

Social Transformation Through Dynamic Education



**BHARATI VIDYAPEETH'S  
NEW LAW COLLEGE, KOLHAPUR**

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Ref.No.: BV/NLCK /

Date:

**7.1.6 Quality audits on environment and energy are regularly undertaken by the Institution and any awards received for such green campus initiatives:**

Reports on Green and Energy audits submitted by auditing agency

The auditing agency has conducted Green Audit and Energy Audit and reports have been submitted by the auditing agency.



*Chavate*  
**I/C PRINCIPAL**  
Bharati Vidyapeeth's  
New Law College  
Kolhapur.

# Energy Audit

BHARATI VIDYAPEETH'S NEW LAW COLLEGE KOLHAPUR

UPENDRA DEUSKAR & ASSOCIATES, KOLHAPUR.

BHARATI  
VIDYAPEETH'S  
NEW LAW  
COLLEGE  
KOLHAPUR

ENERGY AUDIT  
REPORT

SEPTEMBER-2022

**UpendraDeuskar& Associates, Kolhapur**  
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## i. Acknowledgement

We are grateful to the management of Bharati Vidyapeeth'S New Law College Morewadi, Kolhapur(Client) for giving us an opportunity to contribute in their efforts towards efficient energy management by undertaking this Energy Audit exercise.

We team of Upendra Deuskar & Associates acknowledges with thanks the co-operation and support extended by management and operating personnel from client side during the audit exercise. Detailed discussions and interaction were held with plant personnel throughout the course of the audit and awareness of energy conservation was noted as exemplary. We would also like to place on record our sincere thanks and appreciation for all plant executives.

We are also thankful to the other staff members who were actively involved while collecting the data and conducting the field studies. We take this opportunity to also thank all the team members at various departments associated with this study of energy audit for extending cooperation during collection of on-site data.

We trust that the findings of this study will help college facility management in improving the equipment performance thereby giving optimum energy consumption at the premise.

## ii. Energy Audit Team

<b>UpendraDeuskar&amp; Associates</b>	Mr. Upendra G. Deuskar ( BEE Certified Energy Auditor) Mr. Gaurav Ghewade (BEE Certified Energy Auditor) Mr. Ajay Toraskar
<b>Bharati Vidyapeeth's New Law College</b>	Mr. Rahul Kadam-Administrative Officer Dr. Prafull B. Chavate-I/c Principal Mr. Lad-Site Engineer
<b>Date of Audit</b>	22 <sup>nd</sup> Sept, 2022

## iii. Instruments

1. Power Quality Analyser
2. Ultrasonic Flow meter
3. Thermal Imager
4. Temperature – RH logger
5. Lux Meter
6. Power Clamp Meter
7. Measuring Tape

## iv. Executive Summary

Client already have installed energy efficient equipment in their premise. Most of energy efficiency improvement work has been already done by client which shows their positive approach to energy efficiency and sustainability.

**Observations & Recommendations are summarised below.**

Energy saving and sustainability improvement measures undertaken by college management are as follows.

1. **Replacement of Fluorescent Tube Lights (FTL) with LED Tube Lights***(Replacement in process)*
2. **Installation of solar PV rooftop for renewable energy generation& reduction in carbon emission**
3. **College building designed to minimize energy required for lighting& HVAC needs**

**Recommendations for further energy savings are as follows**

Most of the energy efficiency improvement work has been already done by client in their premise. There is less scope remains in energy efficiency improvement, recommendations for the further improvement in energy efficiency and power quality areas are listed below.

1. **Install Energy Efficient ceiling fans**
2. **Replace FTL to LED in single projects for cost benefit and energy savings**
3. **Install aerators for water and energy savings**
4. **Choose energy efficient pumps for future pump replacement or installations**

# 1 Introduction

## 1.1 General Description of Facility

New Law College, Kolhapur is a constituent unit of Bharati Vidyapeeth, Pune. The Institute was established in the year 1982 under the mentorship of Dr. Patangrao Kadam.

The Institute is having its own adequately spacious building with a fair statistical dimension of 19,428 sq. feet. The teaching staff is well qualified and is dedicated to work towards educating the students. The Institute is facilitated with a big library of more than 2600 sq. feet with 10781 books.

### Objectives

- To undertake an energy audit so as to identify areas for energy saving, both without and with investment.
- To prioritize distinct areas identified for energy savings depending upon saving potential, skills, and time frame for execution, investment cost, paybacks etc.

