GREEN AUDIT
REPORT 2025–2026



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

EDUCATION AS SERVICE

Prepared by

PROF. KAVITA SHAH

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

काशी हिन्दू विश्वविद्यालय
BANARAS HINDU UNIVERSITY
Institute of Environment & Sustainable Development
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 2025-June 2026 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

Institute of Environment and
Sustainable Development
Banaras Hindu University

Date: 25.07.2026
Place: Varanasi

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 2025-26 for Vasant Kanya Mahavidyalaya, Kamachha, Varanasi. 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	**23**
10.	Conclusion and Recommendations	**36**

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 a snapshot 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

About the Vasant Kanya Mahavidyalaya

Vasant Kanya Mahavidyalaya is situated within the Theosophical Society campus at Kamachha, Varanasi. Founded in 1954 and managed by the Besant Education Fellowship, the college is affiliated with Banaras Hindu University. Spanning 10,436.83 square meters in the center of Varanasi, the institution provides doctoral (Ph.D.), postgraduate, and undergraduate degrees in arts and social sciences, along with UGC-approved diploma programs. Guided by the motto "Education as Service", the college is dedicated to academic excellence and holistic student growth. It reflects the Theosophical commitment to universal brotherhood, free from prejudices of race, creed, sex, caste, or color. In 2017, the college was awarded an "A" grade by the National Assessment and Accreditation Council (NAAC) during its second cycle of accreditation.

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**		

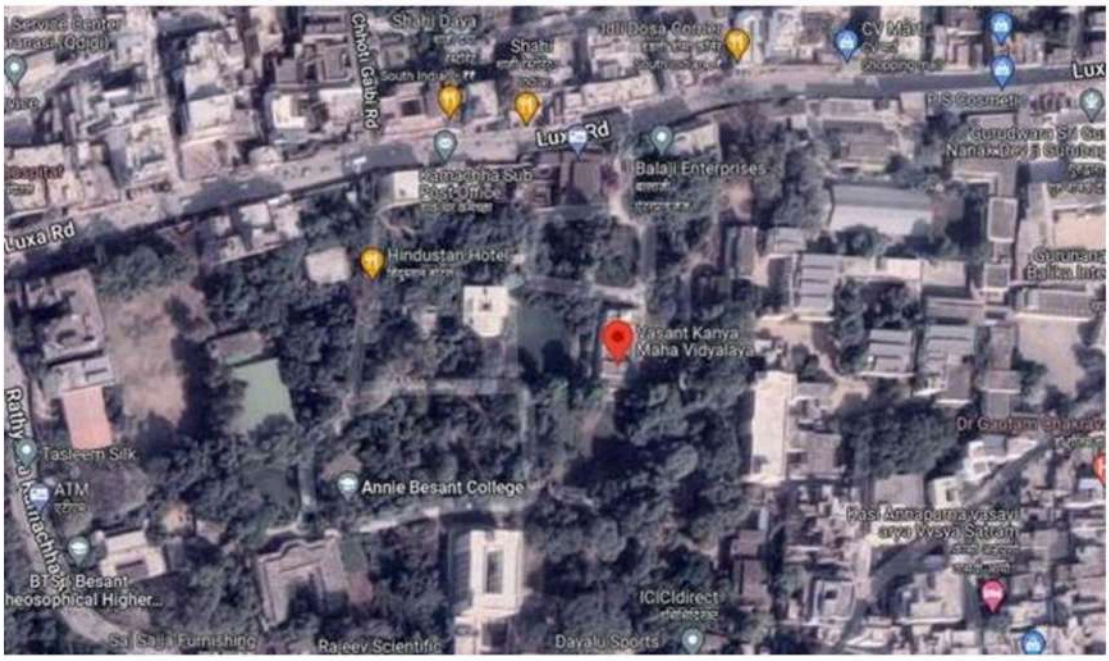


Fig. 1 Satellite map showing location of Vasant Kanya Mahavidyalaya.

Table 2 General Information About the Vasant Kanya Mahavidyalaya College.

A. General Information	
Name of the institution	**Vasant Kanya Mahavidylaya**
Address	**Kamachha, Varanasi**
Contact Details	**0542-2455382, 09454329315**
Website	**www.vkm.org.in**
Location	**Urban**
B. Infrastructure	
Built up area (including others) **{2122.00 Sq. Mtr (VKM)}**	**3968.03 Sq.Mtr.**
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	**18**
PG	**11**
Ph.D.	**11**
Certificate	**4**
Diploma	**1**
Total No. of working days	**284 days**

D. Human Resources	
Total Staff	**Students – 2035** **Teaching – 72 (including Honorary)** **Non-teaching – 40** **(including contractual)** **Total - 2147**
Total Student uptake	**Intake – 3126** **(UG & PG)** **Admitted –2035** **(UG, PG & PhD)**
Teacher: Student Ratio	**1:28**
Girl Student: Boy Student Ratio	**144:1** ***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***

2. NEED FOR GREEN AUDIT

With environmental sustainability now a national priority, higher education institutions are increasingly expected to advance sustainable practices. A green audit provides a structured, systematic evaluation of a college's environmental footprint, enabling campuses to assess and improve their impact on the surrounding ecosystem. It involves the identification, quantification, documentation, and analysis of environmental components associated with institutional operations, such as energy consumption, waste management, water usage, biodiversity, air quality, and carbon emissions. The audit also examines institutional activities that may affect human health and the natural ecosystem, thereby supporting the implementation of effective sustainability measures and continuous environmental improvement.

As a strategic environmental management tool, the green audit helps identify opportunities to enhance resource efficiency, strengthen sustainable practices, and promote environmental responsibility across the institution through initiatives related to green campus development, water conservation, energy efficiency, waste reduction, and carbon footprint management.

In the contemporary context, the green audit serves as more than a procedural requirement, it acts as a critical mechanism for the reflective assessment of the institution's environmental footprint and its overarching commitment to sustainability. Vasant Kanya Mahavidyalaya demonstrates a strong commitment to responsible resource stewardship and sustainable academic practices. The college aligns with the Government of India's climate neutrality goals and regularly monitors the sustainability of its teaching and research activities through periodic green audits of its campus.

