



Maratha Vidya Prasarak Samaj's  
**ARTS AND COMMERCE COLLEGE, SATPUR**

Janta High School Campus, Satpur,  
Tal.: Nashik, Dist.: Nashik (Maharashtra) Pin : 422007

PH.: 0253-235410

E-Mail : [srcollege.satpur@mvp.edu.in](mailto:srcollege.satpur@mvp.edu.in)

Website : <https://mvpsatpurcollege.ac.in/>

College Code : 0897

Centre No. : 0897

AISHE : C-41756

*Principal : Dr.D.G.Ushir, M.A., M.Phil., Ph.D.*

**Affiliated to Savitribai Phule Pune University, Pune College ID – PU/NS/AC/141/2009**

## 7.1: Institutional Values and Social Responsibilities

**7.1.3: Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following**

Sr. No.	Documents
1	Green audit / Environment audit
2	Energy audit
3	Clean and green campus initiatives
4	Beyond the campus environmental promotion activities



**Eureka Environment Consultant**

*We Care Our Environment*

Add: B 204, Akshar Residency, Near Shivkrupa Nagar, Hirawadi, Panchwati, Nashik - 422003.

## Green Audit Certificate

This is to certify that the Eureka Environment Consultant conducted “**Green Audit**” for “**Maratha Vidya Prasarak Samaj’s, Arts and Commerce College, Satpur, Nashik - 422007 (M.S.) India**” in February 2022. The audit focused on assessment of the green initiatives, planning and implementation of the college campus that consisted of “Green Campus Management, Green Cover, Plantation, Waste Management, Rainwater Harvesting and conservation of energy etc., We appreciate the efforts of the college and issue the certificate of ‘Green Audit’ for the year 2021-22.

Place: Nashik

Date: 28.03.2022



*M. K. Kulkarni*

Eureka Environment Consultant, Nashik  
Certified Lead Auditor  
ISO 14001:2015 (Certification No.  
IN/14019/144785)

**Maratha Vidya Prasarak Samaj's**

## **Arts and Commerce College, Satpur**

Post-Satpur Tal: Nashik Dist: Nashik Pincode: 422007

# **Green Audit Report**

**Academic Year 2021-22**



**Prepared by**

**Eureka Environment Consultant**

**Nashik - 422002**

# INDEX

Sr. No.	Contents	Page No.
<b>1.</b>	<b>Introduction</b>	1 - 7
	1.1 Green Audit	1
	1.2 Benefits of Green Audit	2
	1.3 Requirements of NAAC Accreditations	3
	1.4 Profile of Maratha Vidya Prasarak Samaj	4
	1.5 Profile of Arts and Commerce College, Satpur	5
<b>2.</b>	<b>Methodology Used for Green Audit</b>	8 – 9
	2.1 Pre Audit Stage	8
	2.2 Onsite Audit	9
	2.3 Post Audit Stage	9
<b>3.</b>	<b>Environmental Aspects Covered under Green Audit</b>	10 – 28
	3.1 WATER ENVIRONMENT	10
	3.1.1 Water Audit	10
	3.1.2 Water Storage Capacity	11
	3.1.3 Quantification of Wastewater	13
	3.1.4 Rainwater Harvesting	14
	3.2 AIR ENVIRONMENT	14
	3.3 NOISE MONITORING	17
	3.4 SOLID WASTE MANAGEMENT	20
	A. Segregation of Solid Waste	21
	B. Hazardous Waste	23
	C. E-Waste	24
	3.5 GREEN COVER OF COLLEGE CAMPUS	26
<b>4.0</b>	<b>Energy Conservation Practices:</b>	30-32
<b>5.0</b>	<b>Environmental Awareness Programs</b>	32-45
<b>6.0</b>	<b>Conclusion and Recommendation</b>	45-47

## LIST OF TABLES

<b>Sr. No.</b>	<b>Table Description</b>	<b>Page No.</b>
1.1	List of Branches in Higher Education	5
1.2	Courses offered by College	7
2.1	College Green Audit/ Environmental Conservation Committee	8
3.1	Total Population of the Campus and Water Quantity Requirement	10
3.2	Drinking Water (Well Water) Analysis Results	11
3.3	Quantification of wastewater generation on college campus	13
3.4	Rooftop rainwater harvesting potential of Arts and Commerce College, Satpur	15
3.5	Area for surface rainwater harvesting potential of Arts and Commerce College, Satpur	17
3.6	Surface rainwater harvesting potential of Arts and Commerce College, Satpur	17
3.7	Air Quality Status of Satpur	19
3.8	Noise Monitoring Results in the College Campus	22
3.9	Quantity of solid waste generation:	23
3.10	Segregation of Solid Waste	24
3.11	Green Cover Calculations	26
3.12	List Available trees on college campus	27
3.13	List of Common ornamental plants available on college campus	28
3.14	Floor wise Building Plan	29
3.15	Details of energy efficient electrical equipment	29

## LIST OF FIGURES/ PHOTOGRAPHS

<b>Sr. No.</b>	<b>Contents</b>	<b>Page No.</b>
1	Google Image of Arts and Commerce College, Satpur	6
2	Layout Map of Arts and Commerce College, Satpur	7
3.	Physico-chemical Assessment of Drinking Water	12
4.	Bacteriological Assessment of Drinking Water	12
5.	Monthly Rainfall for an Average Year	15
6.	Picture showing rainwater harvesting pit and pipe coming through rooftop	18
7.	Design of Rainwater harvesting pit	18
8.	Air Quality Status of Satpur	19
9.	Noise Monitoring Photographs	20
10	Noise Level Monitoring	22
11	Segregation of Solid Waste	23
12	Chart for the classification of the solid waste generated	24
13	Green Cover Map of the College Campus	26
14	Green Lawn and Trees on College Campus	27
15	Photos shown Solar Street Light Installed in College, Campus	30
16	Photo showing energy conservation signage's displayed on college campus	30
17	Plantation Activities in and Around the College	31

## **1.0 Introduction**

The two major outputs of the twentieth century, modernization and industrialization, have made human life more luxurious and comfortable. They are, on the other hand, responsible for the indiscriminate use of natural resources, the exploitation of forests and wildlife, the production of huge solid waste, the pollution of limited and sacred water supplies, and, ultimately, the unsightly and inhospitable state of our mother Earth. People are becoming more aware of global issues such as global warming, the greenhouse effect, ozone depletion, and climate change, among others. Mother Earth is now thought to have made her final decision. It is past time for people to wake up, unite, and fight for a more sustainable environment.

Green Audit is the most effective ecological instrument for resolving such issues. This type of audit was created in the late 1970s with the goal of inspecting the work that was being done within the institution. It is the systematic identification, quantification, recording, reporting, and analysis of ecological diversity components, as well as the financial or social expression of the same. Green audit provides guidance on how to improve the environmental conditions.