## 1.2 Scope of Work

- To correlate monthly data of production with electricity, fuels & water consumption, for a period of 12 months of normal operation to establish bench mark values for energy consumption.
- To study electrical energy metering, monitoring and control system existing at the plant and to recommend a suitable system for future monitoring.
- To study monthly power factor, maximum demand, working hours, load factor etc. for the reference period along with monthly electricity consumption and establish scope for MD control through possible optimization of load factor and through detailed load management study.
- Based on above, to evaluate the possibility of replacing major motors with energy efficient motors. To provide cost-benefit analysis for the replacement policy.
- To study existing requirements of energy provisions at present locations and to identify distinct possibilities of rationalization / savings.
- To study existing maintenance practices for utility systems and recommend areas for improvement in energy efficiency / savings.
- To identify, evaluate and priorities energy saving opportunities into short, mid and long-term time spans depending upon investments, quantum of savings, skills and time required for implementation, etc.
- To prepare draft energy audit report, present to management, undertake necessary modifications based on presentation meeting and submit the final report.



### 1.3 Electricity Consumption

Client is receiving electricity supply of 415 V from Maharashtra State Electricity Distribution Company Limited (MSEDCL) with sanctioned load of 20 kW.

Following table represents bill analysis for last 11 months energy use of the plant.

Table 1 Bill Analysis – Last 11 months

Month	Energy Consumption	Energy Generation	Net Energy Consumption	Demand Charges	Wheeling Charge	Energy Charges	Total Current Bill
	kWh	kWh	kWh	Rs.	Rs.	Rs.	Rs.
Jul-22	977	676	301	427	406	2128	4150
Jun-22	1656	1295	361	427	487	2552	4875
May-22	1095	1095	0	427	0	0	427
Apr-22	1011	1011	0	427	0	0	427
Mar-22	1951	1951	0	416	0	0	416
Feb-22	0	0	0	415		0	415
Jan-22	967	967	0	415	0	0	415
Dec-21	991	991	0	415	0	0	415
Nov-21	1258	1258	0	415	0	0	415
Oct-21	1003	1003	0	415	0	0	415
Sep-21	1133	1133	0	415	0	0	415
<b>Total</b>	<b>12,042</b>	<b>11,380</b>	<b>-</b>	<b>4,614</b>	<b>893</b>	<b>-</b>	<b>12,785</b>
<b>Average</b>	<b>1,095</b>	<b>1,035</b>	<b>60</b>	<b>419</b>	<b>89</b>	<b>425</b>	<b>1,162</b>

Energy consumption, Energy Generation, Energy Billing trends are represented in graphical format as below.