2.1 NAAC CRITERIA VII ENVIRONMENTAL CONSCIOUSNESS

The National Assessment and Accreditation Council (NAAC), New Delhi, has made it mandatory for all higher educational institutions to submit an annual Green, Environment, and Energy Audit Report from the academic year 2019–20 onwards. Green auditing is included under Criterion VII of NAAC, which evaluates institutional values and best practices and assigns grades such as A, B, or C based on performance. Furthermore, it is an integral part of the Corporate Social Responsibility (CSR) of higher educational institutions to actively contribute to mitigating global warming by adopting measures that reduce their carbon footprint. In this context, the Green Audit functions as an essential mechanism to improve and sustain environmental quality within and around the institution, fostering 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 is a systematic process that identifies, evaluates, and assesses whether an institution's practices are environmentally responsible, eco-friendly, and aligned with the 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 to monitor 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 AUDITAND ITS MANAGEMENT

A water audit serves as a comprehensive diagnostic tool for evaluating institutional water consumption through both qualitative and quantitative lenses. Its primary objective is to assess existing infrastructure and usage patterns to identify strategic opportunities to reduce, reuse, and recycle water resources effectively. This systematic approach is essential for benchmarking institutional performance against established national standards; for instance, the National Building Code of India (NBC, 2016) specifies that higher educational institutions without boarding facilities should maintain a water consumption target of 45 liters per capita per day. 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 at 96.61KL per day. Water usage on campus primarily supports drinking, sanitation, administrative operations, canteen services, gardening, and laboratory activities. The institution does not use an automatic leak detection system; instead, water leakages are managed through routine manual inspections and regular pipeline maintenance. The audit team reported no observable leaks within the system.

Water storage infrastructure comprises two overhead tanks, each with a capacity of 25 KL, of which 10 KL is earmarked for firefighting. In addition, four 1 KL tanks are installed in the A.B. Block, one 1 KL tank is located in the Home Science Department, and the Geography Department and the canteen each have a 500 L storage tank. Water from the overhead tanks is supplied to washrooms, basins, laboratories, and water purification units across the campus. Water coolers equipped with RO purifiers are provided in each building to ensure safe drinking water, and a third-party contractor is engaged by the college for their annual maintenance.

Wastewater Management:

- Wastewater generation across the campus is primarily derived from sanitary facilities, washrooms located on each floor of all buildings, and kitchen operations within the canteen.
- 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 2025 – May 2026 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	2035	91575
2.	Staff	112	5040
	Total	**2147**	**96615**

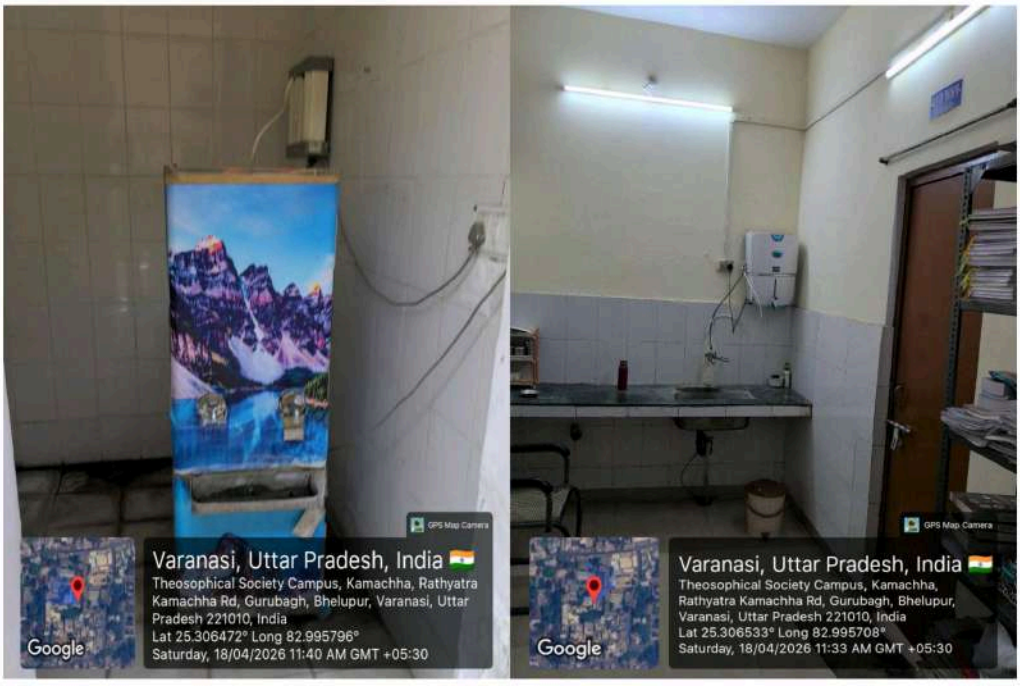


Fig. 2 Water Cooler and RO purification system installed within the college premises.

Water Conservation Initiatives:

1. The audit team did not observe any leakage of water from faucets or pipelines on campus.
2. Water dripping from air conditioners in the college is collected in buckets and reused for watering plants in the campus garden area.
3. Effluents from the Home Science Laboratory are channelled and reused for gardening purposes.
4. Rainwater harvesting is operational on campus under the scheme of the Government of Uttar Pradesh, which enhances campus water supply and helps maintain groundwater levels through recharge. Rainwater is collected from the terraces of the two main blocks and conveyed through pipes to an underground reservoir.