### **1.1 Green Audit**

Green Audit assists colleges in determining whether they are overusing or underusing various types of environmental resources such as water and energy. It also helps in the assessment of college's impact on numerous environmental factors. Green auditing raises health awareness while also raising environmental awareness. The goal of the green audit is to improve understanding of green impacts on college campuses and encourage resource sustainability. If self-assessment is a natural and necessary part of a good education, institutional self-assessment may be said to be a natural and necessary part of a good educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

People have recently been observed to be unconcerned about the environment. Human actions have a direct or indirect negative impact on the environment, resulting in a variety



of environmental challenges. The increase in world population, significant advances in science and technology, and globalization are all contributing to changes in the eco system. Global warming, ozone depletion, air pollution, and water pollution are some of the issues that develop as a result of this. 'Environmental Audit' is another name for 'Green Audit.' It is the most environmentally friendly method of resolving environmental issues.

Furthermore, in any educational institution, a clean and healthy environment is one of the desired pre-requisites. To achieve this, our institution places a strong emphasis on implementing green practices and raising environmental awareness among all of its stakeholders. This process of making the campus eco-friendly is made easier by the active participation of stakeholders. Adopting energy saving methods, proper waste management, waste water treatment, and tree plantation are some of the strategies employed to make the campus environmentally friendly. Rainwater harvesting, solar street lamps, solid and liquid waste, greening the campus, and no vehicle day are all examples of green practices. Furthermore, the college has an active Eco club that organizes numerous activities to raise student awareness, such as awareness rallies and competitions. Further, academic activities such as study tours/visits. Cleaning of campus and the nearby villages on different occasion and projects are also arranged in accordance to Green policy

### **1.2 Benefits of Green Audit:**

In recent years, a Green Audit of an institution has become increasingly significant for self-assessment, as it represents the organization's participation in addressing current environmental issues. Since its establishment, the institution has worked to keep our surroundings clean. As a result, the current green audit's goal is to identify, quantify, explain, and prioritize a framework for environmental sustainability that complies with applicable rules, policies, and standards.

The Government of India issued the National Environment Policy 2006 in 2006, making green auditing essential for all industries. According to the policy, it is a reaction to India's national commitment to a clean environment, as enshrined in Articles 48 A and 51 A (g) of the Constitution (DPSP), and bolstered by judicial interpretation of Article 21. (National Environmental Policy 2006). It is acknowledged that maintaining a healthy environment is not just the responsibility of the government. Every citizen bears responsibility, and via the country's environmental management, a spirit of partnership is to be established.



The Supreme Audit Institution (SAI) formalized the environmental audit process by following the rules outlined in the Manual of Standard Orders (MSO) released by the Authority of the Controller and Auditor General of India in 2002. The Supreme Audit Institution of India is the country's highest national auditing institution. Because of the necessity for environmental accountability, NAAC, an autonomous agency under the UGC, has included the notion of environmental audit in university and college accreditation processes.

Furthermore, it is part of the Higher Educational Institutions' corporate social responsibility to ensure that they contribute to the decrease of global warming through carbon footprint reduction methods.

- It would aid in the preservation of the ecosystem on and around campus.
- Recognize cost-cutting strategies such as waste reduction and energy conservation.
- Determine the current and upcoming difficulties.
- Give the organization the tools it needs to improve its environmental performance.
- It promotes a positive image of the university by maintaining a clean and green campus.
- Finally, it will contribute to the creation of a favorable impression for the future NAAC visit.

### **1.3 Requirements of NAAC Accreditations**

When asked why Environmental Audits, which are required for industries, are also required for educational institutions, the only answer that comes to mind is: The possibility for environmental conservation and growth in educational institutions is the only response that appears at that moment.

According to NAAC Criterion VII, institutional values and best practices, a college must respond to a variety of questions about environmental sustainability and conciseness. The questions such as Weather institution has facilities for alternate sources of energy and energy conservation measures? Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste? Water conservation facilities available in the Institution, Green campus initiatives implemented by college. In

this regards, throughout the year every college runs various types of actives. College prepare various policies to maintain and support environment.

Under Criterion VII sub point 7.1.6 every college needs to conduct Green Audit, Energy Audit, Environmental Audits etc., and need upload the reports in every years AQAR. The goal of making all of these audits mandatory through NAAC is to help universities become more environmentally friendly and sustainable. NAC has included these challenges in its assessment of the need of the hour, recognising that schools can better achieve the United Nations' Sustainable Development Goals.

#### 1.4 Profile of Maratha Vidya Prasarak Samaj's



The 108-year-old Maratha Vidya Prasarak (MVP) Samaj in Nashik is a well-known educational institution in Maharashtra. MVP Samaj's great thinkers correctly laid the "*Bahujan Hitay, Bahujan Sukhay*" foundation. The institute aspires to offer the horizons of education to the impoverished sectors of society, as its slogan states, "well-being and happiness of the masses." Discipline, Quality, and Transparency are the three guiding principles of the institute.

The Institute began as a boarding school in 1914, with 5 students and a grant of Rs. 1000/- from Rajarshi Shahu Maharaj, the then Chatrapati of Kolhapur. This 100 years old renowned

educational institute is in the jurisdiction of University of Pune. At present, the total number of students in its 350 educational and professional institutions is 1,81,683, with a total of 7,478 staff. The budget for the year is Rs. 275 crores. The spectrum of educational institution encompasses Primary Schools, Secondary Schools, Graduate & Postgraduate Colleges, Professional & Vocational Colleges. It was one of the greatest milestones in the pre-independence history of Nashik. The wellbeing in general and education in particular were considered the sole of human being.

The founders of the samaj were inspired and driven by the great work of *Mahatma Jyotiba Phule* and *Chhatrapati Rajarshi Shahu Maharaj* of Kolhapur. The pioneers, devoted and dedicated team of MVP Samaj includes the names of great social workers and educationalists as – *Karmaveer Raosaheb Thorat, Bahusaheb Hiray, Kakasaheb Wagh, Annasaheb Murkute, Ganpatdada More, Kirtiwanrao Nimbalkar, D.R.Bhosale, Vithoba Patil Jadhav*. The students & professionals produced by the institutions of NDMVP Samaj form the real backbone of modern society.

**Table No. 1.1 List of Branches in Higher Education**

<b>Sr.No.</b>	<b>Institution Type</b>	<b>Number</b>
<b>2</b>	Agriculture College	01
<b>3</b>	Arts, Science & Commerce Colleges	17
<b>4</b>	College of Architecture	01
<b>5</b>	College of Education (B.Ed)	01
<b>6</b>	College of Engineering	01
<b>7</b>	College of Pharmacy	01
<b>8</b>	D.Ed. College	01
<b>9</b>	Institute of Management & Research	05
<b>10</b>	Institute of Pharmaceutical Sciences	01
<b>11</b>	Law College	01

### **1.5 Profile of MVP's Arts and Commerce College:**

Satpur is known as Industrial suburb of Nashik. Maratha Vidya Prasarak Samaj established Arts and Commerce College, Satpur in 2009, to cater the needs of

economically backward classes and industrial workers. Our college greatly contributes to the students who could not afford to go for the higher education in Nashik city or elsewhere. Satpur is only seven kilometers away from Nashik. It is affiliated to Savitribai Phule Pune University, Pune. It has full-fledged Arts and Commerce faculties leading to UG degree. The college always pays attention towards the holistic development of the students. It strives to create a stimulating environment which will inculcate value-based learning along with Skills Development which in turn will be useful for the Personal and Social Development. The college has earned a name and fame for its academic excellence, regularity and punctuality of execution of different schemes, its rigorous discipline, administrative control, and progressive outlook to serve the society.