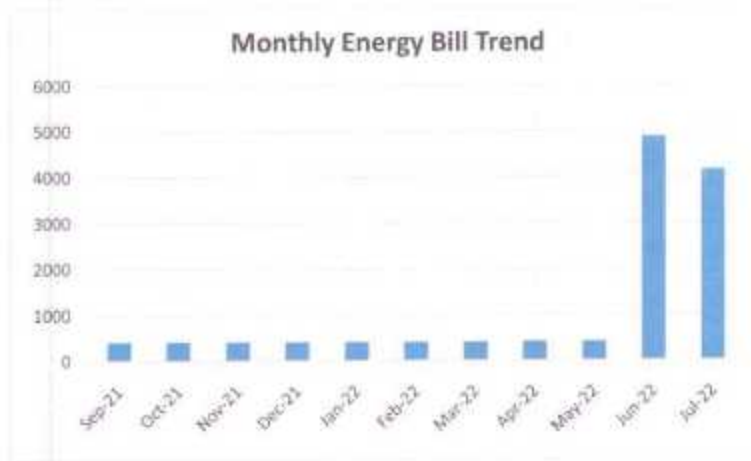


Figure 1. Electricity Bill Trend

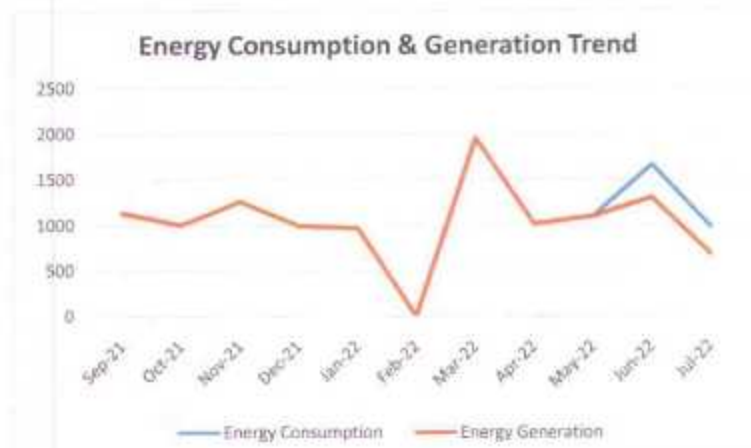


Figure 2 .Energy Consumption & Generation Trend

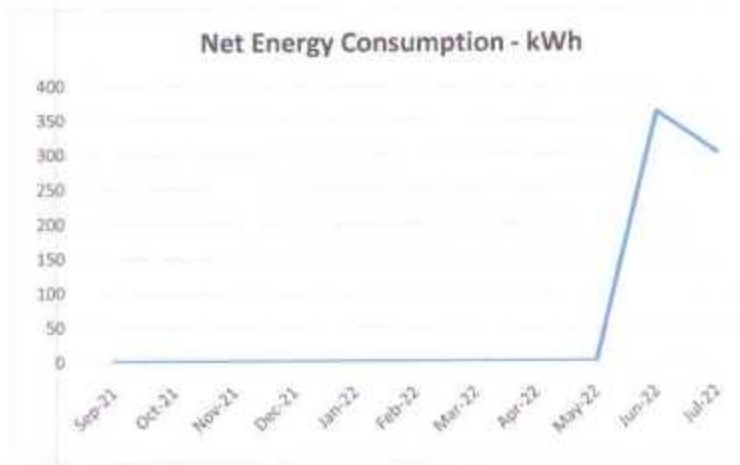


Figure 3 Net Energy Consumption trend.

## 2 Energy Saving Initiatives by College

Client already have installed energy efficient equipment in their premise. Most of energy efficiency improvement work has been already done by client & Client has also installed rooftop solar (PV) power plant this shows their positive approach to energy efficiency and sustainability.

Energy saving and sustainability improvement measures undertaken by college management are as follows.

### 1. Replacement of Fluorescent Tube Lights (FTL) with LED Tube Lights(Replacement in process)

College management is focusing on replacement of FTL to LED lights with target of 100% replacement. College management will achieve 50% reduction (guaranteed) in energy consumption for lighting purpose. The replacement will provide substantial savings in energy consumption and carbon emission.

### 2. Installation of solar PV rooftop for renewable energy generation

College management has installed 25 kW solar photovoltaic power plant on rooftop of college building which will not only reduce the energy expenditure but also reduce carbon emission and this initiative shows positive approach of college management towards energy and environmental sustainability.

### 3. College building designed to minimize energy required for lighting& HVAC needs

College building design itself helps to reduce daylight needs in college building and classrooms. Windows and openings allow sufficient air ventilation thus minimises the need for HVAC systems & this ultimately leads to reduced or minimum energy demand for the premise.



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Date-22-09-2022

**TO WHOSOEVER IT MAY CONCERN**

This is to certify that we had carried out the Energy Audit in the Bharati Vidyapeeth's New Law College at Morewadi, Kolhapur.

It was observed that client already have installed energy efficient equipment in their premise. Most of energy efficiency improvement work has been already done by client; which shows their positive approach to energy efficiency and sustainability.

**Our Observations & Recommendations are summarised as below-**

Energy saving and sustainability improvement measures undertaken by college management are as follows.

- 1) Replacement of Fluorescent Tube Lights (FTL) with LED Tube Lights
- 2) Installation of solar PV rooftop for renewable energy generation& reduction in carbon emission
- 3) College building designed to minimize energy required for lighting& HVAC needs

**Recommendations for further energy savings are as follows-**

- 1) Replace degraded and faulty capacitors to maintain unity power factor
- 2) Choose energy efficient pumps for future pump replacement or installations

Yours truly,

**UPENDRA G. DEUSKAR**  
**BEE Certified Energy Auditor.**  
**Regn. No.- EA - 1674**



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**UPENDRA G. DEUSKAR**  
**BEE Certified Energy Auditor.**  
**Regn. No.- EA -1674**

# **GREEN AUDIT REPORT**

## **FY 2022-23**

### **BHARATI VIDYAPEETH'S NEW LAW COLLEGE KOLHAPUR**



**Prepared by**

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## **FOREWORD...**

World is facing various serious environmental issues, different reports from World Health Organization, IPCC, various National and International organizations highlights the Environmental issues are most sensitive and widely discussed issues in the world today. From local issues like unsafe drinking water, regional issues like urban smog to global warming to deforestation etc. are the environmental issues that are discussed at global level but true fact is that regional or local activities are responsible to make such issues global. On the background of scenario components involved in higher education institutions like universities, colleges, research institutes are expected to take lead role in environmental conservation and protection. Institutions must play an active role in creating and modeling solution for environmental problems.

