitivity toward environmental concerns, with a growing emphasis on integrating sustainable practices into their operational and academic frameworks. As environmental sustainability emerges as a critical national priority, the role of higher education institutions becomes increasingly significant in mitigating ecological impacts. Institutional activities, if unmanaged, can contribute to various adverse environmental effects, thereby necessitating systematic environmental assessments. Such assessments must be designed to establish a precise and reliable baseline to inform and guide future sustainability initiatives.

A green audit is defined as a formal and systematic evaluation of an institution's environmental performance and its compliance with applicable environmental laws, regulations, and standards. It provides a time-bound assessment of the institution's environmental status. However, in the absence of continuous monitoring mechanisms, the relevance of such audits may diminish over time, underscoring the need for sustained evaluation processes.

The implementation of green audits, coupled with appropriate mitigation strategies, offers multifaceted benefits for institutions, stakeholders, and the broader environment. It promotes environmental awareness, fosters ethical values, and enhances health consciousness among students and staff. Furthermore, it enables a comprehensive understanding of the ecological footprint of campus operations. From an economic perspective, green auditing contributes to cost efficiency through optimized resource utilization. It also cultivates a sense of accountability, ownership, and social responsibility among the academic community. Institutional self-assessment, as facilitated through green audits, is an essential attribute of quality assurance and

continuous improvement in higher education.

The audit framework typically encompasses key parameters such as environmental awareness, waste minimization and management, biodiversity conservation, water and energy efficiency, and adherence to environmental legislation. Data collection is generally conducted through structured questionnaires, and the audit report presents detailed observations along with actionable recommendations to enhance environmental performance. The finalized green audit report is submitted to the authorities of Vasant Kanya Mahavidyalaya to support informed decision-making and to strengthen the institution's commitment to sustainable development in the years ahead.

Best Wishes

Prof. Kavita Shah
Institute of Environment and Sustainable Development
Banaras Hindu University – 221005

1. INTRODUCTION

1.1 About the Vasant Kanya Mahavidyalaya

Vasant Kanya Mahavidyalaya is situated within the premises of the Theosophical Society at Kamachha, Varanasi. Established in 1954, it is run by Besant Education Fellowship and is affiliated to Banaras Hindu University (Fig. 1; Table 1,2). The college is situated in heart of Varanasi with a campus area of 10436.83 Sq. mtr. The college at present runs Ph.D., Post-graduate and Undergraduate courses in arts and social sciences as well as Diploma courses sanctioned by UGC. With the motto of 'Education as Service', the institution aims at providing quality education and ensuring an all-inclusive growth. It cherishes the theosophical idea of Universal Brotherhood of Humanity, without distinction of race, creed, sex, caste and colour. The college has been accredited "A" by NAAC in its second cycle of accreditation in 2017.

Table 1 Campus layout and map of Vasant Kanya Mahavidyalaya.

S. No.	Building Name	G.F. Area (Sq.Mtr.)	F.F. Area (Sq.Mtr.)	S.F. Area (Sq.Mtr.)	T.F. Area (Sq.Mtr.)	Roof Area (Sq.Mtr.)
1.	Administrative Wing Block 'A'	325.75	325.75	-	-	325.75
2.	Academic Wing Block 'C'	411.61	411.61	-	-	411.61
3.	Annie Besant Academic Block – 1	354.86	354.86	354.86	-	354.86
4.	Annie Besant Academic Block – 2	192.81	192.81	-	-	192.81
5.	Library	104.12	104.12	-	-	104.12
6.	Leela Sharma Block	635.00	635.00	635.00	635.00	635.00
7.	Canteen	97.85	-	-	-	-
Total area		2122.00	2024.15	989.86	635.00	2024.15
Total area covered		7795.16				

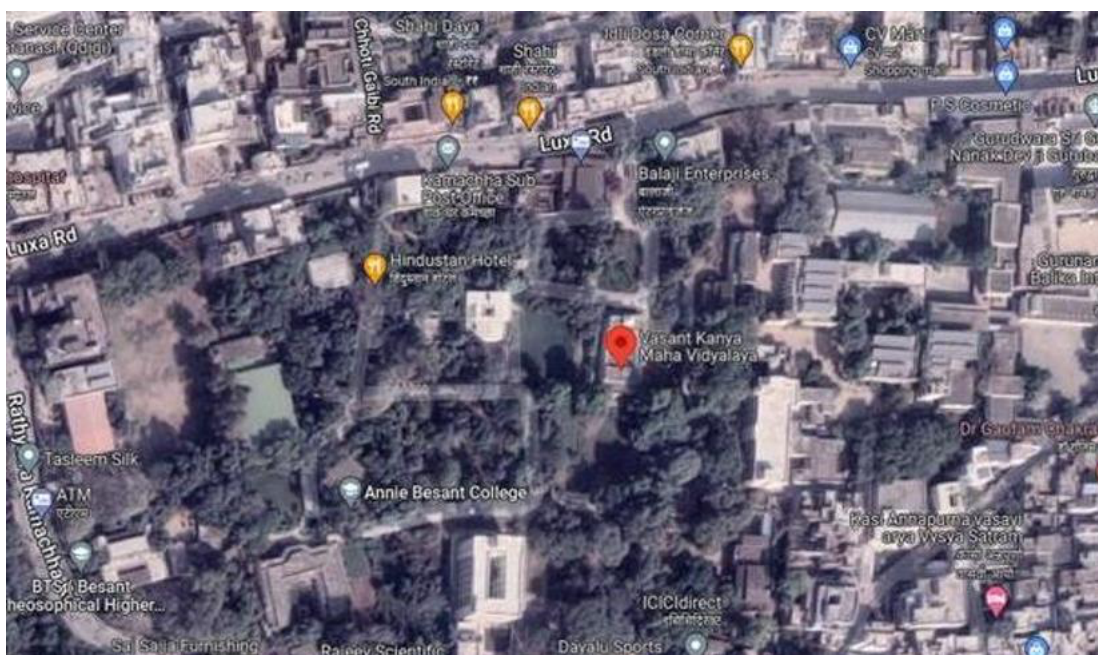


Fig. 1 Satellite map showing location of Vasant Kanya Mahavidyalaya.

Table 2 General Information about the Vasant Kanya Mahavidyalaya.

A. General Information	
Name of the institution	Vasant Kanya Mahavidyalaya
Address	Kamachha, Varanasi
Contact Details	0542-2455382, 09454329315
Website	www.vkm.org.in
Location	Urban
B. Infrastructure	
Built up area (including others)	3968.03 Sq.Mtr.
{2122.00 Sq. Mtr (VKM)}	
Campus area	10436.83 Sq.Mtr.
Roof area	2024.15 Sq.Mtr.
Open space (including greenery area)	6468.83 Sq.Mtr.
Built up area (only VKM)	7795.46 Sq.Mtr.
Greenery area	2087.46 Sq.Mtr.
No. of auditorium - AC/Non-AC	01
Library	01
Laboratories	02
Pharmacy	Facility provided at the level of BHU
Playground	04
Students' hostels	No hostel available under the college, however facility for girls hostel provided by Theosophical Society
Canteen	01
Transport facilities	-

C. Courses and Class duration	
Class duration	UG -3 years PG – 2 years Diploma in Spoken English – 6 months; Certificate in Spoken English – 1 year Certificate in Fashion Designing – 1 year Certificate in Self Realization through Theosophy– 6 months Certificate course in Indian classical dance- Kathak-6 months Basic Computer Application Course- 6 months Certificate course in Indian Knowledge System – 6 months
Courses	
UG	15
PG	11
Ph.D.	11
Certificate	5
Diploma	1
Total No. of working days	279 days
D. Human Resources	
Total Staff	Students – 1924 Teaching – 66 (including Honorary) Non-teaching – 40 (including contractual) Total - 2030
Total Student uptake	Intake –2944 (UG & PG) Admitted – 1924 (UG, PG & PhD)
Teacher: Student Ratio	1:29
Girl Student: Boy Student Ratio	137:1 <i>VKM is a Women's College in UG & PG, only girls are admitted In Ph.D., there are 11 male students in both the years</i>

2. NEED FOR GREEN AUDIT

As environmental sustainability continues to emerge as a critical national priority, the role of higher education institutions in advancing sustainable practices has become increasingly significant. A green audit is undertaken to systematically evaluate environmental practices within and beyond the college campus, assessing their direct and indirect impact on the environment. It involves the structured identification, quantification, documentation, reporting, and analysis of various environmental components associated with the institution. The initiative is designed to review institutional activities that may pose risks to both human health and the natural ecosystem.