**Figure No. 1: Google Image of Arts and Commerce College, Satpur**

- **Different activities available for students.**

1. National Service Scheme
2. Student Welfare
3. Physical education & sports
4. Cultural Programmes
5. Soft Skill Development Programme
6. Skill Development Programme
7. Yoga Course

- **Area of College:**

- a. Total Campus area: 2 Acres
- b. Total Buildup Area: 1712.1 Sq.mt.

**Table No. 1.2 Courses offered by College**

Sr.No.	Name of Faculty	Name of Program	Name of Subject
1.	Faculty of Arts	BA	English Psychology Economics Marathi History Political Science Geography
2.	Faculty of Commerce	B.Com	Banking & Finance, Marketing Management, Business Administration

## **2.0 Methodology Used for Green Audit**

With the importance of Green audit in mind, the current study examines the process of environmental audit and the important steps that academic institutions may do to help the environment. Green audit is done through various stages.

### **2.1 Pre Audit Stage:**

The implementation of a College Green Audit/ Environmental Conservation Committee (ECC) by an organization is the first and most essential part of a green audit. The ECC is the backbone of the auditing process, with a wide range of responsibilities. This system keeps track of every facet of the green audit. The following table shows the details of college ECC.

**Table No. 2.1 College Green Audit/ Environmental Conservation Committee**

<b>Academic year 2021-2022</b> (For which green audit is to be conducted)			
<b>Sr. No.</b>	<b>Name of Member</b>	<b>Designation</b>	<b>Title in Committee</b>
1.	Dr. D. G. Ushir	Principal	Chairman
2.	Dr. S. S. Rajole	Assistant Professor	IQAC Co-ordinator
3.	Smt. V. P. Mogal	Assistant Professor	Coordinator

4	Shri. S. R. Kapadi	Senior Clerk	Member
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The ECC should declare an organization's "Environmental Policy" and communicate it to all teachers, nonteaching staff and students. The policy reflects the organization's environmental sustainability goals, objectives, scope, and priorities. ECC should provide all the necessary base line data to external auditing agency.

The ECC shall organize and carry out its programs and operations in a thorough and systematic way, as stated in the declared environmental policy. Before such operations are planned, the environmental issues of the organization, as well as their legal obligations, should be evaluated.

ECC members must define roles, responsibilities, and authorities of key personnel during the implementation and operation processes, commit to staff training, maintain effective communication channels, adopt effective documentation and operational controls, and maintain sufficient emergency preparedness awareness among the staff. All implemented programs and processes should be evaluated by the ECC, which should then be modified in accordance with the environmental policy.

## **2.2 Onsite Audit Stage**

Higher education institutions must conduct and verify their own Audit through external auditing organizations. The ECC of the college plans the visit of auditor's from external agencies and execute the audit process. During the visit, the auditor thoroughly examines the documentation and makes any required comments. The auditor conducts an audit of the Environment Policy by evaluating documents and conducting personal interviews with stakeholders' representatives. The auditor also conducts an assessment of all planned and implemented programs or activities through document evaluation and personal interviews with stakeholders' representatives.

## **2.3 Post Audit Stage:**

An auditor's role at the post-audit stage to analyze, interpret the provided baseline data and onsite observations and prepare a detailed audit report. In relation to the higher education institute, the auditor evaluates all of the audit's facts and observations together. The auditor

must evaluate all the findings as per the available standard norms. In consultation with the ECC, the auditor creates a brief report of the audit, including recommendations. External auditors must provide detailed recommendation to ECC of the higher educational institution. According to an auditor's suggestions, the ECC should devise an action plan and carry it out successfully. The auditor monitors the programs or activities on a regular basis. An organization will be awarded a certificate if the audit is completed successfully.



### 3.0 Environmental Aspects Covered under Green Audit

#### 3.1 WATER ENVIRONMENT:

##### 3.1.1 WATER AUDIT:

Water conservation is not only good for Society and the environment; it's also excellent practice. Water conservation can help you save money on your water, wastewater, and energy bills, as well as reduce on-site treatment expenses. Every company is different, but a water audit is a good place to start.

Water audits allow you to inventory all of your facility's water uses and suggest strategies to improve water efficiency. The findings can assist you in prioritizing actions to take in order to adopt cost-effective water-saving measures. A water audit might help you save money by lowering your water bill at home (and sewer bill if you are connected to a public sewer system). By applying easy conservation measures and without dramatically altering your lifestyle, you may reduce your water usage by up to 30%.

**Table No. 3.1 Total Population of the Campus and Water Quantity Requirement**

Sr. No.	Particulars	Total number	Required Water Supply (lpcd)	Water Requirement (lpcd)
1.	College Staff (Teaching and Non-Teaching)	25	45	1125
2.	College Students (Girls and Boys)	443- 253 Girls & 190 Boys	45	19,935
3.	Residential Students	NA	45	--
4.	Residential Staff	Na	45	--
5.	Floating Population (Visitors)	40	45	1800
	Total	508		22,860

Water demand for various institutions, in addition to home consumption, is also analyzed for a town or city. Hospitals, schools, restaurants, hotels, railway stations, bus terminals, and offices of various departments are all found in a well-developed city or town. On average, additional per capita demand for these units ranges from 25 to 60 liters per head

per day (lpcd), depending on the village, town or city. As per the standard guidelines given in National Drinking Water Mission the service level benchmark is to provide 150 lpcd water supply for metro cities, 135 lpcd for other cities/towns with sewage system and 45 lpcd without sewage system city/town. The minimum water demand according to the world health organization (WHO) is 20 liter per person per day.

### 3.1.2 Water Storage Capacity:

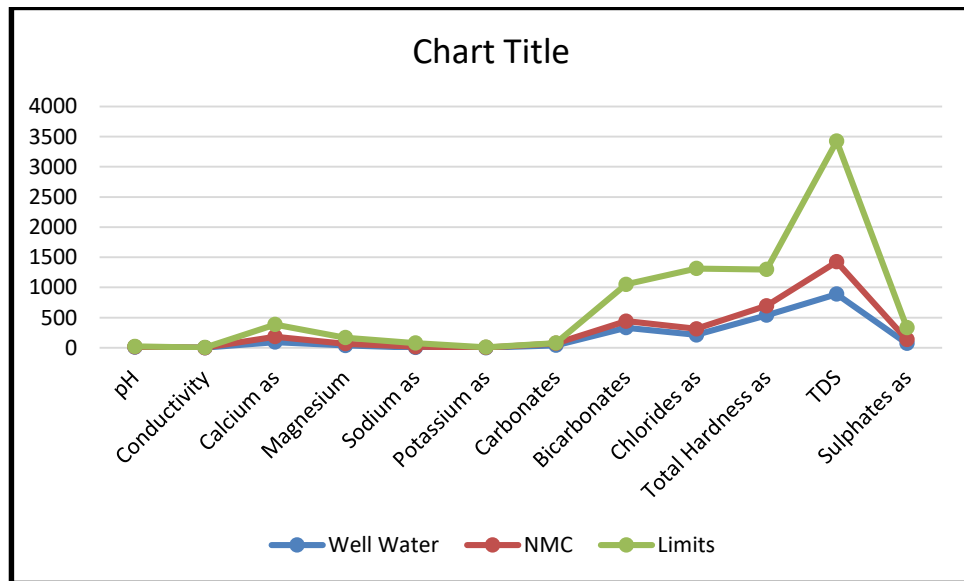
On the roof of the college are Seven water storage tanks with total 11000 liters capacity and another one is underground of 20,000 liters capacity is situated in college premise. The Nashik city has Godavari river that is source of water for the population. A borewell provides the appropriate amount of water to the college on a regular basis which is up to 20000 Lit and remaining amount is fulfilled by corporation tap up to 4000 Lit . According to the discussion with ECC, the college as well as the school adjacent to the college premises use water from water tank commonly. The overhead water tanks were filled once a day. Based on available data and water supply benchmarks as per the National Building Code (NBC), if college students use water for available above tanks, the campus college receives 925liters less water per day.