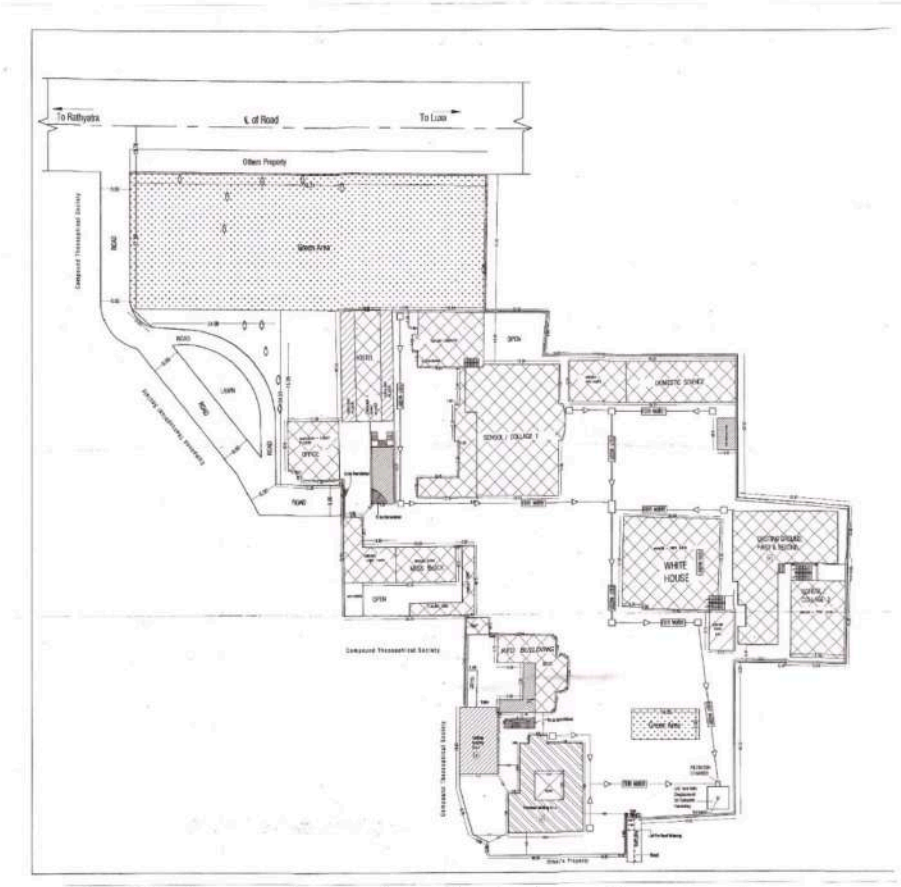


Fig. 3 Rainwater harvesting plan in the college premises.



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	**28**
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	**8 Pcs.**
	(5 Pcs. – 185 L;
	2 Pcs. – 260 L; 1 Pcs. – 150 L)
Flood lights	**5**
Street lights	**3**
Aquaguard water filters	**4 Pcs. Aquaguard with Water**
and coolers	**Cooler** **2 Pcs. Kent RO**
	1 Pcs. Aquaguard Water
	Purifier cum Water Cooler
	1 Pcs Usha water cooler and purifier **havells water**
Genset available and	**Diesel genset - 2 Pcs. (30**
capacity	**KVA each)**
Elevator	**1**
Laboratory Instruments	
Portable Tachistoscope	**02**
PT-123	

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

Energy sources utilized by all the departments and services of college include electricity. The average electricity consumption from June 2025 to May 2026 is 4777 KWH amounting to ₹ 46,857 @ ₹9.81 per unit. Electricity peak load is in the month of September 2025. All electricity supply to the campus is provided through the Indian Section of The Theosophical Society. The major energy consumption occurs in the administrative building, academic buildings, library, and canteen. In addition, the campus is equipped with two noise-free diesel generator (DG) sets, each of 30 kVA capacity, to meet essential energy requirements during power outages.

From June 2025 to May 2026, the average monthly consumption of diesel by the DG sets is 22.112 liters/month. Conventional tube lights, LED fixtures, and ceiling fans are installed in classrooms, halls, and the library. To promote efficient energy consumption and reduce electricity costs, the college has initiated the replacement of incandescent bulbs and conventional tube lights with LED lighting. For the academic year 2025–2026, the Department of Home Science consumed approximately 7 LPG cylinders, while the canteen kitchen uses about 2 LPG cylinders per month for cooking.

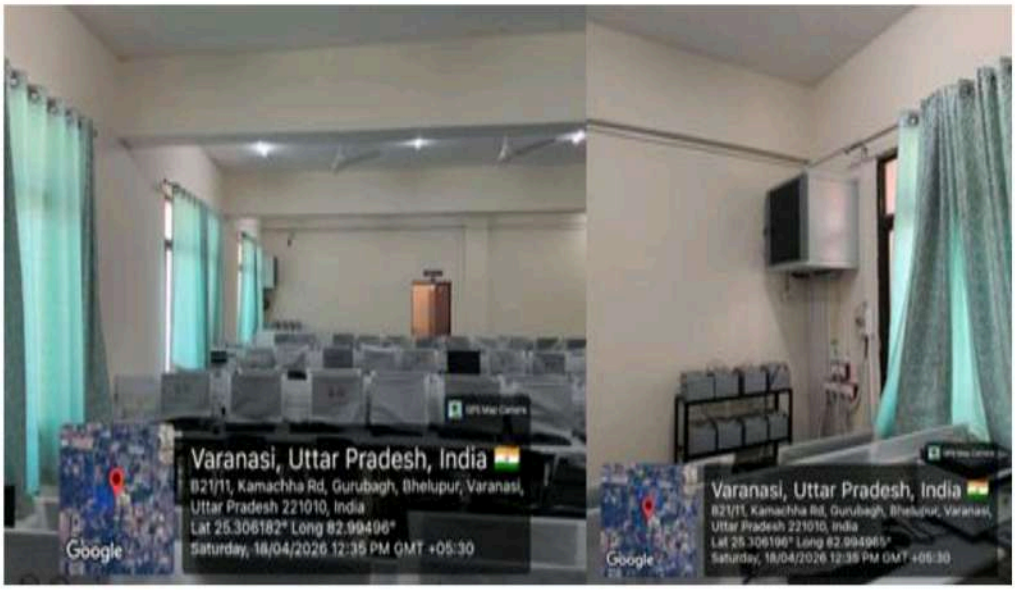


Fig. 5 New desktops computers installed in the college computer laboratory.



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

Table 5 Electricity consumption at VKM campus (2025-26).

Electricity load (Average of 2025-26) (Source: Electricity bill of the campus)

Months	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Average Daily Energy Usage (kWh)	**2819/30 = 93.96**	**4783/31 = 154.29**	**6363/31 = 205.25**	**7907/30 = 263.56**	**4799/31 = 154.80**	**3473/30 = 115.76**	**3950/31 = 127.41**	**4965/31 = 160.16**	**3369/28 = 120.32**	**4573/31 = 147.51**	**5150/30 = 171.66**	**5167/31 =166.67**

Months with peak load	**September 2025**
Average Electricity Usage (1 year)	

Month	Units Consumed (KWH)	Bill Amount Deduction for (Rs.) Unit@9.81	solar injection	**Total Amount (Monthly Average) – Rs. 46857**
June 2025	**2819.00**	**27654.00**	**-**	**Total Units (Monthly Average) – 4777 KWH**
July 2025	**4783.00**	**46921.00**	**-**	
Aug 2025	**6363.00**	**62421.00**	**-**	
Sept 2025	**7907.00**	**77568.00**	**-**	
Oct 2025	**4799.00**	**47078.00**	**-**	
Nov 2025	**3473.00**	**34070.00**	**-**	
Dec 2025	**3950.00**	**38750.00**	**-**	
Jan 2026	**4965.00**	**48707.00**	**-**	
Feb 2026	**3369.00**	**33050.00**	**-**	
Mar 2026	**4573.00**	**44861.00**	**-**	
Apr 2026	**5150.00**	**50522.00**	**-**	
May 2026	**5167.00**	**50688.00**	**-**	

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 of Vasant Kanya Mahavidyalaya.