The green audit serves as a strategic tool to guide improvements in environmental management by identifying opportunities to enhance sustainability practices and integrate protective measures. It encompasses key areas such as green campus initiatives, waste management, water conservation, air quality management, energy efficiency, and carbon footprint assessment, reflecting the institution's commitment to environmental responsibility.

In the contemporary context, conducting a green audit has become essential for institutional self-evaluation, providing insights into the organization's contribution toward addressing environmental challenges. Vasant Kanya Mahavidyalaya demonstrates a strong commitment towards responsible resource stewardship and sustainable academic practices. The institution aligns itself with the climate neutrality objectives set by the Government of India and actively monitors the sustainability of its teaching and research activities through regular green audits of its campus.

2.1 NAAC CRITERIA VII ENVIRONMENTAL CONSCIOUSNESS

The National Assessment and Accreditation Council, New Delhi, has mandated that from the academic year 2019–20 onwards, all higher educational institutions must submit an annual Green, Environment, and Energy Audit Report. Green auditing is incorporated under Criterion VII of NAAC, a self-governing body in India responsible for assessing and accrediting institutions with grades such as A, B, or C based on their performance during evaluation.

Furthermore, it is an integral aspect of the Corporate Social Responsibility of higher educational institutions to actively contribute to mitigating global warming through measures aimed at reducing their carbon footprint. In this context, the Green Audit serves as an essential mechanism to enhance and sustain the environmental quality within and around the institution, promoting a more responsible and eco-conscious academic environment.

3. OBJECTIVES OF GREEN AUDIT

1. To evaluate the quality of water and soil within the campus.
2. To quantify and assess the management of solid and liquid waste generated on the premises.
3. To document and review the green practices adopted by the institution and monitor their performance on an annual basis.
4. To develop a comprehensive database to support corrective measures and inform future planning and development.
5. To identify existing gaps and provide actionable recommendations for enhancing the Green Campus status of the institution.

4. AUDIT METHODOLOGY

Green auditing involves identifying, evaluating, and determining whether an institution's practices are environmentally responsible, eco-friendly, and aligned with principles of sustainability.

The present Green Audit of the Institution comprises of the following stages:

I. Pre-Audit Stage:

It involves the identification of target areas for auditing.

II. Audit Stage:

Collection and collation of onsite data were made through:

1. Review of previous records and policies
2. Onsite physical inspection of the campus
3. Interaction with the stakeholders
4. Collection of data and observation
5. Focus Group Discussion

III. Post-Audit Stage

It encompasses data analysis, preparation of the final report, and the formulation of recommendations to address identified gaps, along with mechanisms for monitoring the implementation of the action plan.

4.1 MAJOR AREAS OF AUDIT REPORT

The following 5 major areas (including their subsections) were covered for Green Audit and compliance/ initiatives under these areas were verified/ validated.

- i. Water Audit and its Management
- ii. Energy Audit and its Management
- iii. Waste Audit and its Management
- iv. Carbon Footprint
- v. Green Campus Management

5. WATER AUDIT AND ITS MANAGEMENT

Water Audit can be defined as a qualitative and quantitative analysis of water consumption to identify the means of reducing, reusing and recycling water. It involves evaluating water quality, availability, and usage patterns, along with the infrastructure and practices for its conservation and sustainable use. According to the standards provided by National Building Code of India (2016) by the Bureau of Indian Standards (NBC, 2016 BIS), the prescribed water requirement for higher educational institutions is 45 L per capita. The campus is equipped with four borewells, of which three are operational and actively used for water extraction. The total daily water consumption, when the institution operates at full capacity, was recorded approximately at 91.35KL per day. Water usage on campus primarily supports drinking, sanitation facilities, administrative functions, canteen services, gardening, and laboratory activities. The organisation does not have any automatic leak detection system; water leakages are effectively managed through routine manual inspections and regular maintenance of pipelines. The audit team reported no observable leakage within the system.

Water storage infrastructure includes two overhead tanks, each with a capacity of 25KL, of which 10KL is reserved for firefighting purposes. Additionally, four storage tanks of 1KL capacity each are installed in the A.B. Block. The Home Science Department has one 1KL tank, while the Geography Department and the canteen each have a 500L storage tank. Water from the overhead tanks is distributed to washrooms, basins, laboratories, and water purification units across the campus. Water coolers fitted with RO purifiers are provided in each building in the campus as a source of safe drinking water. Third party contractor is appointed by the College for their annual maintenance.

Wastewater Management:

- Wastewater is primarily generated from washing, toilet flushing, canteen kitchen operations, and washrooms on each floor of all the buildings.
- Currently, sanitary wastewater generated is sent to municipal sewer line.

Table 3 Average water consumption by the staff and students of Vasant Kanya Mahavidyalaya from June 2024 – May 2025 as per NBC, 2016 BIS Report. Per capita water consumption 45 liters /day.

S.No.	Category	No. of individuals	Total water consumed (liters per day)
1.	Day Scholars	1924	86580
2.	Staff	106	4770
Total		2030	91350

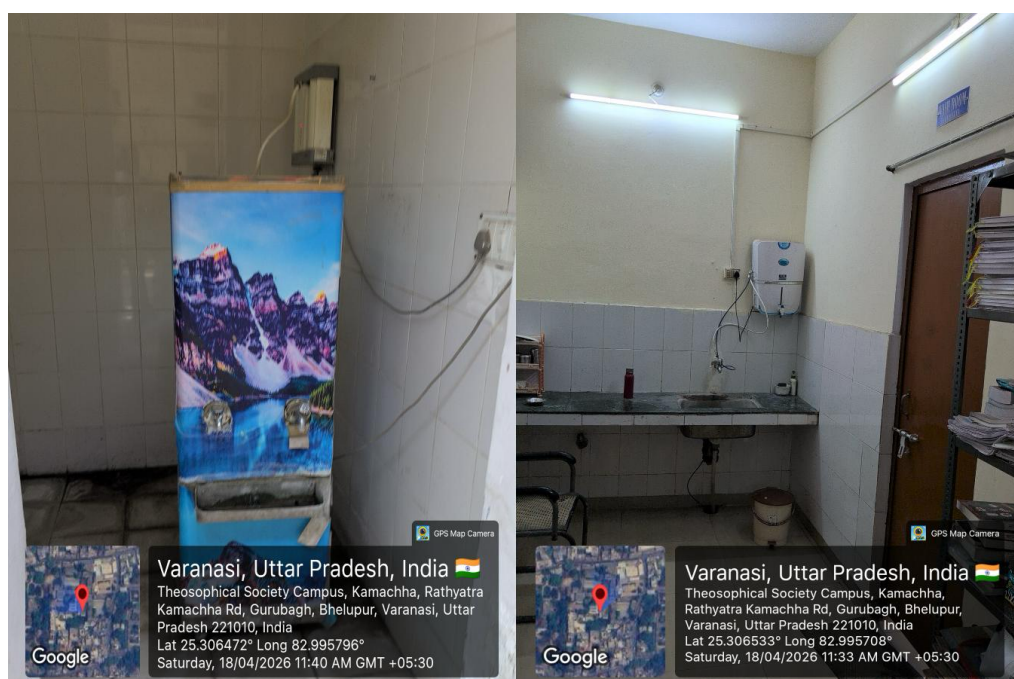


Fig. 2 Water Cooler and RO purification system installed within the college premises.