Table No. 3.2 shows the physicochemical and microbiological properties of drinking water.

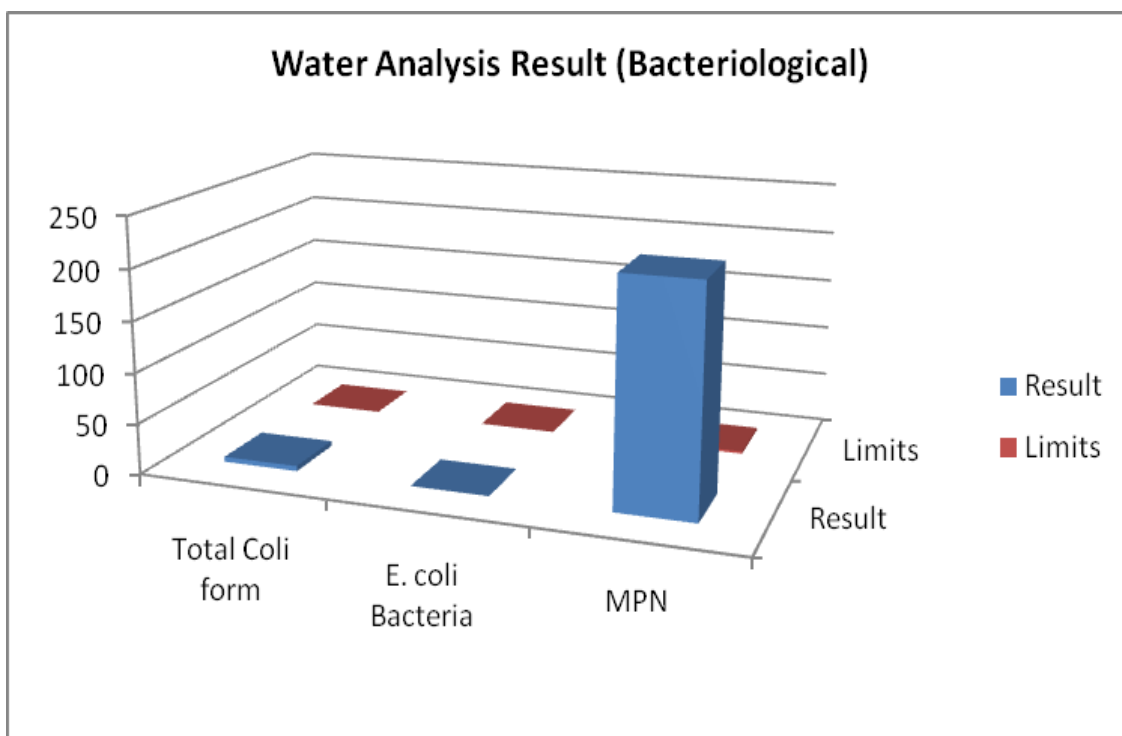
**Table No. 3.2 Drinking Water (Well Water) Analysis Results**

Sr. No.	Parameter	Unit(s)	Well Water	Nashik Municipal Corporation	Limits as per IS 10500: 2012 (Acceptable /Permissible)	Analysis Method
1	pH	--	7.2	7.7	6-7.5	Instrumentation
2	Conductivity	dSm-1	0.88	0.9	0.1-1	Instrumentation
3	Calcium as Ca	mg/lit	94.6	89.3	75-200	Titration
4	Magnesium as Mg	mg/lit	37.30	29.2	30-100	Titration
5	Sodium as Na	mg/lit	2.1	15.3	4.5-60	AAS
6	Potassium as K	mg/lit	1.7	2.25	2.0-5.0	AAS
7	Carbonates as CO <sub>3</sub> <sup>2-</sup>	mg/lit	41	31	3.0-45	Titration

8	Bicarbonates as HCO <sub>3</sub>	mg/lit	331.8	109.2	10-610	Titration
9	Chlorides as Cl <sup>-</sup>	mg/lit	213.6	99.8	250-1000	Titration
10	Total Hardness as CaCO <sub>3</sub>	mg/lit	540	156.7	300-600	Titration
11	TDS	mg/lit	890	535	500-2000	Gravimetric
12	Sulphates as SO <sub>4</sub>	mg/lit	72.54	63.2	<200	Spectrophotometer
13	Iron as Fe	mg/lit	0.00	0.00	<5.0	AAS
14.	Total Coli form	No./100 ml	Present (Non fecal contamination)	Absent	Absent	IS: 1622 (Rev.1,R.A :2014)
15.	E. coli Bacteria (Fecal Coli form)	No./100 ml	Absent	Absent <2.2 MPN/	Absent <2.2 MPN/	
16.	MPN/100 mL	No./100 ml	220 MPN/100 mL	100mL	100mL	



**Figure No. 2 Physico-chemical Assessment of Water Source**



**Figure No. 3 Bacteriological Assessment of Water**

Some physico-chemical parameters, such as total hardness, TDS, carbonates, bicarbonates, calcium, and magnesium, are found to be over the acceptable limit but within the permissible limit in the above reports. Water is discovered to be polluted with non-fecal coliform after bacteriological parameters are assessed. MPN is also found in excess of the standard limit.

### 3.1.3 Quantification of Wastewater:

**Table No. 3.3 Quantification of wastewater generation on college campus**

Sr. No.	Particulars	Total number	Required Water Supply (lpcd)	Water Requirement (lpcd)	Total Wastewater Generated (lpcd)
1.	College Staff - Teaching and Non-Teaching	25	45	1125	900
2.	College Students (Girls and Boys)	443	45	19,935	15948
3.	Floating Population (Visitors)	40	45	1800	1440
	Total	465		20,925	18288

As a result, it's been determined that water should only be used after proper pre-treatment, chlorination, and UV exposure.

It is reported that the college gets its water from a well and Corporation source. The quality of freshwater has degraded as a result of widespread consumption by locals and college. As a result, a water purification system is required. Cleaning water tanks on a regular basis is also very important. The water quality is NON POTABLE. As a result, immediate action is essential.

According to the Central Public Health and Environmental Engineering Organization (CPHEEO), wastewater accounts for 70-80 percent of total water supplied. The Arts and Commerce College, Satpur generates roughly 18288 liters of wastewater per day, based on the number of users and per capita water used. In rural areas, the average person uses 10 lpcd of water for sanitation (toilet/ablution). It means that 4650 lpcd of water is generated in a college's toilets and bathrooms. The waste water is disposed in municipal corporation sewers through proper channel.