Fig. 8 Energy saving 5-star AC installed in the Hall.

Signages: The college campus has signages reminding people to turn off the light and fans in the rooms and laboratories.

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 estimates the approximate use of petrol and diesel by vehicles operating within the college premises and records the measures taken by the institution to conserve fuel. Conventional vehicles on campus rely primarily on petrol and diesel as fuel sources. The majority of students, teaching and non-teaching staff, and visitors use two-wheelers and four-wheelers. The campus has about 20 four-wheelers consuming approximately 450 litres of fuel per month, and around 150 two-wheelers consuming about 900 litres of fuel per month.
3. **Details of Energy Audit are given in Table 6.**

Table 6 Fuel Energy Audit of Vasant Kanya Mahavidyalaya.

1.	Total number of Students	2035
2.	Total number of Teachers	72
3.	Number of non-teaching staff	40
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

4. **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 principal greenhouse gases (GHGs)—including carbon dioxide (CO_2), water vapor, methane (CH_4), nitrous oxide (N_2O), and ozone (O_3)—are the primary drivers of global climate change. Among these, carbon dioxide is the most significant anthropogenic emission, with atmospheric concentrations currently reaching approximately 416 ppm. These gases are primarily released through human activities, including industrial processes and the operation of mechanical systems. Consequently, an institutional carbon footprint serves as a vital metric, quantifying the total volume of greenhouse gas emissions generated by an organization's activities, operations, and infrastructure.

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 Standard (VCS). Among these, ISO 14064 is an independent, voluntary standard that supports the quantification and reporting of GHG emissions for organizations, events, products, and individuals.

Using data on the annual electricity bill, annual fuel consumption, and LPG usage of Vasant Kanya Mahavidyalaya (VKM), the institution's carbon footprint has been calculated by multiplying these values with their respective emission factors, yielding an estimated total of about 50.895 tonnes of CO_2 per year. A portion of these emissions is offset by remedial measures adopted by the college, equivalent to 2.31 tonnes of CO_2 for the year 2025–2026. Consequently, the effective carbon footprint of VKM College is 48.585 tonnes of CO_2 annually.

Table 8 Carbon Footprint Calculation for VKM for 2025-2026.

S. No.	Source	Rate	Quantity Days/ Year	Total Quantity	Annual Equivalent CO_2
1.	Electricity	0.82 $kgCO_2/kWh$	4700 kWh/month × 12	56400 kWh	30.07 T CO_2
2.	Fossil fuel (LPG Cylinder)	1.9 $kgCO_2/kWh$	19 kg × 7+ 19 kg × 2 × 12	589kg	1.11 T CO_2
3.	Fossil fuel (2-wheeler)	2.3 $kgCO_2eq/L$	30 liter/day × 284 days	8.52kL	19.6 T CO_2
4.	Fossil fuel (Cars)	2.3 $kgCO_2eq/L$	15 liter/day × 284 days	4.26kL	9.8 T CO_2
5.	Fossil fuel (DG Set)	2.3 $kgCO_2eq/L$	22.112 liter/month × 12	0.05kL	0.115 T CO2
				Total	**60.695 T CO2**

No. of working days in 2025-26: 284 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 Remediation for Carbon Footprint for VKM for 2025-2026.

S. No.	Source	Rate	Quantity Days/ Year	Total Quantity	Annual Equivalent CO2
3.	Solar Electricity	0.82 $kgCO_2/kWh$	100 kWh/Month× 12	1200 kWh	0.98 T CO2
4.	Cycles	2.68 kg/L	350 cycles × 284 days/50 × 4	0.497 T	1.33 T CO2
				Total	**2.31T CO2**

8. WASTE AUDIT AND ITS MANAGEMENT

Pollution caused by waste is not only aesthetically displeasing but also leads to significant litter accumulation within communities, which can give rise to various health problems. Solid waste refers to discarded or non-useful solid materials generated through routine human activities. Proper solid-waste management is critical to prevent environmental degradation and to reduce the risk of health hazards associated with poor

waste disposal.

Waste generation on campus

Data on solid waste generation at VKM Campus were collected from all academic buildings and support facilities. The campus generates various types of waste, including paper, canteen waste, plastic, and electronic waste, which have been classified into biodegradable and non-biodegradable categories. Waste bins have been placed strategically on each floor and in key locations such as staff rooms, laboratories, washrooms, kitchens, and open campus areas.

To ensure efficient segregation and collection, disposal units are strategically positioned on every floor and in critical locations, including faculty offices, laboratories, sanitation facilities, food service areas, and common open spaces.

Liquid waste from the Psychology and Home Science laboratories was also recorded.

Environmental assessments conducted across the campus premises indicated no hazards pertaining to municipal dumping sites, waste accumulation, sewage infrastructure, or open drainage systems in the vicinity.



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

Biodegradable wastes

Biodegradable waste, such as food waste, canteen waste, and other organic materials, is collected and deposited into designated compost pits on campus. The organic matter is allowed to undergo composting, reflecting a sustainable waste-management practice. In addition to kitchen waste, organic materials like leaf litter and terrestrial weeds generated during campus maintenance are also composted. Paper waste from classrooms, libraries, and offices is collected separately and sold to scrap dealers. Human waste is managed through the municipal sewage system, and adequate dustbins are installed across campus buildings to minimize littering and maintain cleanliness.

Non-biodegradable waste

Non-biodegradable waste, particularly e-waste, is periodically identified and removed by the college's designated committee and handed over to authorized scrap dealers for recycling. Other non-biodegradable wastes, such as plastics, glass, unused equipment, and sanitary napkins, are disposed of through the municipal waste management system, ensuring proper handling and reducing environmental impact.

Liquid waste disposal

The liquid waste produced in the Home Science laboratory is reused for watering nearby flower beds on campus. Compost prepared from organic waste is also applied as a natural fertilizer for these plantations, supporting sustainable landscaping and soil fertility.

Hazardous waste

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

9. GREEN CAMPUS MANAGEMENT

Water Quality Assessment

Water samples from the three borewells, which serve as the main water sources for the VKM campus, were collected and analysed for their physicochemical parameters. The samples were collected systematically, preserved, and transported to the laboratory, where they were analysed for key parameters such as dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids, and salinity. The results are presented in Table 10 are found to be comparable with the drinking-water quality standards prescribed by national and international 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	7.1	7.3	7.6	6.5-8.5
2.	Total Dissolved Solids (ppm)	565	590	510	500
3.	Dissolved Oxygen (mg/l)	6.3	6.8	6.5	6-8
4.	Turbidity	Nil	Nil	Nil	1 NTU
5.	Conductivity (µs)	165	145	150	-
6.	Acidity (mg/l)	43	38	42	200

7.	Alkalinity (mg/l)	23	21	20	200
8.	Salinity (ppt)	0.71	0.75	0.70	-
9.	Hardness (Total)	164	167	167	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 below.