Water Conservation Initiatives:

1. No leakage of water from faucets and pipes were noticed by the audit team.
2. Collection of water dripping from Air Conditioners in the college in buckets and used for watering plants in garden area on campus.
3. Reuse of the effluents of the Home Science Laboratory by channeling for gardening purposes.
4. Rainwater harvesting is in place in the campus (under the scheme of Uttar Pradesh Government), which strengthens the water supply to the campus and maintains water level of wells through ground water recharging process. The rainwater is collected from the terraces of the 2 blocks and taken through pipes to the underground reservoir.

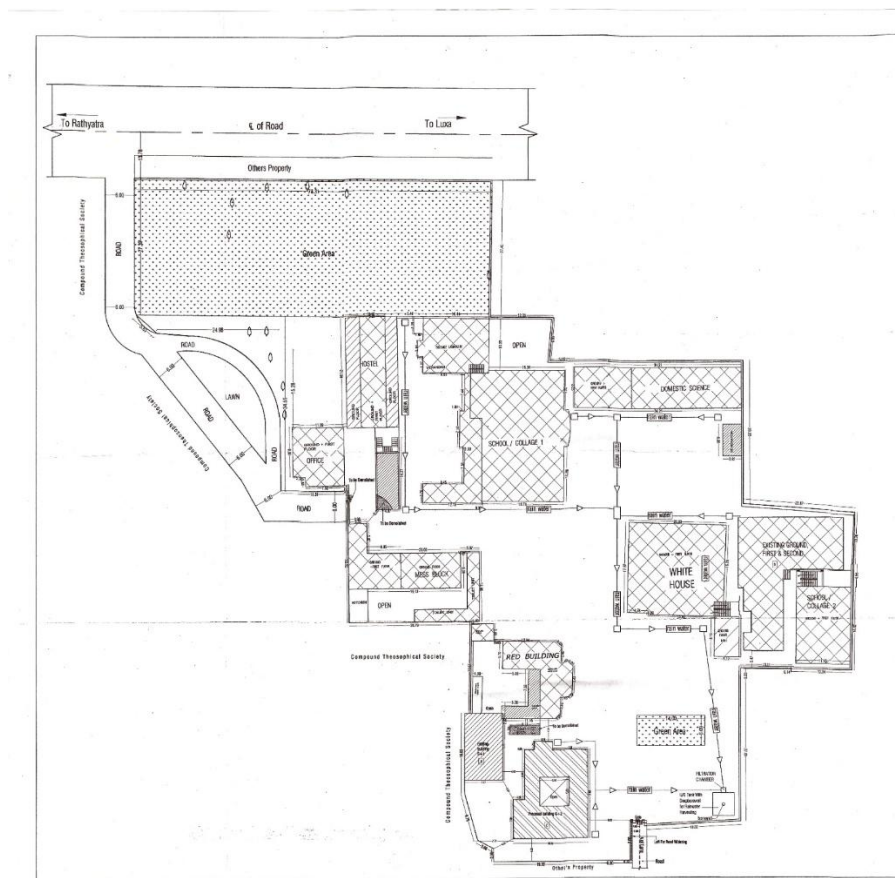


Fig. 3 Rainwater harvesting plan within the college premises.



Fig. 4 Rainwater harvesting infrastructure installed on the college premises.

6. ENERGY AUDIT AND ITS MANAGEMENT

The energy audit is key to a systematic approach for decision making in the area of energy management. The major consumption of electricity by the college includes the electrical equipment listed in Table 4.

Table 4 Major sources of electricity consumption at Vasant Kanya Mahavidyalaya.

Electrical Equipment	
LED bulbs and tubes	526
Fans (ceiling + standing)	351
Computers and laptops	199 (190 Desktop; 9 Laptops)
Projectors	15
Television	1
CCTV cameras	22
Photocopiers	03
Air Conditioners	8 Pcs. (6 Pcs. – 2 Ton; 2 Pcs. – 1.5 Ton)
Air Coolers	18
Water Pumps	4 Pcs. (1 Pcs. – 3 HP 2 Pcs. – 1.5 HP 1 Pcs. – 0.5 HP)
Refrigerators	7 Pcs. (5 Pcs. – 185 L; 1 Pcs. – 260 L; 1 Pcs. – 150 L)
Flood lights	9
Street lights	3
Aquaguard water filters and coolers	5 Pcs. Aquaguard with Water Cooler 2 Pcs. Kent RO 1 Pcs. Aquaguard Water Purifier cum Water Cooler 1 Pcs Usha water cooler and havells water purifier
Genset available and capacity	Diesel genset - 2 Pcs. (30 KVA each)
Elevator	1
Laboratory Instruments	
Portable Tachistoscope	02
PT-123	

Human Maze (electric)	20	20
Memory Drum Electric	06	06
Refrigerator	02	02
Symphony winter cooler	01	01
Medium size cooler	01	01
Laptops	03	03
Computers	04	04
Printer	03	03
UPS	01	01
Electric Sewing Machine	11	11
Tracing Table	01	01
Press	01	03
OTG	01	01
Microwave	01	01
Mixer grinder	03	01
Laundry Meter	01	01
Bath Machines	02	02
Electric kettle	01	01
Projector	01	01
Object Camera	01	01
Maharaja Heater	01	01

Energy sources utilized by all the departments and services of college include electricity. The average electricity consumption from June 2024 to May 2025 is 4941 KWH amounting to ₹ 48471.16 @ ₹9.81 per unit. Electricity peak load is in the month of April 2025. All the Electricity is supplied through “The Indian Section, The Theosophical Society”. The major use of the energy is at administrative building, academic buildings, Library, and canteen. In addition to this, there are two sound free diesel generator (DG sets) of 30KVA capacity each installed for meeting the energy requirements during power cuts. From June 2024 to May 2025, the average monthly

consumption of diesel by the DG sets is 75.18 liters.

Conventional tube lights, LEDs and fans are installed in classrooms, halls and library.

For efficient energy consumption and savings on electric bill, the college has initiated the process of replacing incandescent bulbs and tube lights with LEDs. The LPG cylinder consumption is approximately 7 cylinder per year for the Department of Home Science. Also, 2 LPG cylinders per month are used in canteen kitchen for cooking.



Fig. 5 New desktops computers installed in the college computer laboratory.



Fig. 6 DG sets installed for electricity backup on the college campus.

Table 5 Electricity consumption at VKM campus (2024-25).