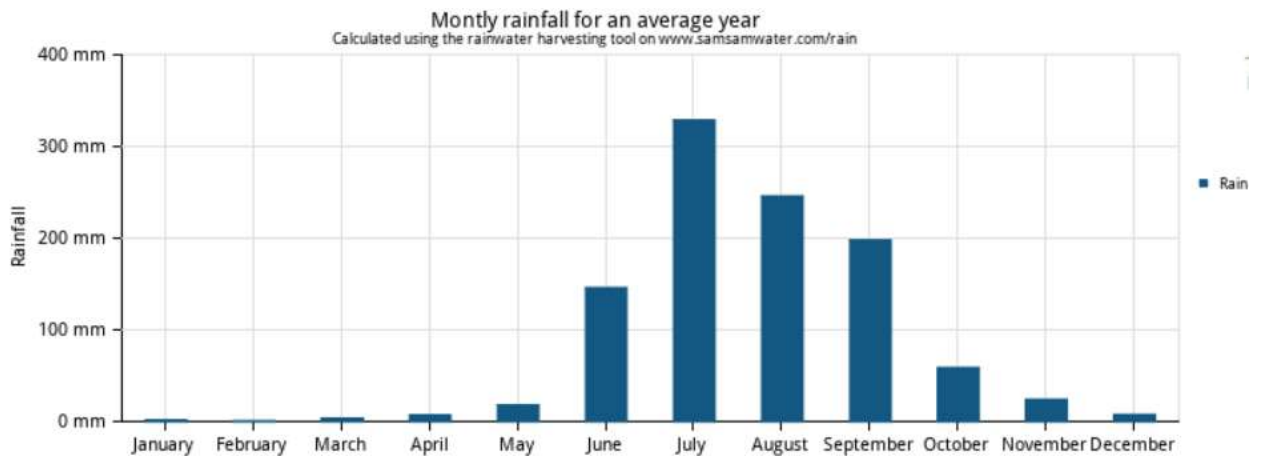
#### **3.1.4 Rainwater Harvesting.**

In terms of managing their natural resources, higher education institutions (HEIs) have a great deal of autonomy. They are virtually self-governing and internally regulated, whereas people, businesses, industries, and others are subjected to strict external oversight and accountability. This ability to self-regulate, with their own university presidents presiding over their own resource management system as the final authority, can serve as a springboard for water conservation. Every individual and system must have water conservation embedded not only in their minds, but also in their actions.



**a. Rooftop Rainwater Harvesting:**

The average rainfall at this location varies between 0.4 mm in the driest month (February) and 150.2 mm in the wettest month (September). The total annual rainfall in an average year is 607 mm. The Arts and Commerce College, Satpur is spread over 2 acres of land. Out of which buildings are constructed over 1712.1 sq. meters of the area.



**Figure No. 4 Monthly Rainfall for an Average Year**

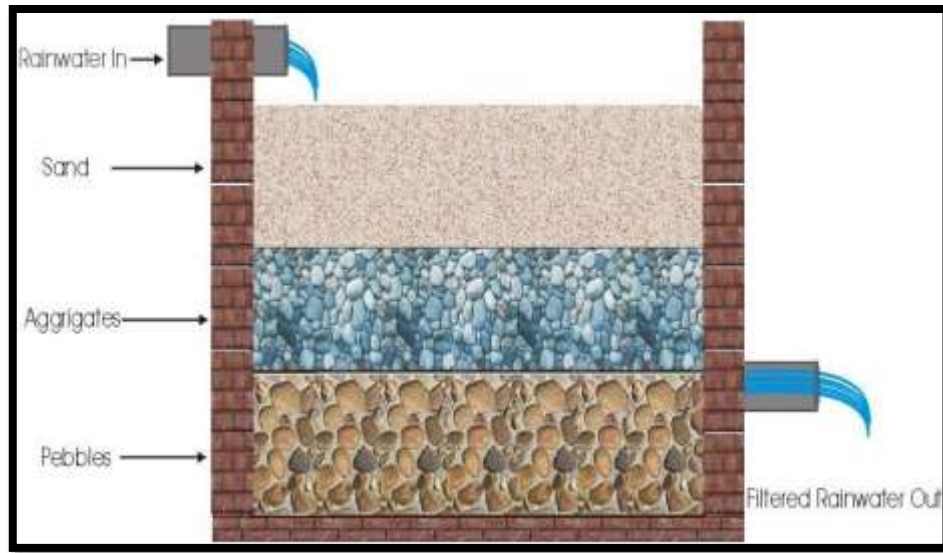
A flat roof has a runoff coefficient of 0.7, which means that 70% of the rain can be harvested. Based on this runoff coefficient and a roof area of 300.1 square metres a volume of 168 litres ( $0.8 \text{ mm} \times 300.1 \text{ m}^2 \times 0.7$ ) of water can be collected in the driest month (February) and 113459 litres ( $540.1 \text{ mm} \times 300.1 \text{ m}^2 \times 0.7$ ) in the wettest month (July). The total yearly amount of water that can be collected from the roof is 321700 litres ( $322 \text{ m}^3$ ) in an average year. The water demand is 20925 litres per day, which equals to about 627750 litres per month. The total water demand is 7637600 litres ( $7637.625 \text{ m}^3$ ) per year. The amount of water that can be collected from the roof ( $322 \text{ m}^3$ ) is less than the water demand ( $7637.625 \text{ m}^3$ ). Only a part of the water demand can be fulfilled using a rainwater harvesting system.



**Photo No. 1 Rainwater harvesting of college**

A suitable filtration system is necessary for better recharge. The classic sand bed filter uses coarse riverbed sand, pebbles, and rocks stacked one on top of the other in a limited masonry construction. Rainwater from one end is allowed at the top, while filtered water is retrieved from the other.





**Figure 5 Design of Rainwater harvesting pit**

### **3.2 AIR ENVIRONMENT:**

Air pollution has long term and short-term impact on the biotic and abiotic component of the environment. Air pollution sources for rural areas are vehicular activities and domestic firewood burning, fuel burning etc. The major pollutants released in the atmosphere are PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub>, CO etc.

PM<sub>10</sub> are inhalable pollutant particles with a diameter less than 10 µm but larger than 2.5µm which may deposit in air and causes health issues like eye and throat irritation, coughing or difficulty breathing, and aggravated asthma. While PM<sub>2.5</sub> are inhalable pollutant particles with a diameter less than 2.5 µm that can enter the lungs and circulatory system which may cause severe impacts are on the lungs and heart. SO<sub>2</sub> can cause irritation in the throat and eyes, as well as worsen asthma and chronic bronchitis. Significant quantities of NO<sub>x</sub> in the air increase the risk of respiratory illnesses. CO is a colourless gas that can trigger migraines, nausea, consciousness, and vomiting when inhaled at excessive quantities. As per the data from the IMD department the air quality status of Nashik is shown in table no. 3.5

The health of the students, instructors, and staff at the academic institute is dependent on the air quality. Windstorms, pollen grains, natural dust, traffic emissions, generators, fires, and laboratory smells, among other things, are all causes of air pollution

on the college campus. But in the present study whole city is considered and the data is extracted from nearby government air quality monitoring stations.