Table 11 Soil Quality Assessment of Vasant Kanya Mahavidyalaya.

S. No.	Parameter	Location 1 (Garden)	Location 2 (Ground)
1.	pH	7.4	7.1
2.	Total Kjeldhal Nitrogen (mg/kg)	2.9	2.5
3.	Total organic carbon (%)	1.6	1.3
4.	Phosphate (mg/kg)	0.41	0.27

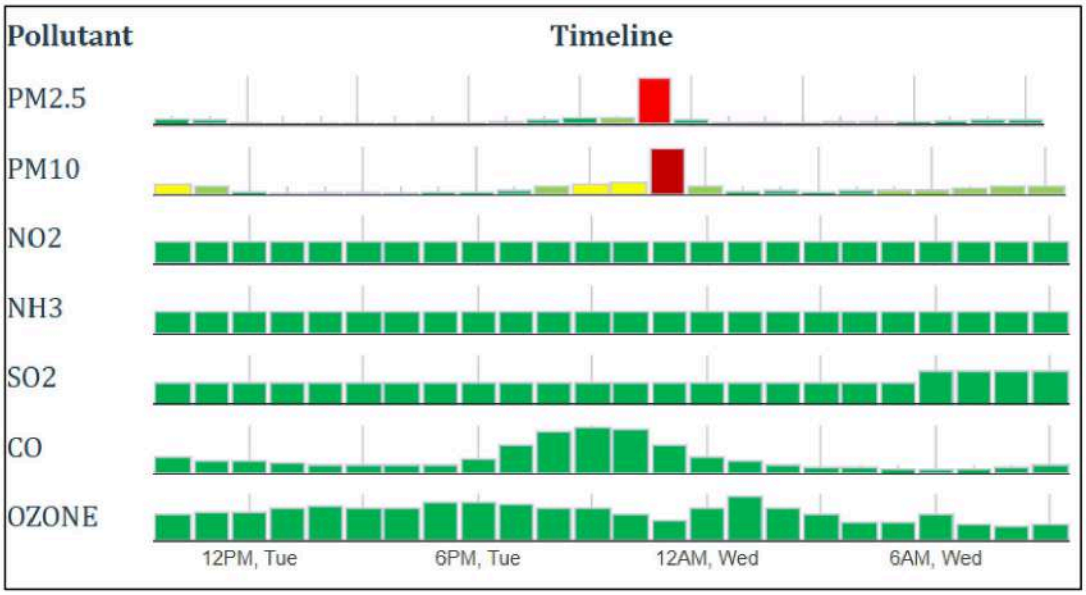


Fig. 12 Concentration of air pollutant on the day of audit (8/04/2026) of Vasant Kanya Mahavidyalaya.

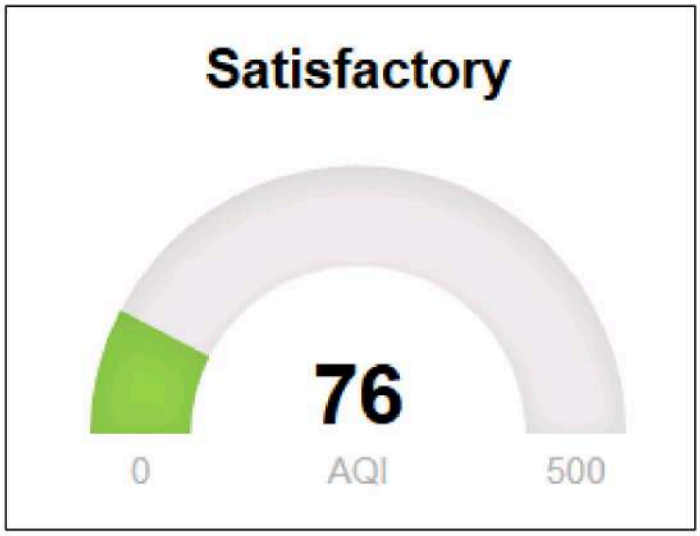


Fig. 13 Air Index on the audit day (8/04/2026) of Vasant Kanya Mahavidyalaya.

Green cover

VKM Garden is rich in biodiversity, hosting approximately 105 species of plants, shrubs, and trees across an area of about 2,087.46 square meters. Students use this space to relax, read, and spend time during breaks. The campus comprises four blocks- A, B, C, and D along with the adjoining Theosophical Society area, all of which are well-greened and filled with vegetation. Most plantations consist of ornamental and fruit-bearing species, and the college organizes two plantation drives annually: the "Varsha Mangal" programme in July and a 7-day NSS camp during which students plant around 100 saplings. There is no separate botanical, medicinal, or vegetable garden; plants are grown naturally across the campus and scientific names are not displayed. A small patch of mango and jackfruit trees is maintained in the Theosophical Society area. Watering is primarily done using groundwater from borewells, supplemented by overflow water collected from rooftops. The college avoids chemical fertilizers and pesticides, relying instead on organic manure prepared in its compost pits. The garden also serves as a refuge for rare species, including *Santalum album* (Chandan), which is conserved on campus.

Green Initiatives by the College

1. **Tree Plantations & Environment initiatives under National Service Scheme**

   From time to time, College organizes programmes to spread awareness about environmental issues. NSS programmes focus on tree plantation, cleanliness campaigns across the campus and classrooms, and outreach programmes in nearby villages focusing on environmental conservation, discouraging polythene use, and addressing excessive mobile usage.

Key Initiatives (2025)

- January 21: "Swabhav me Swachhata" campaign including school interaction, rally, cleaning of Panchvati Sarovar & Mandir, Nukkad Natak, and motivational address by Dr. Rajeev Lochan Behra.
- January 23: Dental Care & Environmental Protection Programme (BHU Dental Team), free check-up, plantation drive, and speech competition.
- September 29: Tree plantation on Annie Besant Birth Anniversary and NSS camp with environmental pledge and planting of neem, guava, pomegranate, and curry leaf saplings.
- October 30: Campus Cleanliness Drive.

Recent Programmes (2026)

- March 13 (7-day NSS Camp): Focus on *Skill Development Among Youth* with training on *Waste Management Skills* emphasizing the 3Rs – Reduce, Reuse, Recycle.
- April 22: Earth Day celebration promoting awareness on climate change, pollution, and biodiversity (organized by Geography Department – Club IDIKA).