Bharati Vidyapeeth's New Law College, is following different sustainable practices as their vision. As a part of Quality system, college is committed to take lead role and create its own identity in the protection and conservation of environment. College has been following eco-friendly and sustainable practices to manage the available resources. As a part of such voluntary practices and component of Quality System internal environmental audit is conducted to evaluate the actual scenario on the campus.

Green audit of college campus is planned systematic assessment of day to day activity with special reference conservation of natural resources, optimum use of available resource and control over waste generation. Green audit assessment will show way to find out the eco-friendly and non-eco-friendly practices on the campus. Objectives of green auditing vary with the operational activities of the organization. In case of our college green audit is an internal requirement of Quality System. Green audit show alternative path for management for non-ecofriendly activities. It also promotes a good environmental management practices and raises the awareness about the environmental conservation and its long term benefits. College has already Implemented conservation practices in vision, which provides chance to explore opportunities for better performance in the future.

As a part of Quality System over the past five years college has fixed goal for conservation of environment and sustainable practices. For the achievement of goal college accepted various new and advanced technologies which are eco-friendly; such as self-sufficiency in water by adapting watershed management and roof top rain water harvesting systems. Plantation of local and endemic plant species on campus is big challenge that is accepted by the college. Over the years various green practices helped for number of significant changes, which have helped to increase the green area on the campus.

I am very happy to forward this Green Audit report of Bharati Vidyapeeth New Law College, Kolhapur. I must congratulate NAAC cell and his team for efforts taken for the completion of such type of report. I hope the report will be helpful to all concerned and will motivate all to change non sustainable practices.

**Principal**

**Bharati Vidyapeeth New Law College , Kolhapur..**



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## INTRODUCTION

**Bharati Vidyapeeth New Law College**, Kolhapur was established in 1996 with facility for 600 student's admissions per year. The college is housed in multi-stored, well ventilated, spacious building with an area of 6787 Sq. Mtr. The institute is well-equipped with laboratories and state of the art center for academic excellence.

The college has well organized theoretical and practical teaching schedule for the students, so that they can become excellent professionals to serve the society. With highly qualified & dedicated staff and advanced equipment the institution imparts quality training for the students and completes patient care.

Our faculty members are undertaking quality research projects through Institutional Ethical Committee and many of them have represented it National and International level. The institute has as provided comfortable accommodation facility for the students and also has residential quarters for the teaching staff.

### **Collage Information:**

Bharati Vidyapeeth New Law College, is a well-known center of clinical excellence located in the same premises. The college provides 24 hour central Library facility computer center laboratories, workshops, class rooms with seminar halls. All facilities are available for basic study. The college is well equipped with all facilities for teaching, training and study care.

The administrative sections and record rooms are fully automated. College is linked with Digital Library where national & international law books are available.

College provides various facilities for law student such as

1. Wi Fi facility in campus area
3. Skill development courses
4. Health Centre /Gymkhana
5. RO water coolers
6. Sports facility

### **Institute also undertake following activities and programs**

- Tree Plantation Programme
- Training Program on "SAVE FUEL & SAVE MONEY"
- Workshop on "Personality Development Skills"

## 1.1 INFRASTRUCTURE

### a) Academic Physical Facilities:

Sr. No.	Facility	Numbers
1	Central Library	01
2	Computer Centre	02
3	Laboratories	00
4	Cafeteria	01
5	Workshops	02
6	Class rooms	07
7	Auditorium/Exam Hall	01

### b) Residential Facilities:

Sr. No.	Facility	Numbers
1	Boys Hostel	No
2	Cafeteria	1
3	Mess/Canteen	1

### c) Sports Facilities:

Sr. No.	Indoor / Outdoor	Facilities
1	Outdoor	Well-equipped playground of 3500 sq.mts.
2	Indoor	Gymnasium, Carrom & Table Tennis 105 sqmtr

### d) Medical Facilities for students and staff:

i) Free Health Check-up & Services
ii) Health Scheme for the staff

## **1.2 Green Audit: An overview:**

Educational Institutes are playing a key role in continues development of human resources worldwide through teaching and research. Educational institutes conduct various activities with aim to percolate the knowledge among the different levels of society. Likewise educational institutes also try to give issues related environmental conservation and pollution control. Various types of evolutionary methods are used to identify the environment concerning problem. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit etc.