Electricity load (Average of 2024-25) (Source: Electricity bill of the campus)												
Months	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Average												
Daily												
Energy												
Usage												
(kWh)	1646/30 = 54.86	6139/31 = 198.03	5555/31 = 179.19	6216/30 = 207.2	5194/31 = 167.54	3447/30 = 114.90	4120/31 = 139.90	5452/31 = 175.87	2700/28 = 96.42	4337/31 = 139.90	7367/30 = 245.56	7119/31=229.64
Months with peak load										April 2025		
Average Electricity Usage (1 year)												
Month	Units		Bill Amount							Total Amount		
	Consumed		Deduction for							(Monthly		
	energy		(Rs.)		solar					Average) – Rs.		
	(KWH)		Unit@9.81		injection					48471.16		
June 2024	1646.00		16147.00							Total Units		
July 2024	6139.00		60224.00		-					(Monthly		
Aug 2024	5555.00		54495.00		-					Average) – 4941		
Sept 2024	6216.00		60979.00		-					KWH		
Oct 2024	5194.00		50953.00		-							
Nov 2024	3447.00		33815.00		-							
Dec 2024	4120.00		40417.00		-							
Jan 2025	5452.00		53484.00		-							
Feb 2025	2700.00		26487.00		-							
Mar 2025	4337.00		42546.00		-							
Apr 2025	7367.00		72270.00		-							
May 2025	7119.00		69837.00		-							

(Source: Electricity bill of the campus)

Electricity Conservation Initiative:

Centralized Solar Panels: A 100KVA Photovoltaic Array has been installed on roof top of the college building which have been connected to the 600VA solar panel inverter. This system powers the campus lighting, marking a significant step toward energy conservation and reducing the college's overall electricity consumption.



Fig. 7 Rooftop Solar Panels installed for renewable energy generation on the college premises.

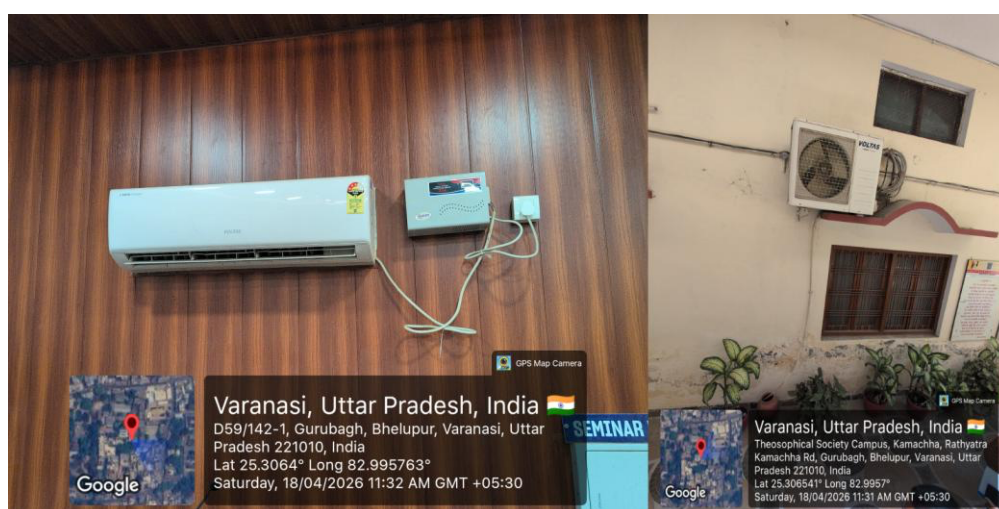


Fig. 8 Energy-Efficient 5-star rated Air Conditioners installed in the Hall.

Signages: Awareness signages installed across the college campus promoting Energy Conservation Practices.

- 1. Energy efficient appliances:** The college uses energy-efficient, star-rated appliances such as LED bulbs, and 4 to 5 star rated air conditioners and refrigerators.
- 2. Fuel Energy Audit:** The fuel energy audit determines the approximate use of petrol or diesel by the vehicles inside the College. It also includes the efforts taken by the college to conserve the fuel. The conventional source of fuel for the vehicle is petrol and diesel. Maximum students, teaching and non-teaching staff of college and visitors use two-wheeler and four-wheeler vehicles. Number of four wheelers is 20 and they consume 450 litres of fuel/month whereas 150 are two wheelers and they consume 900 litres of fuel/month.

Details of Energy Audit are given in Table 6.

Table 6 Fuel Energy Audit (2024-2025) of Vasant Kanya Mahavidyalaya.

1.	Total number of Students	1924
2.	Total number of Teachers	66 (including honorary)
4.	Total number of vehicles used by the stakeholders of the college (per day)	800 (approx.)
5.	No. of cycles used	350
6.	No. of two wheelers used (average distance travelled and quantity of fuel and amount used per day)	150 (8 km/vehicle /Day and 30 liters of fuel/day)
7.	No. of cars used (average distance travelled and quantity of fuel and amount used per day)	20 (10 km/vehicle /Day and 15 liters of fuel/day)
8.	No. of persons using common (public) transportation (average distance travelled and quantity of fuel and amount used per day)	1500 approx. (8km per day)
9.	No. of parent-teacher meetings in a year? Parent turn up (approx.)	2 200 (approx.)
10.	No. of visitors with vehicles per day	10
11.	No. of generators used every day (hours). Give the amount of fuel used per day	02 generators 2 hours approx. 2 L diesel
12.	No. of LPG cylinders used in the canteen in a year	24

3. **Fire Fighting System:** Eleven (11) fire extinguishers (ABC MAP 90 type) are placed at VKM. In the newly constructed Leela Sharma block a fire hydrant system is installed. A 10 KL of water in tank at the rooftop is reserved for the firefighting unit.

Table 7 Fire Safety Audit of Vasant Kanya Mahavidyalaya.

Firefighting systems in main campus Details	Fire Hydrant System (Complete Fire Fight System) installed in the Leela Sharma Block
Fire extinguishers installed and their types	11 Pcs. (ABC - MAP 90)
Fire exists	2



Fig. 9 ABC-MAP 90 type Fire Extinguisher installed at each floor of the campus building.



Fig. 10 Fire Fighting System installed in Leela Sharma Block of VKM.

7. CARBON FOOTPRINT

The primary greenhouse gases include carbon dioxide, water vapour, methane, nitrous oxide, and ozone. Among these greenhouse gases, carbon dioxide is the most significant, making up about 416 ppm of the Earth's atmosphere. Human activities and the use of various machines contribute towards adding green-house gases to the atmosphere. A carbon footprint is the total sum of carbon dioxide emissions released into the Earth's atmosphere through by an organization, event, product, or a person.

An understanding about the same of any institute where large number of anthropogenic activities are happening is important to assess the contribution of emission of gases that are responsible for Green House Effect. Auditing for carbon footprint of VKM Campus was done using a detailed questionnaire, so that the impact of the community on environment can be assessed.

There are several recognized standards and guidelines are available for measuring greenhouse gas (GHG) emissions, including the GHG Protocol, ISO 14064, Life Cycle Assessment (LCA), and market-based mechanisms such as the Clean Development Mechanism (CDM) and Voluntary Carbon Standards (VCS). Among these, ISO 14064 is an independent, voluntary standard that facilitates the quantification and reporting of GHG emissions for organizations, events, products, and individuals. From the provided data of annual electricity bill, annual fuel and LPG consumption of VKM College, the carbon footprint is calculated by multiplication with their emission factor which is about 80.69 tonnes CO₂ annually. A small part of it is compensated by remedial measures adopted by the college which is 2.28 tonnes CO₂ for 2024-2025. Therefore, the effective carbon footprint is 78.41 tonnes CO₂.

Table 8 Carbon Footprint Calculation for VKM for 2024-2025.