2. Annual village camp

UBA is an ambitious outreach programme launched by Ministry of Human Resource Development in 2014. Most of the Central Universities and Colleges are associated with this programme. Vasant Kanya Mahavidyalaya joined the programme in 2018 and since then has been making significant contributions in uplifting and empowering the village life. The UBA Cell of VKM conducted the following programmes during the session 2025-26 :

1. A Free Dental Checkup Camp in collaboration with Ashwa Vegan Globe

and VKM, UBA Cell was organized on 07.03.2025 for Spreading Awareness about Hygiene and Cleanliness regarding healthy gums and Teeth.

2. UBA and Sports Committee in collaboration with Gramsabha Bariyasanpur and Mahadev P.G. College, Bariyasanpur organized a Kabaddi Fest on 17.04.2025 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. takes good care of gardening and plantation. The campus has 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 reliance on conventional materials like bricks.



Fig. 15 Minimizing the usage of bricks by reusing waste coconut shells in gardening.

5. 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.



Fig. 16 Initiatives taken to promote plastic free campus.

- 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.

6. 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.

7. Flora in the VKM campus:

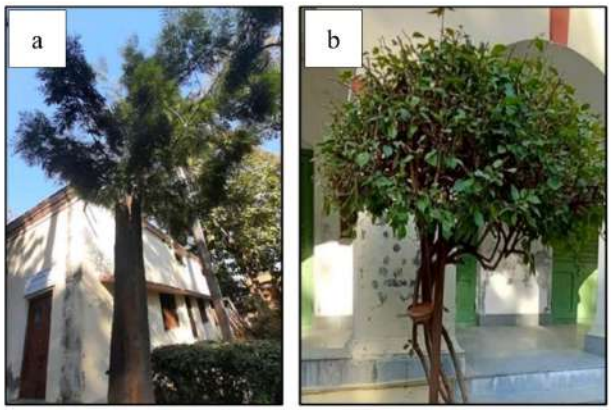
The campus of Theosophical society and VKM is rich in biodiversity. The campus boasts of 102 species of flora in the campus which are listed in the Table 12.

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

S. No.	Name	Botanical Name	Category	Quantity
1.	Acalypha	*Acalypha Wilkesiana*	Shrub	01
2.	Adenium (desertroses)	*Adenium*	Tree	01
3.	Ajwain	*Trachyspermum ammi*	Herb	01
4.	Alchornea	*Alchornea cordifolia*	Shrub	12
5.	Allamanda	*Allamanda cathartica*	Shrub	01
6.	Almond tree	*Prunus dulcis*	Tree	01
7.	Aloe vera	*Aloe barbadensis miller*	Herb	01
8.	Alpinia	*Alpinia galanga*	Herb	08
9.	Amaltas	*Cassia fistula*	Tree	01
10.	Anjeer	*Ficus carica*	Tree	02
11.	Areca Palm	*Dypsis lutescens*	Tree	05
12.	Arjun	*Terminalia arjuna*	Tree	02
13.	Ashok	*Saraca indica Linn*	Tree	18
14.	Ashoka	*Polyalthia longifolium*	Tree	15
15.	Bamboo	*Bambusoideae*	Grass	02
16.	BananaPalm	*Musa*	Tree	01
17.	Begonia'Vista	*King begonia*	Tree	01
18.	Bela (Mogra)	*Jasminum sambac*	Shrub	01
19.	Bottle Palm	*Hyophorb eleganicaulis*	Tree	03
20.	Bottlebrushes	*Callistemon citrinus*	Tree	01
21.	Cat Palm	*Chamaedorea cataractum*	Tree	02
22.	Champa	*Michelia*	Shrub	04

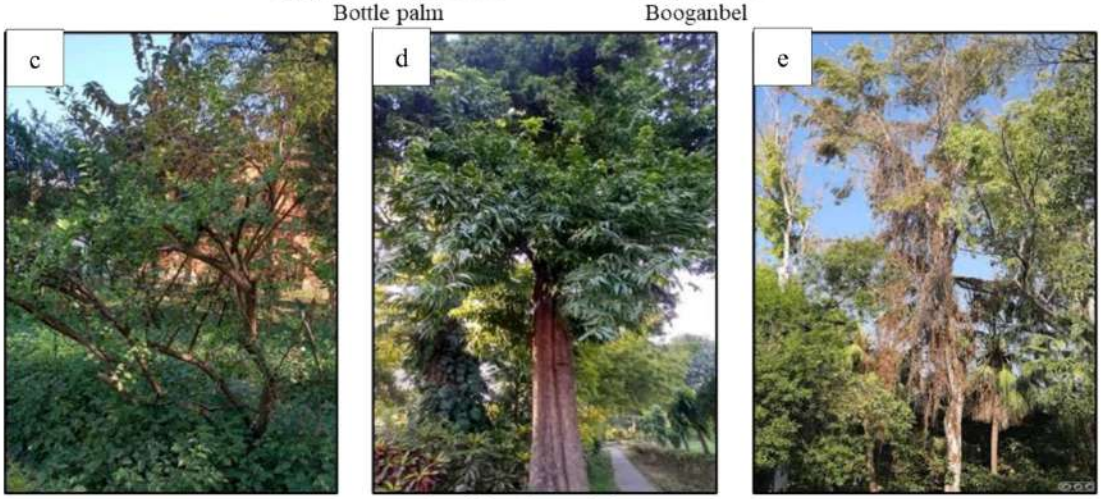
23.	Chandan	*Santalum album*	Tree	01
24.	Chandni	*Tabernalmontana divaricata*	Shrub	02
25.	China Palm	*Liuistona chinesis*	Tree	05
26.	Christmas Tree	*Araucaria hetrophylla*	Tree	06
27.	Coleus	*Coleus*	Shrub	01
28.	Croton	*Codiaeum variegatum*	Shrub	08
29.	Crown-of-thorns	*Euphorbia milii*	Shrub	04
30.	Cycas	Cycas revluta	Shrub	01
31.	Cycas Zamia	*Zamia*	Shrub	01
32.	Dabal Bonchi	*Psoralea corylifolia*	Herb	13
33.	Dahlia	*Dahlia*	Herb	06
34.	Double Bensia	Double Bensia		01
35.	Dracaena	*Dracaena fragrans*	Shrub	05
36.	Dracaena Reflexa	*Dracaena reflexa*	Shrub	01
37.	Dumb Cane Plant	*Dieffenbachia bowmannii*	Herb	01
38.	Duranta	*Duranta erecta*	Shrub	Hedge
39.	Fan Palm	*Livistona chinensis*	Tree	04
40.	Fern	*Tracheophyta*	Fern	02
41.	Fig (Anjeer)	*Ficuscarica*	Tree	02
42.	Fishtail Palm	*Caryota*	Tree	09
43.	Forbia			04
44.	Gandhraj	*Gardenia jasminoides*	Shrub	01
45.	Giant Bamboo	*Dendrocalamus giganteus*	Grass	01
46.	Giloe	*Tinospora cordifolia*		01
47.	Guava Plant	*Psidium guajava*	Tree	02
48.	Gudhal	*Hibiscus*	Shrub	12
49.	Guldaudi	*Chrysanthemum*	Herb	03
50.	Gulmohar	*Delonix regia*		01
51.	Harjor magnolia	*Cissus quadrangularis*		01
52.	Henna	*Lauesonia inermis*	Tree	01
53.	Hibiscus	*Malvaviscus*	Shrub	03
54.	Ixora	*Ixora coccinea*	Shrub	01
55.	Jackfruit Tree	*Artocarpus heterophyllus*	Tree	01
56.	Jasmine	*Tabernaemontana divaricata*	Tree	09
57.	Kachnar tree	*Bauhinia variegata*	Tree	01
58.	Kalanchoe Pinnata	*Bryophyllum pinnatum*	Herb	03
59.	Kalmegha	*Andrographis paniculata*		
60.	Kamini	*Murraya paniculata*	Shrub	05
61.	Kaneiror Kane	*Cascabela thevetia*	Shrub	02
62.	Kochia Grass	*Bassia scoparia*	Herb	17