**“Green Audit is a tool to highlight general practices accepted and implemented by organization in term of its impact on environment”**. Green audit also focus on adverse practices which are cause and responsible for harm to environment. Green audit shows strength and weakness of organization towards protection and conservation of environment. It also mark and highlight the non-accepted practices of natural resources utilization.Green audit shows the path to continuously run healthy practices, new innovative system for optimum utilization of resource and minimization of waste generation. It helps for protection and conservation of environment, natural resources and lead institution sustainable campus in social, economical and environmental views.

## **1.3 Need of Green Auditing:**

Green auditing is the process of assessment of practices accepted by institution in view of whether they are ecofriendly and sustainable or not. Traditionally, Indian culture teaches good and efficient users of natural resources. But over the period of time uncontrolled excess use of resources like energy, water, chemicals are become threat to the environment and society also. Now, it is necessary to check whether our accepted practices are consuming more than required resources? Whether we are handling waste carefully? Where we have control over the use of natural resources. Green audit shows all such practices and gives an well direction to optimizes the use of natural resource. In the era of global warning, climate change, pollution and resource depletion it is necessary to verify the accepted practices and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall awareness among the stack holders of institution towards an environmental conservation and green practices to be accepted.

### **1.4 Goals of Green Audit:**

College has conducted green audit with following goals.

1. Baseline data collection of environmental parameters and measures over the environmental issue before they become problem.
2. Find out strength and weakness in green practices.
3. Conduct a survey to collect base line ground reality about green practices.
4. Find out the hurdles in green practice, and suggest solution over the hurdles.
5. Check out the facility of different types of waste management.
6. Increase environmental awareness throughout campus with training.

### **1.5 Objectives of Green Audit:**

1. To collect the base information over the current practices which can impact on environment?
2. To find out significant environmental issues.
3. Setup goal, vision and mission for environmental conservation and sustainable practices in campus.

## METHODOLOGY

This is the first attempt to conduct Green Audit of Bharati Vidyapeeth's New Law College Kolhapur. First target was to collect the base line data concern about the green practises. The present report is based on onsite visits, personal observations and questionnaires survey tools. Primarily, based on data requirement, different type of questionnaires were prepared. Questionnaires were provided to all concern asked them to fill the same. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared. Before the survey all the required secondary data were collected from concern departments.

### **2.1 Survey by Questionnaire:**

Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires were prepared based on the guidelines, rules, acts and formats prepared by Ministry of Environment and Forest, New Delhi, Central Pollution Control Board and other statutory organizations. Green Audit Report of Shivaji University, Kolhapur is used as format for the report preparation. Most of the guidelines and formats based on broad aspects and some of the issues or formats were not applicable for educational institutions. In fact questionnaires were prepared, using these guidelines and formats, combinations, modifications and restructuring them, sets of questionnaires were prepared as solid waste, energy, water, hazardous waste, and e-waste.

All the questionnaires comprises of group of modules. Questionnaires were prepared in such a view that it will be easy to extract the general information of the concerned department, which broadly includes name of the department, total number of students and employees, visitors of the department, average working days and office timings etc. Another part of the questionnaires extract the present consumption of resources like water, energy, or the handling of solid and hazardous waste. Maintaining records of the handling of solid and hazardous waste is much important in green audit. Last part of the questionnaires shows possibilities of loss of resources like water, energy due to improper maintains.

## **2.2 Onsite visit and observations:**

Bharati Vidyapeeth's New Law College campus has vast built up area comprising of various departments, administrative building, Library, Class rooms, sports complex. All these amenities have different kind of infrastructure as per their requirement. All these buildings were visited by the surveyors. Presents conditions were checked by specific check list. Personal observations were made during the onsite visit.

## **2.3 Data analysis and final report preparation:**

Required primary and secondary data were collected by different ways like questioners, check list etc. Collected data were cross checked during the personal onsite visit. In case of green audit, the filled questionnaires of the survey from each group, were tabulated in excels spreadsheets. The tabulated data is then used for further analysis. SPSS software is used to find out the frequency distribution and results in percentile format. For better understanding of the results and to avoid complications, averages and percentages of the Tables were calculated. Interpretation of the overall outcomes is included in Final report.

# OVERVIEW OF GREEN AUDIT

## **Audit Criteria**

- 3.1 Green Cover
- 3.2 Waste Management
- 3.3 Electricity and Energy Audit
- 3.4 Water Conservation
- 3.5 Health and Hygiene
- 3.6 Training and Awareness

### **3.1 Green Cover**

The college continuously conducts tree plantation drives as a mission. The plantation movement is conducted three times during the year i.e. before the arrival of monsoon, during monsoon and post monsoon. Space has been allocated for developing a garden. The college premises indicate the awareness level on floral biodiversity among the staff and students of the college.