**Figure No. 6 Monthly Air Quality for an Average Year**

Table No. 3.4 Air Quality Index of Nashik

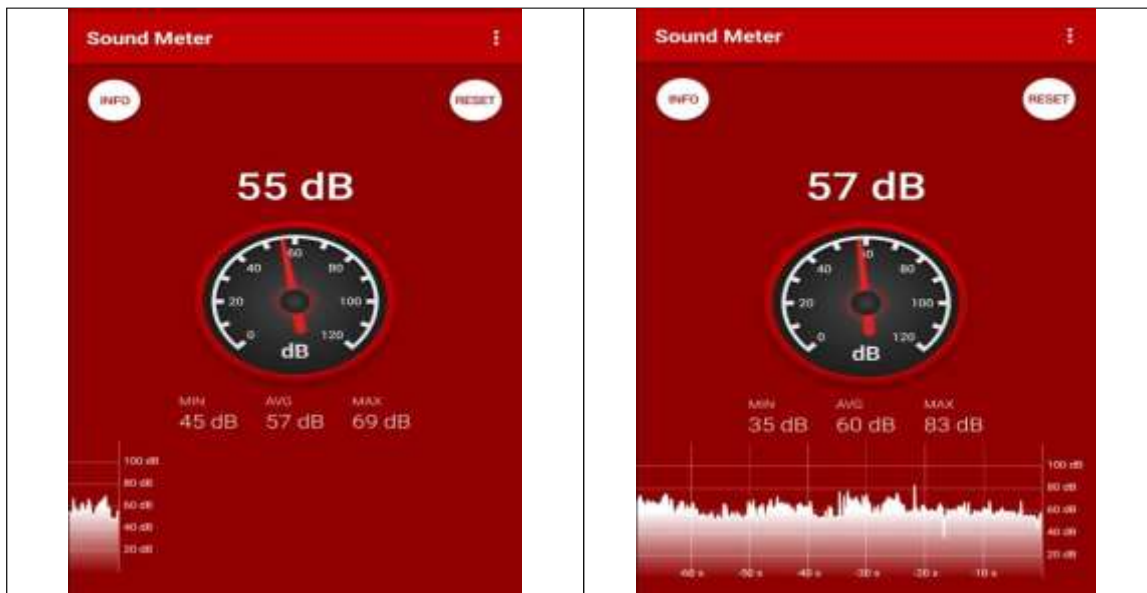
Sr. No.	Parameter	Result	NAAQS 2009	Unit
1	Average Wind	15.5	-	Km/h
2	Wind Direction	W-E	-	-
3	Pressure	1010	-	mb
4	Temperature	30/10	-	°C
5	Sulphur Dioxide	22	80	µg/m <sup>3</sup>
6	Nitrogen Dioxide	08	80	µg/m <sup>3</sup>
7	Carbon Monoxide	03	4	mg/ m <sup>3</sup>
8	Particulate matter < 10µm	154	100	µg/m <sup>3</sup>
9	Particulate matter < 2.5 m	280	60	µg/m <sup>3</sup>
10	Ozone	23	180	µg/m <sup>3</sup>

### **Causes of Air Pollution in Nashik :**

- (i) The primary causes of outdoor air pollution are solid, liquid particles called aerosols & gas from vehicles emissions, construction activities, factories, burning stubble & fossil fuels and wildfire, etc.
- (ii) Main causes of indoor air pollution are harmful gases from cooking fuels (such as wood, crop wastes, charcoal, coal and dung), damp, mould smoke, chemicals from cleaning materials, etc.

### 3.3 NOISE ENVIRONMENT:

Sound pressure level (SPL) measurements were automatically recorded with the help of an Integrated Sound Level Meter. The noise levels measurements were carried out using noise level meter.. The major source of noise identified in the study area has been predominantly the vehicular movement and the transportation activities. There is no industrial or commercial zone nearby college. Therefore noise level survey was carried out at seven locations within the college campus.



**Figure No. 7 Noise Monitoring Photographs**

**Table No. 3.5 Noise Monitoring Results in the College Campus**

<b>Locations</b>	<b>Leq dB(A) Minimum</b>	<b>Leq dB(A) Maximum</b>	<b>Leq dB(A) Average</b>	<b>Limit dB(A)</b>
Main gate	45	69	57	50
Campus	35	83	60	50
Corridor	35	83	59	50
Admin Office	35	65	50	50
Staff Room	45	75	60	50
Ground Classroom	45	80	48	50

Second floor corridor	35	83	59	50
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From the noise monitoring survey it was observed that the noise levels were observed in the range of 35 - 83 dB(A) that shows the values confirming to the prescribed standards.

### 3.4 SOLID WASTE MANAGEMENT:

Solid waste generation and management has become a most emerging issue in recent years. The rate of solid waste generation is extremely significant, while in other side there is lack of adequate technologies to manage the garbage generated. All garbage other than liquid waste is classified as solid waste. If solid trash is not properly disposed of, it can cause serious health problems as well as an unpleasant living environment. As a result, it is critical to manage solid waste in proper way to lessen the pressure on waste management systems. The goal of this inventory is to determine the amount, volume, type, and present management practice of solid waste generated in MVP's Arts and Commerce College at Satpur. This study will aid in the continued management of solid waste and enhance the beauty of campus in terms of green cover.

**Table No. 3.6 Quantity of solid waste generation:**

Sr. No.	Location	Quantity of Biodegradable waste (kg/day)	Quantity of Recyclable	Construction waste (kg/day)	Quantity of Hazardous waste (kg/day)	Quantity of E-waste (kg/day)
1	Classrooms	--	0.5	Approx. 2-3 kg/day only during construction period	--	--
2	College Canteen	--	--		--	--
3	Lecture Halls	--	--		--	--
4	College campus	1	1		--	--
		<b>1</b>	<b>1.5</b>	<b>3</b>	--	--

(Solid waste quantification is calculated as per CPCB norms)