63.	Kohler Denta			01
64.	Peace Lily	*Spathiphyllum*	Herb	Hedge
65.	Koyaliya			Hedge
66.	Lalpatti	*Iresineherbstii*	Shrub	01
67.	Lemon grass	*Cymbopogon*		01
68.	Lily	*Lilium*	Herb	01
69.	Mango	*Mangifera indica*	Tree	03
70.	Marigold	*Tagetes minuta*	Tree	22
71.	Money Plant	*Epipremnum aureum*	Climber	01
72.	Monstera Plant	*Monstera deliciosa*	Shrub	01
73.	Morpankhi	*Platycladus orientalis*	Tree	02
74.	Moulsari Tree	*Mimusops elengi*	Tree	01
75.	Naagdon	*Euphorbia tithymaloides*	shrub	04
76.	Neem Tree	*Azadirachta indica*	Tree	04
77.	Night-blooming jasmine (RatRani)	*Cestrum nocturnum*	Shrub	02
78.	Night-flowering Jasmine (Parijat)	*Nyctanthes arbor-tristis*	Shrub	02
79.	Parlour Palm	*Chamaedorea elegans*	Tree	04
80.	Pathar chatta	*Kalanchoe pinnata*		01
81.	Petunia	*Petunia*	Herb	02
82.	PonytailPalm (Lolina)	*Beaucarnea recurvata*	Tree	01
83.	Prass			01
84.	Raphis Palm	*Rhapis excelsa*	Tree	01
85.	RedHedge			Hedge
86.	Rose	*Rosa rubiginosa*	Shrub	03
87.	Rubberplant	*Ficus elastica*	Tree	01
88.	Sadabahar	*Catharanthus roseus*	Shrub	02
89.	Satavar 2	*Asparagus racemosus*		02
90.	ShirishaTree	*Albizia nedbeck*	Tree	02
91.	Sleeping Hibiscus/ Mirchi Gudhal	*Malvaviscus*	Shrub	01
92.	Snake Plant	*Sansevieria trifasciata*	Shrub	01
93.	Spiral ginger	*Costus speciosus*		02
94.	Swarnachampa	*Magnolia champaca*	Tree	01
95.	Tecoma	*Tecoma stans*	Shrub	01
96.	Tengri			04
97.	Tree Ferns	*Cyatheaceae*	Fern	00
98.	Tulsi	*Ocimum tenuiflorum*	Herb	10
99.	Vicks	*Plectranthus tomentosa*		01
100.	Wela			03
101.	White Hibiscus	*Hibiscus rosa-sinensis*	Shrub	01
102.	Yellow Kaner	*Cascabela thevetia*		01