S. No.	Source	Rate	Quantity Days/ Year	Total Quantity	Annual Equivalent CO ₂
1.	Electricity	0.82 kgCO ₂ /kWh	4941 kWh/month × 12	59292 kWh	48.62 T CO ₂
2.	Fossil fuel (LPG Cylinder)	1.9 kgCO ₂ /kWh	19 kg × 7 + 19 kg × 2 cylinders × 12	589 kg	1.11 T CO ₂
3.	Fossil fuel (2-wheeler)	2.3 kgCO ₂ eq/L	30 liter/day × 279 days	8.37kL	19.25 T CO ₂
4.	Fossil fuel (Cars)	2.3 kgCO ₂ eq/L	15 liter/day × 279 days	4.19kL	9.64 T CO ₂
5.	Fossil fuel (DG Set)	2.3 kgCO ₂ eq/L	75.18 liter/month × 12months	0.902kL	2.07 T CO ₂
Total					80.69 T CO₂

No. of working days in 2024-25: 279 days

The International Organization for Standardization (ISO) also provides some general standards for

- Greenhouse gas emissions at Organization level (ISO 14064 - 1) and
- Greenhouse gas emissions at project level (ISO 14064 – 2)
- Specifications to validate and verify relevant accountings are documented in (ISO 14064 - 3)

Table 9 Remedial Measures to reduce Carbon Footprint of VKM during 2024-2025.

S. No.	Source	Rate	Quantity Days/ Year	Total Quantity	Annual Equivalent CO ₂
1.	Solar Electricity	0.82 kgCO ₂ /kWh	100 kWh/Month × 12	1200 kWh	0.98 T CO ₂
2.	Cycles	2.68 kg/L	350 cycles × 279 days/50 × 4	0.50 T	1.30 T CO ₂
Total					2.28 T CO₂

8. WASTE AUDIT AND ITS MANAGEMENT

Pollution caused by waste is aesthetically displeasing and results in significant litter accumulation within communities, which may contribute to health issues. Solid waste comprises discarded or non-useful solid materials arising from routine activities. Proper management of solid waste is essential to prevent environmental degradation and health hazards.

Waste generation on campus

Data on solid waste generation at VKM Campus was collected from all buildings and support facilities. The campus produces different types of waste, such as paper, canteen, plastic, and electronic waste, which have been classified into biodegradable and non-biodegradable categories. Waste bins have been strategically placed on each floor and in key areas including staff rooms, laboratories, washrooms, kitchens, and open campus spaces. Liquid waste from the Psychology and Home Science laboratories was also documented. No concerns regarding nearby municipal dumping sites, garbage heaps, sewer systems, or open drainage were identified.



Fig. 11 Waste-bins at different locations in the college premise.

Biodegradable wastes

Biodegradable waste, including food waste, canteen waste, and other organic materials, is collected and deposited into designated compost pits. The organic matter undergoes composting, representing a sustainable practice adopted by the campus. In addition to kitchen waste, organic materials such as leaf litter and terrestrial weeds generated during campus maintenance are also composted. Paper waste from classrooms, libraries, and offices is collected and sold to scrap dealers. The library has also been digitalised to minimize paper consumption and promote sustainable resource management. Human waste is managed through municipal sewage systems, and adequate dustbins are installed across campus buildings to prevent littering.

Non-biodegradable waste

Non-biodegradable waste, particularly e-waste, is periodically identified and segregated by the college's designated committee and handed over to authorized scrap dealers for proper recycling and disposal. Other non-biodegradable wastes, including plastics, glass materials, unused equipment, and sanitary napkins, are managed through the municipal waste management system. In addition, discarded plastic bottles are creatively reused for plantation and gardening purposes within the college campus, promoting sustainable waste reutilization practices.

Liquid waste disposal

The liquid waste produced in the Home Science laboratory is reused for watering nearby flower beds. Compost derived from organic waste is also used as a natural fertilizer for these plantations.

Hazardous waste

There is no generation of any hazardous waste in the college.

9. GREEN CAMPUS MANAGEMENT

Water Quality Assessment

Water samples from three different borewell which are the main water source of the college campus were collected and analysed for its physicochemical parameters. The samples were collected, preserved and transported to the laboratory and analysed for various physio-chemical parameters. The major parameters analysed include dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids and salinity. The results are presented in the Table 10. The results are comparable with the values of drinking water standards prescribed by different agencies.

Table 10 Physicochemical parameters of water samples collected from college premises.

S.No.	Parameters	Sample1	Sample 2	Sample 3	Standard value (BIS)
1.	pH	7.8	7.2	7.3	6.5-8.5
2.	Total Dissolved Solids (ppm)	535	580	525	500
3.	Dissolved Oxygen (mg/l)	6.7	6.9	7.2	6-8
4.	Turbidity	Nil	Nil	Nil	1 NTU
5.	Conductivity (μ s)	152	143	149	-
6.	Acidity (mg/l)	39	33	37	200
7.	Alkalinity (mg/l)	22	28	24	200
8.	Salinity (ppt)	0.74	0.72	0.71	-
9.	Hardness (Total)	169	162	165	200
10.	Total coliform	Nil	Nil	Nil	0
11.	Fecal coliform	Nil	Nil	Nil	0

Soil Quality Assessment

Soil samples were collected from two different locations of the campus and analysed for the basic parameters. The results are tabulated and presented in the Table 11.

Table 11 Soil Quality Assessment (2024-2025).

S. No.	Parameter	Location 1 (Garden)	Location 2 (Ground)
1.	pH	7.6	7.3
2.	Total Kjeldhal Nitrogen (mg/kg)	3.3	2.9
3.	Total organic carbon (%)	1.5	1.6
4.	Phosphate (mg/kg)	0.34	0.39

Air Quality Assessment

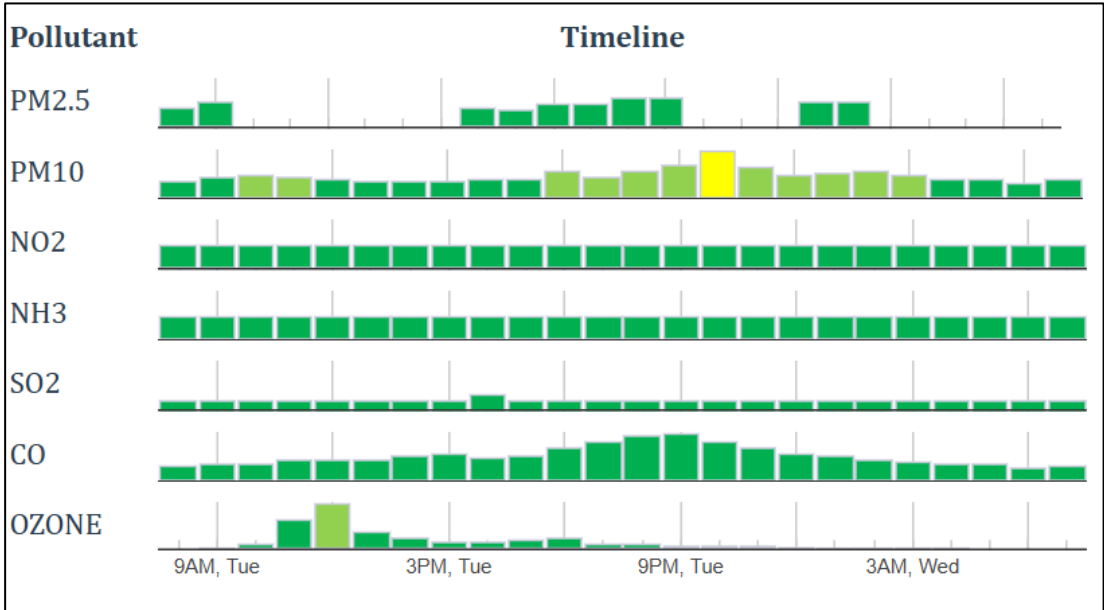


Fig. 12 Concentration of air pollutant on the day of audit (16/04/2025) for 2024-2025.