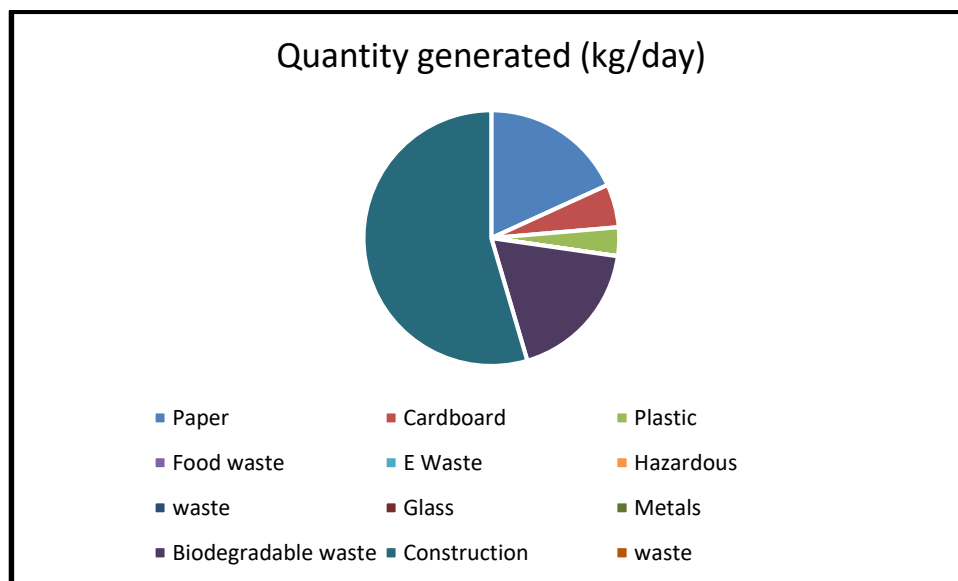


Photo No. 2 Segregation of Solid Waste

**A. Segregation of Solid Waste :**

**Table No. 3.7 Segregation of the Solid Waste**

Sr. No.	Specification (Y/N)	Quantity generated (kg/day)	Recycled (Y/N)	Reuse (Y/N)	Other(specify)
1.	Paper	1	Yes	Yes	--
2.	Cardboard	0.3	Yes	Yes	--
3.	Plastic	0.2	Yes	No	Sold to authorized vendors
4.	Food waste	--	--	--	Currently canteen is under construction
5.	E Waste	--			Building is new, no significant E waste is generated
6.	Hazardous waste	--	--	--	No Laboratory, No chemicals used
7.	Glass	--	Yes	No	Sold to authorized vendors
8.	Metals	--	Yes	No	Sold to authorized vendors
9.	Biodegradable waste	3	No	No	Building is new, vermi-composting plan is proposed
10.	Construction waste	3	No	Yes	Only during construction period



**Figure No. 8 Chart for the classification of the solid waste generated**

As per the analysis of the above data average solid waste generation within the college campus is 7.5 kg/day. Out of which 3 Kg biodegradable solid waste generated from the plant parts, dry leaves. The vermicomposting unit is made for disposal of the biodegradable waste. So at this stage for non biodegradable waste we are using facility of ghantagadi as per the need. About 1.5 kg/day non- biodegradable solid waste generated in the form of paper, cardboard, plastic, glass and metal, etc. We reuse some part of this waste and rest waste we are selling to an authorized vendors. Approximately 3 kg/day construction waste is generated and same is used within campus area for levelling of ground.



**Photo No. 3. Vermicompost Unit**





**Photo 4. Ghanta Gadi for Non-Biodegradable Waste**

### **B. Hazardous Waste:**

A hazardous waste is the waste in any form having "Hazardous Characteristic" or that is officially "designated" as a hazardous waste by name. Despite the fact that characteristic wastes are not specified by their chemical name, they are controlled as hazardous wastes because they exhibit one or more harmful features. Ignitability, Corrosivity, Reactivity, and Toxicity are the four traits.

The said college is providing Arts and Commerce faculty which shows zero hazardous waste generation because of absence of chemical laboratories. Also the E waste generation is insignificant at present status.

### **C. E- Waste:**

Schedule II e-waste is formed at the College. E-waste generation is visible in every educational establishment. Especially at the college level, there are fewer devices and instruments in use for administrative and technical reasons. In administration tasks, computers, printers, and Photocopier machines are essential. The wire used for interconnection is usually discarded with the e trash. Similarly, numerous scientific gadgets and equipment from science laboratories degrade over time. These, too, contribute to the e-waste issues.



### 3.5 Green Cover of College Campus:

Any area with grass, trees, or horticulture is considered a green area. Tree canopy analysis is effective for estimating the amount of green cover in a specific area. The covering generated by the branches and crown of plants or trees is known as canopy cover (green cover). The proportion of a specified area of the ground covered by tree crowns is referred to as green cover. According to the National Mission for Green India (GIM), one of eight missions under the National Action Plan on Climate Change (NAPCC), and previous national forest policy, 33 percent of total accessible land should be covered by vegetation. It will help in the reduction of greenhouse gas emissions because plants and trees are the best carbon sinks.

Trees are not only important, but they are also essential for survival. They produce oxygen, filter CO<sub>2</sub>, prevent soil erosion, and maintain ecological equilibrium, among other things. They also give us with food, housing, and a variety of other necessities. The tree selection is critical while plating trees on campus. Increased canopy coverage from trees helps to reduce the urban heat island effect. Pedestrians will benefit from the shade provided by trees, which will provide relief from the heat. They will also provide shade to surrounding buildings, decreasing the need for air conditioning.

**Table No. 3.8 List of Trees in the Campus**

<b>Sr. No.</b>	<b>Botanical Name</b>	<b>Local Name</b>	<b>No. of Individual</b>
1	<i>Annona reticulata</i>	Ram Phal	1
2	<i>Annona squamosa</i>	Sita Phal	2
3	<i>Araucaria sp.</i>	X-mas Tree	2
4	<i>Azadirachta indica</i>	Neem	6
5	<i>Bougainvillia spectabilis</i>	Bougain Vel	1
6	<i>Bombax ceiba</i>		1
7	<i>Cassia fistula</i>	Bahava	1
8	<i>Casuarina equisetifolia</i>	Suru	1
9	<i>Delonix regia</i>	Gul Mohar	2
10	<i>Eucalyptus sp.</i>	Nilgiri	1
11	<i>Eugenia jambolana</i>	Jamun	2
12	<i>Ficus benjamina</i>	Ornamental Ficus	2

13	<i>Ficus bhenghalensis</i>	Wad	2
14	<i>Ficus elastica</i>	Rubber Tree	2
15	<i>Ficus glomerata</i>	Umber	2
16	<i>Ficus religiosa</i>	Pimpal	3
17	<i>Grewelia robusta</i>	Silver Oak	15
18	<i>Hamelia patens</i>	Hamelia	1
19	<i>Hibiscus rosasinensis</i>	Jaswand	2
20	<i>Mangifera indica</i>	Mango	15
21	<i>Mitragyna parvifolia</i>	Kadamb	4
22	<i>Pakinsonia aculeata</i>	Vilayati Babul	4
23	<i>Palm tree</i>	Palm	10
24	<i>Parkia biglandulosa</i>	Chenduphali	4
25	<i>Peltophorum sp.</i>	Sonmohar	4
26	<i>Phylanthus emblica</i>	Amla	1
27	<i>Plumeria alba</i>	Chapha	3
28	<i>Polyalthia longifolia</i>	Ashok	43
29	<i>Pongamia pinnata</i>	Karanj	2
30	<i>Psidium guajava</i>	Peru	2
31	<i>Putranjiva roxburghii</i>	Putranjiva	4
32	<i>Rosa indica</i>	Gulab	1
33	<i>Spathodia companulata</i>	Pichkari	2
34	<i>Tamarindus indicus</i>	Chinch	3
35	<i>Taxus sp.</i>	Taxus	1
36	<i>Terminalia bellirica</i>	Behada	2
37	<i>Terminalia catapa</i>	Badam	8
38	<i>Thespesia populnea</i>	Ran Bhendi	2
39	<i>Thevetia peruviana</i>	Piwali Kaneher	3
<b>Total Individuals of Trees</b>			<b>167</b>

#### **4.0 Energy Conservation Practices:**

Energy conservation refers to techniques for lowering energy use by eliminating waste and increasing efficiency. We all know that due to the large disparity between demand and supply, a lot of effort is being put in to close the gap in terms of generating more power, which necessitates a lot of capital expenditure and, on top of that, raises a lot of environmental problems. The most important aspect of energy management is energy conservation. We may lower our energy usage by using a variety of energy conservation strategies, such as making better use of technology, use of energy efficient devices and minimizing the wastage of energy.