Counting of trees and shrubs in the college premises was done by Student volunteers. The college has maintained books on identification of flora and fauna. College students are also encouraged for bird watching within the campus. Records of such surveys on floral & faunal biodiversity are maintained and were available during the audit.

Different activities by student are continuously trying to highlight the issues concern about environmental conservation and protection. Various field visits are organised to get aware about the local biodiversity. Apart from this, students organize time to time trips and nature treks to places of ecological importance for students who are interested. Following activities clears the intention towards development of Green Belt.

### **List of Flora and Fauna**

With the help of students a project on identification of plants in campus was undertaken and list of floral biodiversity is listed. Project on identification of fauna which includes, birds, reptiles etc. in campus was undertaken and list of faunal biodiversity is listed. (Attached with Annexure I)

### **Drip and Sprinkler Irrigation system**

As a part of water conservation Technique College installed drip and sprinkler system for watering the plant and garden premises. This will save the water use.

### **Plantation of Rare Endangered Species**

College has developed a garden by planting various local plants. Space has been allocated for developing a garden in premises. The college premises indicate the awareness level on floral biodiversity among the staff and students of the college.



### **Plantation with villagers at different nearby villages**

College has started a unique movement of plantation, motivational approaches are developed in local people to plant more and more trees. As a part of this movement villagers from surrounding villages are motivated to plant a tree in front of their house as well as on road side and nourish the same.

### **Revenue from the sale of different items from garden**

College premises have some fruit plants which contain mango, coconut etc. These fruit plants are full grown and produce saleable fruits. College has its own horticulture department which takes care of all these plants. By selling the different items college generates revenue. Horticulture department sells the products and keeps the record of revenue generated. Practice is too much fruitful because fresh and healthy items are supplied to people with affordable rates as compared to market rate. Since the fresh and cheap item is available the demand is more and more.

### **Drinking water system for birds and animals**

As a part of conservation of biodiversity college has made separate drinking water systems for birds and animals. Specific water bowls are placed at typical locations considering the less human interference. This practice shows very good results and bird and animal count is increased because of availability of water and secure place.

## **3.2 Waste Management**

Solid waste management is a burning issue in current days. The rate of generation of solid waste is very high management technology is too inadequate. Unscientific handling of solid waste is also a burning issue which can create threats to public health and environment. It is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out current management practice of solid waste generation in the campus. Paper waste is a major solid waste generated in the campus. Most of the departments including office, library are major contributors in the paper waste generation. Followed by paper plastic is secondary contributing solid waste generated in large quantity in the campus. Office staff is using one side papers for printing and writing. Biodegradable waste generated in campus is mostly from canteen, hostels and guest house kitchens. Glass waste is less contributing but it takes part in solid waste generation. Glass waste generated from laboratory mainly in the form of bottles, many times bottles are reused for storing of other chemicals. Other glass waste is thrown with solid waste. The college has well established protocol to recycling and reuse of resources such as paper in the form of annual sale of stored newspapers and waste papers to scrap dealer. Very few departments are categorizing the plastic and sending it for

recycling. Metal scraps and waste is segregated separately and sent for recycling yearly. Canteen waste is collected and some biodegradable waste is treated with vermicomposting process. It was observed that e-wastes were collected but due for disposal with recycler. Wastes such as electronic peripherals and paper wastes are stored and later collected by the peon.

### **3.3 Electricity and Energy Audit**

Major energy sources utilized include Solar Energy, Electricity and LPG. Major use of the energy is at office, hostel, laboratories, and library canteen and class rooms for lighting, transportation, cooking and laboratory work. Electricity is supplied to the campus by Maharashtra State Electricity Board. There is no provision of generating electricity on site. **But in future they have made provision for generating energy from solar power.**

The NAAC Cell conducted an Energy Audit as a part of Green Audit. Prime aim of audit was to find a way of energy conservation. College use solar energy as conventional energy source. Hostels are covered under use of solar energy. It is documented that Placards and posters are displayed near electricity supply and rooms however it was nowhere to be seen during the walk through. The peon switched off all power supply in non-lecture hours and was confirmed during the site walk through visit. Lab In charge of all laboratories conveyed that electricity during nonworking hours are put to off. Different awareness programs were conducted for peons, staff and students. The college initiated to install CFL and LED bulbs in the college campus the initiative could be strengthened with help of action plan. The college targets to reduce electricity out of total electricity consumed in college as per the documents. This may be supported by maintaining proper relevant records and benchmarking the present consumption.