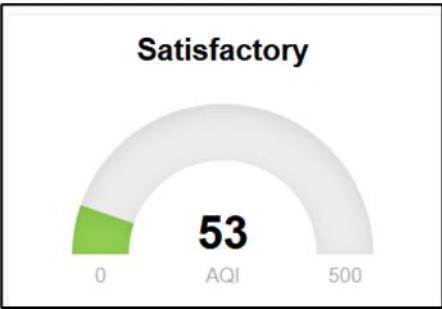


Fig. 13 Air Quality Index on the audit day (16/04/2025) for 2024-2025.

Green cover

VKM Garden is rich in biodiversity. It has nearly 105 species of plants, shrubs, and trees. The total area is about 2087.46 square meters. Students use this space to relax, read, and spend time during breaks. The campus has four blocks—A, B, C, and D—along with the theosophical society area. All areas are green and filled with plants. Most of the plants are ornamental and fruit-bearing. The college organizes two plantation drives every year. The first is in July, called the “Varsha Mangal” program. The second is a 7-day NSS camp. During this camp, students plant around 100 saplings. There is no separate botanical, medicinal, or vegetable gardens. Plants are grown across the campus in a natural way. Scientific names are not displayed. There is a small patch of mango and jackfruit trees in the theosophical society area. Watering is done mainly using groundwater from borewells. Overflow water from rooftops is also used. The college avoids chemical fertilizers and pesticides. Instead, it uses organic manure made in its compost pit. The garden also protects rare plants. One such plant is *Santalum album* (Chandan), which is preserved on the campus.

Green Initiatives by the College

1. Tree Plantations & Environment initiatives under National Service Scheme

The college organizes several programmes time to time to raise awareness about environmental issues and promote sustainable practices. NSS activities focus on tree plantation drives and cleanliness campaigns within the campus and classrooms, as well as outreach programmes in nearby villages that emphasize environmental conservation, discouragement of polythene use, and reducing excessive mobile-phone usage.

Major Activities (2024)

- On 17 September, a speech competition on the theme “Impact of Carbon Emissions on the Ozone Layer” was held to sensitize students about the link between greenhouse gases and ozone-layer depletion.
- This was followed by a solo lecture on environment and environmental conservation on 19 September, aimed at strengthening conceptual understanding of ecological issues.
- On 21 September, students participated in a slogan-writing activity on the theme “Cleanliness in Nature, Cleanliness in Culture”, highlighting the interconnection between environmental hygiene and social values.
- From 24 to 26 September, the college conducted a series of cleanliness drives, including campus-wide cleaning and library labour donation, to promote collective responsibility for maintaining a clean and hygienic environment.
- On 25 September, a tree plantation programme was organized to enhance campus greenery and raise awareness about the role of vegetation in environmental conservation.
- On 30 September, a cleanliness and education awareness rally was held on the Annie Besant Campus to emphasize the importance of sanitation, hygiene, and environmental stewardship among students and staff.
- The week-long activities concluded on 2 October with an online lecture on environmental cleanliness, which reinforced sustainable practices and extended the reach of the awareness campaign beyond the physical campus.
- A World Heritage Week celebration was held on 20.11.2024, featuring a lecture on “Water Heritage of India” and the release of the 5th edition of the departmental e-magazine *Thati*, themed “Jal-Kundas of Kashi”.

- A two-day workshop on “Varshageet”, an expression of reverence towards Mother Nature, was conducted on 12–13 August 2024, with students of the Department of Music (Vocal) presenting Rabindra Sangeet, Kajari, and folk songs.
- On 11th September, 2024 the Department of Political Science organized a lecture on “Environmentalism” by Dr. Kavita Mishra, Assistant Professor, Department of Geography, Allahabad University, to highlight the role of environmentalism in shaping public policy and promoting global ecological consciousness.
- On 16th September 2024, Ozone Day was observed with a special lecture titled “The Ozone Care is Earth Care” by Dr. Kavita Mishra, focusing on the nature and importance of the ozone layer, causes and impacts of its depletion, and measures to reduce CFC emissions.

Key Initiatives (2025)

- On January 21st, “Swabhav me Swachhata” campaign including school interaction, rally, cleaning of Panchvati Sarovar & Mandir, Nukkad Natak, and motivational address by Dr. Rajeev Lochan Behra.
- On January 23rd Dental Care & Environmental Protection Programme (BHU Dental Team), free check-up, plantation drive, and speech competition.
- On World Earth Day, 22nd April, the Department of Geography conducted a session to raise awareness of environmental issues, promote sustainable habits, and encourage students to act as environmental stewards.
- World Ocean Day was celebrated on 04th June, with activities underscoring the vital role of oceans in sustaining life and emphasizing the need for sustainable management and protection of marine ecosystems.

- On September 29th, Tree plantation on Annie Besant Birth Anniversary and NSS camp with environmental pledge and planting of neem, guava, pomegranate, and curry leaf saplings.
- On October 30th Campus Cleanliness Drive was organised.

2. Annual village camp

Unnat Bharat Abhiyan (UBA) is an outreach programme launched by the Ministry of Education (earlier Ministry of Human Resource Development) in 2014 to link higher educational institutions with rural communities for sustainable development. Vasant Kanya Mahavidyalaya joined UBA in 2018 and has since been actively contributing to the upliftment and empowerment of village life through its UBA Cell, which organized a series of focused programmes during the 2024–25 session:

1. Orientation Programme on the Role of Unnat Bharat Abhiyan in Rural Development on 29th November, 2024 to work for the wellness of adopted villages.
2. A Free Dental Checkup Camp in collaboration with Ashwa Vegan Globe and VKM, UBA Cell was organized on 7th March, 2025 for Spreading Awareness about Hygiene and Cleanliness regarding healthy gums and Teeth.
3. UBA and Sports Committee in collaboration with Gramsabha Bariyasanpur and Mahadev P.G. College, Bariyasanpur organized a Kabaddi Fest on 17th April, 2025 for Inculcating Sports spirit in VKM Students, Mahadev P.G. College girls students and Bariyasanpur Girls.



Fig. 14 Programmes organized under UBA during the 2024–25 session.

An excursion was organized under *Unnat Bharat Abhiyan* at Gram Panchayat Khushipur (Block–Kashi Vidyapeeth). Participants actively engaged in community service activities and took the “*Panch Pran*” oath. Under the “*Meri Mati Mera Desh*” campaign, students performed a Nukkad Natak, carried out tree plantation, and conducted a village survey through one-on-one interactions to spread awareness and highlight national values.

3. Eco-club

The college has constituted a Go-Green Committee to oversee the development and maintenance of campus greenery and to supervise gardening and plantation activities. The campus hosts a variety of medicinal and fruit-bearing plants, while potted flowering plants enhance its visual appeal. In line with sustainable practices, discarded coconut shells are innovatively reused as plant borders, reducing dependence on conventional materials such as bricks.



Fig. 15 Minimizing the use of bricks through reuse of waste coconut shells for gardening purposes.

4. Plastic free campaign

The college campus is declared as no polythene zone. Signage for promoting no polythene zone has been put up in the college premises.

- The bio-degradable waste is regularly buried in the earth. It not only supports carbon-neutrality but also produces excellent manure for plants.
- Non-biodegradable waste including e-waste is weeded out by the college weed-out committee and given to the scrap-dealers who re-cycle the waste.