More energy use means more CO<sub>2</sub> emission, which is the primary cause of global warming and climate change. Energy conservation and sustainability in college buildings is therefore crucial and has a high priority on the government agenda. It is now vital to think about how we use energy, particularly for lighting and cooling in buildings. The Arts and Commerce College, Satpur also doing excellent work in energy conservation area.

**Table No. 4.1 LUX meter rereading**

Sr. No.	Location	Light Intensity by Lux Meter
1	Classroom	12
2	Staff Room	01
3	Administrative office	01
4	Principal's office	01
5	Department of Psychology	01
6	Examination Department	01
7	IQAC	01
8	NSS Office	01
9	SWO office	01
10	Gymkhana	01
11	Ladies Room	01
12	Library	01
13	Computer Lab	01
14	Reading Room	01
15	Store Room	01
16	Commerce Lab	01
17	Dept. of English	01
18	Dept. of Marathi	01
19	Dept. Economics	01

## Use of Solar Street Light:



**Photo No. 5 Solar Panel in College.**

technology is used in solar street lighting systems to convert sunlight into DC power via solar cells. The generated electricity can either be used immediately throughout the day or saved in the batteries for later use. Currently two 18 watt in build solar street light was installed in college campus which provide backup of 12 hours.

## 5.0 Environment Awareness Programs:

Environmental awareness is a critical component of our daily life. To ensure the planet's long-term viability, everyone must commit to becoming more environmentally conscious. As a result of the Supreme Court's decision, environmental education is now become compulsory to all students in all types of higher education institutions. Environmental education is a style of education that allows students to learn through hands-on experiences outside of the classroom. It allows students to relate and apply what they've learned in the classroom to real-world environmental challenges. The Arts and Commerce College is one of them and many environment friendly programs are organized through the college. These include tree planting, Cleanliness camp, Blood donation camp, Ganesh Idol donation camp, Yoga Day celebration, Health Checkup Camp, vruksh dindi etc.

### ➤ Tree Plantation Activity:



**Photo No. 6 Plantation Activities in and Around the College**

Every year a large number of Indian plants are planted by the college in the college premises and surrounding areas. Plantation activities are crucial in reducing global warming due to rising pollution and carbon dioxide emissions. Along with tree planting, colleges also planted a huge number of ornamental plants for the purpose of beautification.

➤ **Regular Health Check-up**



**Photo No. 6 Regular Health Checkup**



**Separate Toilet facility:**



**Photo No. 7 Separate Toilet Facility**



➤ **Fire Extinguisher:**



**Photo No. 8 Fire Extinguisher**

➤ Blood Donation Camp



Photo No. 9 Blood Donation Camp



➤ **Cleaning Campaign**



Photo No. 10 Cleanliness Campaign

➤ **Individual Role Related To Environmental Conservation : मूर्ती दान करा अभियान**







Photo No. 11 Ganesh Idol Donation Camp

➤ **Yoga Day Celebration :**





Photo No. 12 Yoga Day

➤ Vruksh Dindi







Photo No. 13 Vruksh Dindi

## **6.0 Conclusion and Recommendations**

The Green Audit of MVP's Arts and Commerce College, Satpur is conducted in Academic year 2021- 2022. The process of discovering and determining if an institution's operations are environmentally friendly and sustainable is known as green audits. The key objective of the college's green audit is to evaluate the college's green initiatives and execute a well-structured audit to determine at which we stand on a grade of environmental sanity.

### **6.1 Conclusion**

During the process of green audit and from observations some of the conclusions are made as follows:

1. College building is under construction at this stage. College takes efforts to dispose majority waste by following recycling and reuse practices.
2. Sufficient Water supply to the college comes from the well or by corporation tap. Roof top rainwater harvesting technology will be used for water conservation.
3. Toilets and bathrooms are new and without any leakages.
4. Toilets and bathrooms wastewater is treated in soak pits and septic tanks.
5. Air quality on the campus is found good.
6. Noise level monitoring is done at different locations within the campus. Noise level observed within the prescribed standards as the college is situated in rural area and campus is surrounded by agricultural field.
7. Plastic waste, paper waste as well as glass waste is disposed properly. Sometimes ghantagadi facility is being used when necessary.
8. No hazardous waste is generated in the college because it runs courses comes under Arts and Commerce stream. E waste is also insignificant as there are no major uses of the laboratories and equipments. E-waste segregation, handling and disposal are properly done.
9. Sufficient ventilation is available in the college building, in classrooms, in staffrooms, in library, in seminar hall and many more. Electricity is minimized by using LED lights and solar panel for campus and street lights. These practices help in energy conservation and functioning properly.

## **6.2 Recommendations**

Following are some recommendations for improving environment friendly practices within the campus.

1. Using the criteria in the Green Audit document, the college should design environmental guidelines.
2. Drinking water quality is assessed and found that the water is not potable for direct use drinking purpose. College has to take immediate action and install water purification system.
3. Pipe leaks and corrosion, as well as overhead tanks, must be addressed as soon as possible.
4. Data on all measured environmental factors should be monitored and recorded on a regular basis, and information should be made available to management.
5. The college should adopt internal procedures to guarantee that it complies with environmental standards, and responsibility for implementing them into action should be appointed.





Maratha Vidya Prasarak Samaj's  
**ARTS AND COMMERCE COLLEGE, SATPUR**

Janta High School Campus, Satpur,  
Tal.: Nashik, Dist.: Nashik (Maharashtra) Pin : 422007

PH.: 0253-235410

E-Mail : [srcollege.satpur@mvp.edu.in](mailto:srcollege.satpur@mvp.edu.in)

Website : <https://mvpsatpurcollege.ac.in/>

College Code : 0897

Centre No. : 0897

AISHE : C-41756

*Principal : Dr.D.G.Ushir, M.A., M.Phil., Ph.D.*

Affiliated to Savitribai Phule Pune University, Pune College ID – PU/NS/AC/141/2009

## ❖ Clean and Green campus initiatives







**Clean Campaign Activity**



**Tree Plantation in College Campus**





**Clean Campaign Activity**





## ❖ Beyond the campus environmental promotion activities





## Clean Campaign Activity at ESI Govt. Hospital



## Clean Campaign Activity at Symmetry, Khambale Gaon





## Idol donation campaign by NSS Volunteer







## Tree Plantation at NSS Adopted Village







## Environmental Awareness Rally by NSS Volunteer

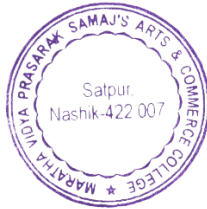






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MI DUAL CAMERA

**IQAC Co-ordinator**  
Maratha Vidya Prasarak Samaj's  
Arts & Commerce College,  
Satpur, Nashik-422 007



**PRINCIPAL**  
Maratha Vidya Prasarak Samaj's  
Arts & Commerce College,  
Satpur, Nashik-422 007