### **3.4 Water Conservation**

For the purpose of water audit an on-site walk through survey and assessment was conducted to determine the efficiency of water use end to develop recommendations for improving water use efficiency. Overall agenda of conducting a water audit is to identify opportunities to make water use more efficient. Water audit includes tracking assessing and validating all components of flow from distribution system in to the consumer's properties. On the other hand, water audit of a campus review direction and quantity of water used for domestic, laboratory, drinking, gardening, sanitary and landscaping processes.

**3.4.1 Drinking water** is provided on assessable place in the campus with 3 Reverse Osmosis systems. Drinking water is regularly being tested for the water parameters according to prescribed BIS standards for drinking water. Toilets were checked for leakages and spillage. These toilets were checked at random and found to be maintained in leakages and spillage free. Although it is highly appreciated that the college has initiated **Rain Water Harvesting** on site. Student conducts water conservation drives inside the campus and also at public places. (Details are attached with annexure). College incited to reduce water consumption by raising awareness in students & staff members and having periodic check on leaks. There were no displays of signage or message for Good Practices in the College premises for Water Conservation. It is needed for the continuous highlight of the issue. The college incited to recycle and reuse the wash water of wash basin for gardening purposes as a future plan. The college also planning for the rain water harvesting system as conservation practices.

#### **3.4.2 Waste Water Management**

As a concern of waste water management college has installed Sewage Treatment Plant of capacity 50 CMD separately. The latest fourth generation state-of-the-art aerobic biological treatment technology is offered.

#### **3.5 Health and Hygiene**

The college incited to promotes **Swatch Bharat Abhiyaan** by maintaining cleanliness on campus. It is well concentrated on housekeep. Toilets were checked for hygiene, leakages and spillage. These toilets were checked at random and found to be maintained in hygienic condition also students were found to be satisfied with hygiene level. It is documented that Sweeper cleans the floor and toilets regularly Swachh Bharat Abhiyaan are promoted by the students and staff. For a good hygiene practices college run following activities.

#### **Campus as Oxygen Park**

By covering maximum area under green cover i.e. under plantation college has been Oxygen Park for the human as well as birds and plants also. College campus works as an oxygen park because campus it provides good, fresh and non-contaminated air. Considering the conditions local people enjoying the campus ride at morning and evening time.

### **Illumination and ventilation**

College buildings are more spacious and class room and all other rooms are good ventilated. Natural illumination and ventilation is too good. There is no need of artificial ventilation and illumination.

### **Sanitation drive**

College conducts sanitation drive, which motivated student and staff about the cleanliness practices and give them exposes for the voluntary work. College has appointed contractor for sanitation purpose.

### **Housekeeping/Pest control**

College has adopted a good practice of housekeeping and pest control. Contract is given to third party for housekeeping and pest control and monitored regularly.

### **Awareness Campaign**

As a part of health and hygiene practices college arranges different awareness camping on different dieses. As a routine activity Awareness campaign on Ebola, Zinka, Swine Flue were arranged.

### **3.6 Training and Awareness.**

The college student's conducts street plays on various environmental, health and hygiene issues. Students with teaching and non-teaching staff actively participate to promote **Swachh Bharat Abhiyaan**. Time to Time College organizes the lectures on experts on the issue of environment and social responsibilities.

### **3.7 Corporate Social Responsibility (CSR)**

College does not work as a typical educational institution; key aim of college is to percolate the knowledge at the lower line of the society without any expectation. Now days it is called as corporate social responsibility but same is the vision from their establishment and it is achieved locally via different educational institutions. By following ways college reaches to society or mass.

## **Summary and Audit findings**

1. College takes efforts for solid waste management especially general waste by proper methods.
2. Recycling and reuse practice is followed strongly.
3. Solid waste and Biomedical waste is managed properly and appreciated
4. Electricity consumption is more and non-controllable at some departments.
5. Use of CFC and CFL lamps is minimum and is to be encouraged.
6. Toilets and bathrooms are consuming more water particularly at hostels.
7. Good watershed management program is implemented on campus.
8. Well adequate water filtration and Water treatment plants system are available.
9. E-waste segregation, handling and disposal should be done properly.
10. Good housekeeping is maintained throughout the premises.
11. Visual signage boards for generating awareness about conservation of water and electricity are found and displayed at prominent location.
12. Drinking water is currently tested for the water parameters according to prescribed standards.