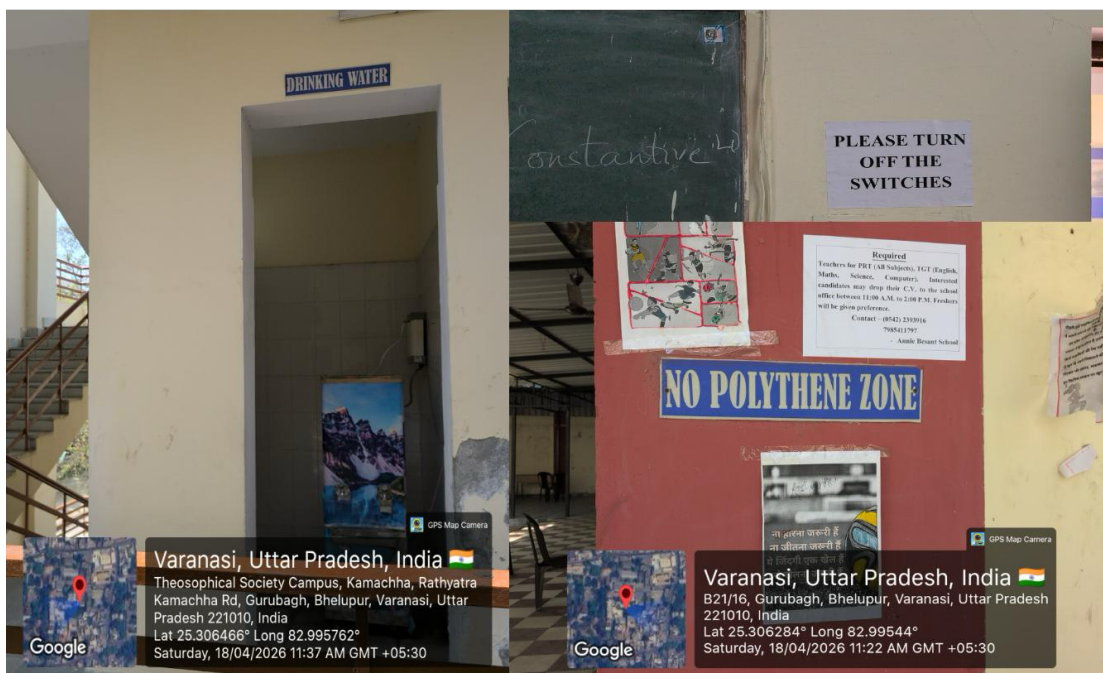


Fig. 16 Initiatives taken to promote plastic free campus.

5. Solar electricity generation

Solar panels are installed on the rooftops of the college building to re-use solar energy in the lighting of the campus.

6. Flora in the VKM campus:

The campus of Theosophical society and VKM is rich in biodiversity. The campus boasts of 88 species of flora in the campus which are listed in the Table 12.

Table 12 Floral Diversity on the Campus of Vasant Kanya Mahavidyalaya.

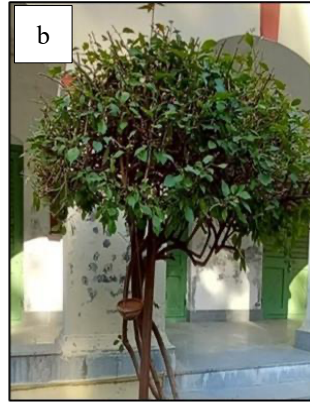
S. No.	Name	Botanical Name	Category	Quantity
1.	Acalypha	<i>Acalypha Wilkesiana</i>	Shrub	01
2.	Adenium (desertroses)	<i>Adenium</i>	Tree	01
3.	Ajwain	<i>Trachyspermum ammi</i>	Herb	01
4.	Alchornea	<i>Alchornea cordifolia</i>	Shrub	12
5.	Allamanda	<i>Allamanda cathartica</i>	Shrub	01
6.	Almond tree	<i>Prunus dulcis</i>	Tree	01
7.	Aloe vera	<i>Aloe barbadensis miller</i>	Herb	01
8.	Alpinia	<i>Alpinia galanga</i>	Herb	08
9.	Amaltas	<i>Cassia fistula</i>	Tree	01
10.	Anjeer	<i>Ficus carica</i>	Tree	02
11.	Areca Palm	<i>Dyopsis lutescens</i>	Tree	05
12.	Arjun	<i>Terminalia arjuna</i>	Tree	02
13.	Ashok	<i>Saraca indica Linn</i>	Tree	18
14.	Ashoka	<i>Polyalthia longifolium</i>	Tree	15
15.	Bamboo	<i>Bambusoideae</i>	Grass	02
16.	BananaPalm	<i>Musa</i>	Tree	01
17.	Begonia Vista	<i>King begonia</i>	Tree	01
18.	Bela (Mogra)	<i>Jasminum sambac</i>	Shrub	01
19.	Bottle Palm	<i>Hyophorb eleganciaulis</i>	Tree	03
20.	Bottlebrushes	<i>Callistemon citrinus</i>	Tree	01
21.	Cat Palm	<i>Chamaedorea cataractum</i>	Tree	02
22.	Champa	<i>Michelia</i>	Shrub	04
23.	Chandan	<i>Santalum album</i>	Tree	01
24.	Chandni	<i>Tabernamontana divaricata</i>	Shrub	02
25.	China Palm	<i>Liustona chinesis</i>	Tree	05
26.	Christmas Tree	<i>Araucaria hetrophylla</i>	Tree	06
27.	Coleus	<i>Coleus</i>	Shrub	01
28.	Croton	<i>Codiaeum variegatum</i>	Shrub	08
29.	Crown-of-thorns	<i>Euphorbia milii</i>	Shrub	04
30.	Cycas	<i>Cycas revluta</i>	Shrub	01
31.	Cycas Zamia	<i>Zamia</i>	Shrub	01
32.	Dabal Bonchi	<i>Psoralea corylifolia</i>	Herb	13

33.	Dahlia	<i>Dahlia</i>	Herb	06
34.	Double Bensia	Double Bensia		01
35.	Dracaena	<i>Dracaena fragrans</i>	Shrub	05
36.	Dracaena Reflexa	<i>Dracaena reflexa</i>	Shrub	01
37.	Dumb Cane Plant	<i>Dieffenbachia bowmannii</i>	Herb	01
38.	Duranta	<i>Duranta erecta</i>	Shrub	Hedge
39.	Fan Palm	<i>Livistona chinensis</i>	Tree	04
40.	Fern	<i>Tracheophyta</i>	Fern	02
41.	Fig (Anjeer)	<i>Ficus carica</i>	Tree	02
42.	Fishtail Palm	<i>Caryota</i>	Tree	09
43.	Forbia			04
44.	Gandhraj	<i>Gardenia jasminoides</i>	Shrub	01
45.	Giant Bamboo	<i>Dendrocalamus giganteus</i>	Grass	01
46.	Giloe	<i>Tinospora cordifolia</i>		01
47.	Guava Plant	<i>Psidium guajava</i>	Tree	02
48.	Gudhal	<i>Hibiscus</i>	Shrub	12
49.	Guldaudi	<i>Chrysanthemum</i>	Herb	03
50.	Gulmohar	<i>Delonix regia</i>		01
51.	Harjor magnolia	<i>Cissus quadrangularis</i>		01
52.	Henna	<i>Lauesonia inermis</i>	Tree	01
53.	Hibiscus	<i>Malvaviscus</i>	Shrub	03
54.	Ixora	<i>Ixora coccinea</i>	Shrub	01
55.	Jackfruit Tree	<i>Artocarpus heterophyllus</i>	Tree	01
56.	Jasmine	<i>Tabernaemontana divaricata</i>	Tree	09
57.	Kachnar tree	<i>Bauhinia variegata</i>	Tree	01
58.	Kalanchoe Pinnata	<i>Bryophyllum pinnatum</i>	Herb	03
59.	Kalmegha	<i>Andrographis paniculata</i>		
60.	Kamini	<i>Murraya paniculata</i>	Shrub	05
61.	Kaneiror Kane	<i>Cascabela thevetia</i>	Shrub	02
62.	Kochia Grass	<i>Bassia scoparia</i>	Herb	17
63.	Kohler Denta			01
64.	Peace Lily	<i>Spathiphyllum</i>	Herb	Hedge
65.	Koyaliya			Hedge
66.	Lalpatti	<i>Iresineherbstii</i>	Shrub	01
67.	Lemon grass	<i>Cymbopogon</i>		01
68.	Lily	<i>Lilium</i>	Herb	01
69.	Mango	<i>Mangifera indica</i>	Tree	03
70.	Marigold	<i>Tagetes minuta</i>	Tree	22
71.	Money Plant	<i>Epipremnum aureum</i>	Climber	01
72.	Monstera Plant	<i>Monstera deliciosa</i>	Shrub	01
73.	Morpankhi	<i>Platycladus orientalis</i>	Tree	02