Hyophorbe lagenicaulis
Bottle palm

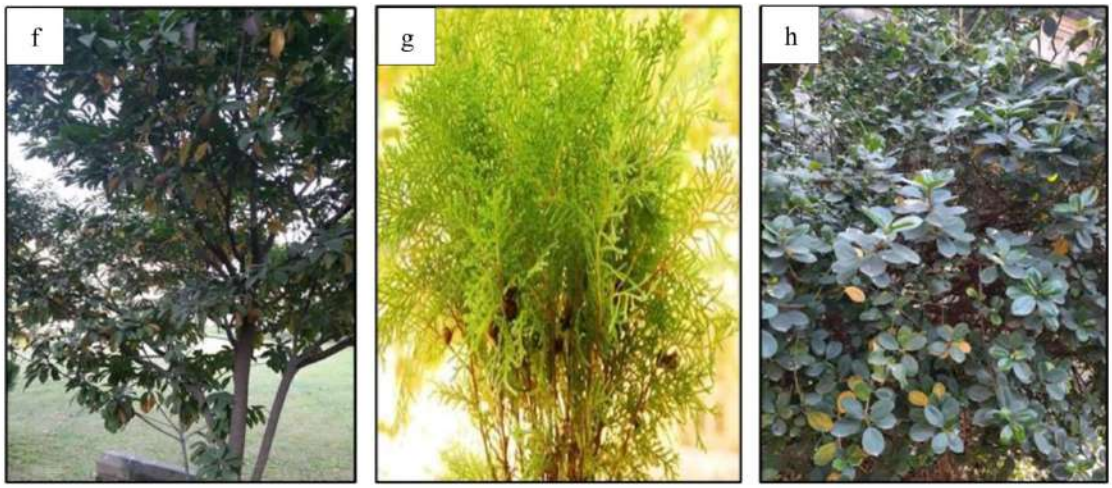
Bougainvillea
Booganbel



Citrus limon
Lemon

Polyalthia longifolium
False Ashoka

Eucalyptus
Gum tree



Manilkara zapota
Chikoo

Platycladus orientalis
Morpankhi

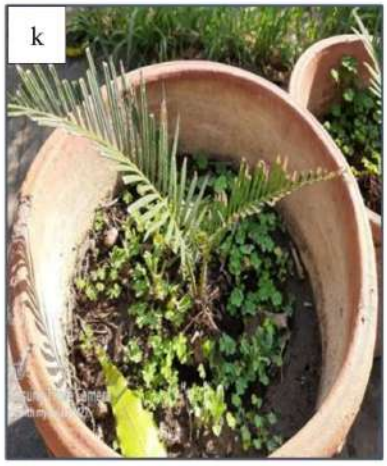
Ficus elastica
Rubber fig



Arlaleotrys odoratissimus
Nag champa



Bombax ceiba
Semal



Zamia
Cycas Zamia



Liuistona chinesis
China palm



Ficus carica
Anjeer



Calliandra haematocephala
Red powder puff



Terminalia caloppa
Kaath badaam



Cordia dichotoma
Lasoda



Santalum album
Chandan

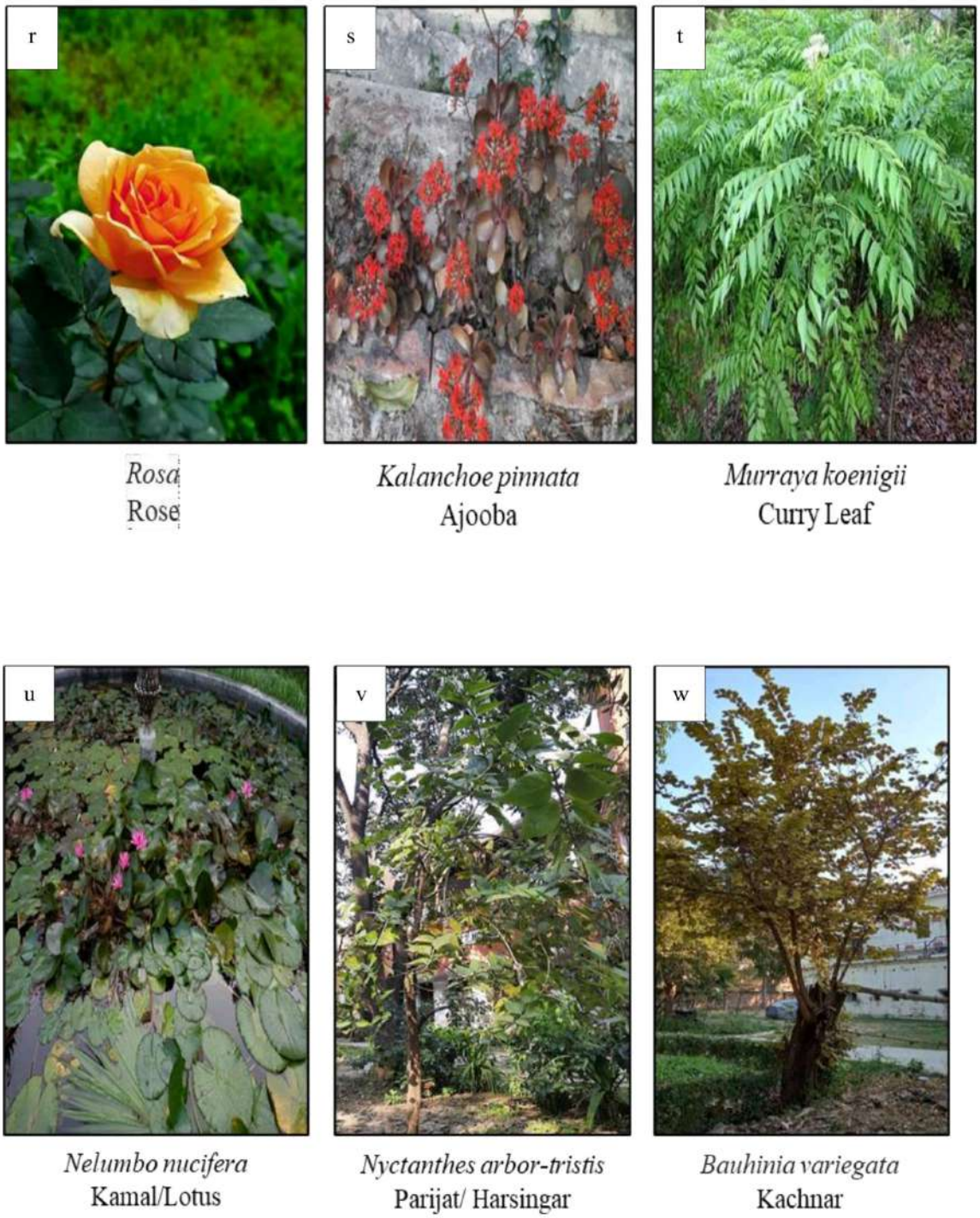


Fig. 17 Major flora (a-w) at Vasant Kanya Mahavidyalaya.

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.

- The total student enrollment at Vasant Kanya Mahavidyalaya increased from 1,924 students in the 2024-2025 session to 2,035 students in the 2025-2026 session. Correspondingly, the daily water consumption on campus rose from 91.35 KL in the 2024-2025 session to 96.61 KL in the 2025-2026 session, reflecting the increased number of individuals using campus facilities.
- Maintain and build upon existing successful practices, such as composting organic waste for natural fertilizer and creatively reusing items like coconut shells for gardening, to ensure ongoing sustainable resource management.

- Despite an increase in total working days during the 2025-2026 session, average electricity consumption decreased compared to 2024-2025. This reduction is primarily attributed to the institution's continued transition to energy-efficient, 5-star rated appliances, including lighting, air conditioners, and refrigerators.
- Waste segregation and separate waste-bins with lids should be installed for the disposal of different kinds of solid waste.
- "Switch off" drills is needed in the campus to create awareness among the students for energy conservation.
- Scientific names of the plants and trees in the campus premises should be displayed to portray the rich biodiversity of the institution.
- Waste water from RO be used for irrigating plants in pots.

Progression towards sustainable campus

The session 2025–2026 demonstrates a progressive shift towards institutional sustainability. Despite a higher total student enrollment (2,035) compared to the previous session (1,924), the college successfully achieved a reduction in average electricity consumption, attributed to the systematic replacement of older appliances with 5-star rated, energy-efficient technology and the strategic integration of the 100KVA rooftop solar array. Furthermore, the effective annual carbon footprint exhibited a commendable downward trend, decreasing by approximately 15% relative to previous reporting cycles. These indicators along with continued commitment to organic waste composting and innovative resource reuse, underscore Vasant Kanya Mahavidyalaya's strengthening trajectory toward climate neutrality and operational environmental efficiency.