74.	Moulsari Tree	<i>Mimusops elengi</i>	Tree	01
75.	Naagdon	<i>Euphorbia tithymaloides</i>	shrub	04
76.	Neem Tree	<i>Azadirachta indica</i>	Tree	04
77.	Night-blooming jasmine (RatRani)	<i>Cestrum nocturnum</i>	Shrub	02
78.	Night-flowering Jasmine (Parijat)	<i>Nyctanthes arbor-tristis</i>	Shrub	02
79.	Parlour Palm	<i>Chamaedorea elegans</i>	Tree	04
80.	Pathar chatta	<i>Kalanchoe pinnata</i>		01
81.	Petunia	<i>Petunia</i>	Herb	02
82.	PonytailPalm (Lolina)	<i>Beaucarnea recurvata</i>	Tree	01
83.	Prass			01
84.	Raphis Palm	<i>Rhapis excelsa</i>	Tree	01
85.	RedHedge			Hedge
86.	Rose	<i>Rosa rubiginosa</i>	Shrub	03
87.	Rubberplant	<i>Ficus elastica</i>	Tree	01
88.	Sadabahar	<i>Catharanthus roseus</i>	Shrub	02
89.	Satavar 2	<i>Asparagus racemosus</i>		02
90.	ShirishaTree	<i>Albizia nedbeck</i>	Tree	02
91.	Sleeping Hibiscus/ Mirchi Gudhal	<i>Malvaviscus</i>	Shrub	01
92.	Snake Plant	<i>Sansevieria trifasciata</i>	Shrub	01
93.	Spiral ginger	<i>Costus speciosus</i>		02
94.	Swarnachampa	<i>Magnolia champaca</i>	Tree	01
95.	Tecoma	<i>Tecoma stans</i>	Shrub	01
96.	Tengri			04
97.	Tree Ferns	<i>Cyatheaceae</i>	Fern	00
98.	Tulsi	<i>Ocimum tenuiflorum</i>	Herb	10
99.	Vicks	<i>Plectranthus tomentosa</i>		01
100.	Wela			03
101.	White Hibiscus	<i>Hibiscus rosa-sinensis</i>	Shrub	01
102.	Yellow Kaner	<i>Cascabela thevetia</i>		01



Hyophorbe lagenicaulis
Bottle palm



Bougainvillea
Booganbel



Citrus limon
Lemon



Polyalthia longifolia
False Ashoka



Eucalyptus
Gum tree



Manilkara zapota
Chikoo



Platyladus orientalis
Morpankhi



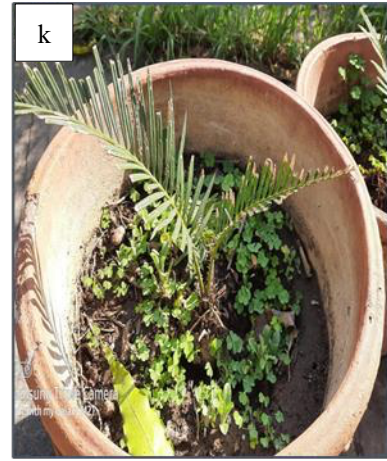
Ficus elastica
Rubber fig



Aralia odoratissima
Nag champa



Bombax ceiba
Semal



Zamia
Cycas Zamia



Livistona chinensis
China palm



Ficus carica
Anjeer



Calliandra haematocephala
Red powder puff



Terminalia caloppa
Kaath badaam



Cordia dichotoma
Lasoda

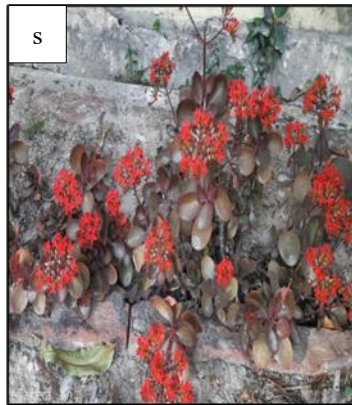


Santalum album
Chandan



r

Rosa
Rose



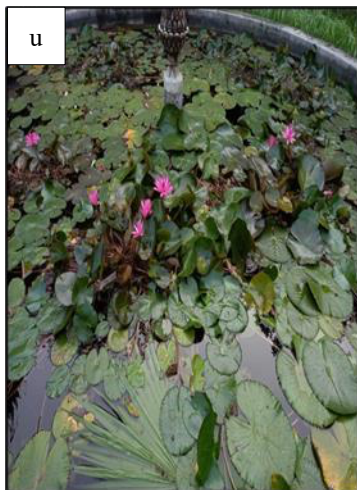
s

Kalanchoe pinnata
Ajooba



t

Murraya koenigii
Curry Leaf



u

Nelumbo nucifera
Kamal/Lotus



v

Nyctanthes arbor-tristis
Parijat/ Harsingar



w

Bauhinia variegata
Kachnar

Fig. 17 Major flora (a-w) in the Vasant Kanya Mahavidyalaya.

10. CONCLUSION AND RECOMMENDATIONS

Green audit “adds value” to the management approaches being taken by the college and is a way of identifying, evaluating, and managing environmental risks (both known and unknown). The green audit reports assist in the process of attaining an eco-friendly approach to the development of the college. The results presented herein shall serve as a guide for educating the college community on the existing environment related practices, judicious and apt use of resources and address the gaps in the green campus report spawning innovative practices in line with sustainable campus.

Following are the findings and recommended actions to support the management practices of VKM:

- **Construction of Ropeway along the boundary of the college campus**

Urban ropeway is being constructed by the Government after acquiring land from the Theosophical society within which the VKM college is situated. Due to the construction, tree falling and reduction in green cover has occurred. Therefore, it is recommended that green cover needs to be restored subsequent to completion of construction work by tree plantation in the area. Average water consumption decreased by 7 % in 2025-2026 than in 2024-2025 due to a smaller number of students enrolled in the session 2025-2026.

- New electrical equipments are installed – one refrigerator, one air conditioner, three air coolers and 152 desktops.
- There is also reduction in the electricity consumption in 2025-2026 as compared to 2024-2025. This may be perhaps due to the non-inclusion of electricity bill for May 2024 and a smaller number of working days in 2025-2026 as compared to previous session. Moreover, the installed electrical appliances are energy efficient and of 5-star rating.

- Carbon footprint increased from 56.79 T CO₂ in 2021-2022 to 66.83 T CO₂ in 2023-2022. But there is decrease in the carbon footprint by 15 % in 2025-2026. This may be due to fewer working days and energy efficient electrical equipment.
 - Waste segregation and separate waste-bins with lids should be installed for the disposal of different kinds of solid waste.
 - “Switch off” drills, “Fire” drills are needed in the campus to create awareness among the students for energy conservation.
 - Scientific names of the plants and trees in the campus premises be displayed to portrait the rich biodiversity of the institution.
 - Waste water from RO be used for irrigating plants in pots.
-