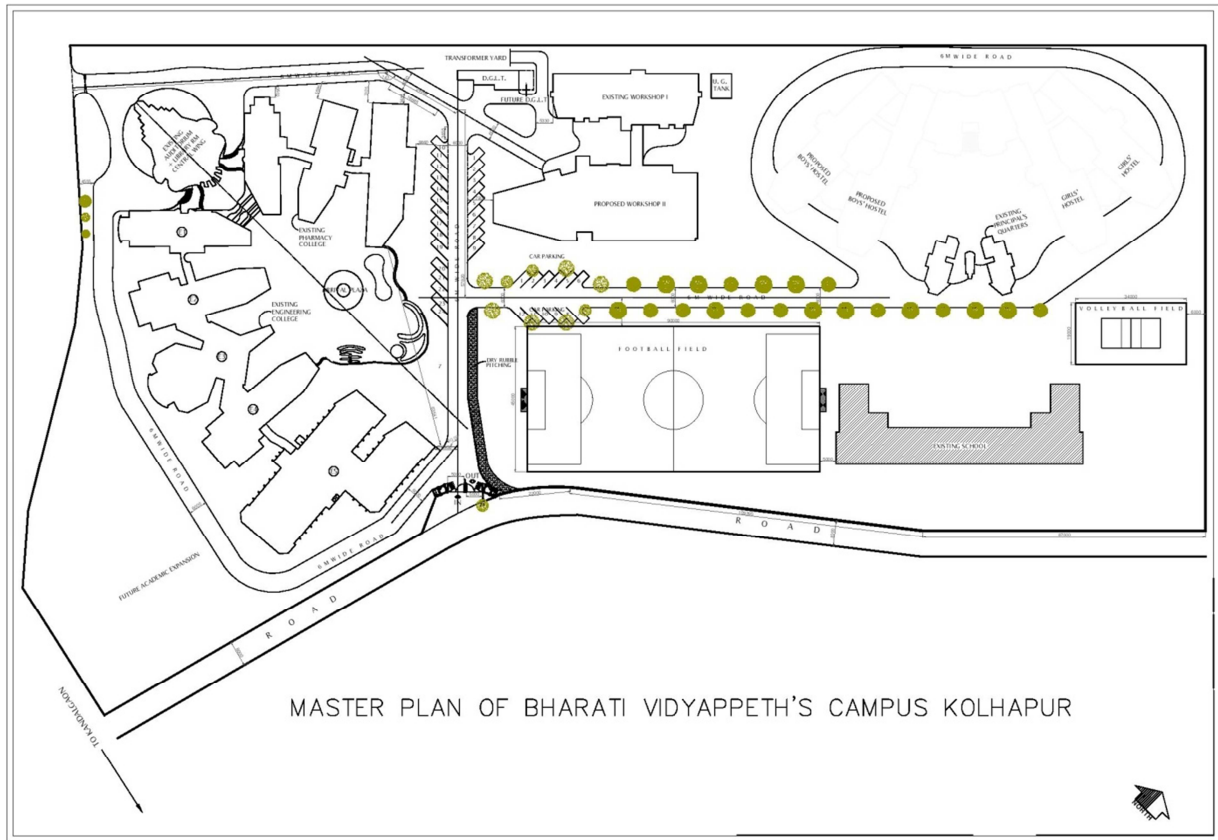
## **Recommendations**

Following are some of the key recommendation for improving campus environment.

1. Vision Mission and Goal to be prepared for consumption & reuse of all natural resources with all the recommendations and current practice carried by institution.
2. The college should develop internal procedures to ensure its compliances with environmental issues.
3. Leakages and corrosion of pipes, overhead tanks be maintained timely and promptly.
4. The college should improve its monitoring and reporting system for water usage, electricity consumption etc.
5. The college should develop a segregation protocol for the segregation of different type of solid waste.
6. To achieve the target of reduction in electricity and water consumption, there should be proper documented management programs to achieve the same.
7. College should arrange special drive to check of PUC and should be made mandatory for students who use and park personal vehicles in the college premises.

# **ANNEXURES**

## Layout of Campus



# Maintenance of the infrastructure

Maintenance of the infrastructure is undertaken by,

- **General Maintenance**
- **Electrical Maintenance**
- **General Maintenance**
  - It is sub-divided into – Plumbing, Carpentry, Welding, Mason, Maintenance of Sewer lines etc.
  - A total of 04 staff and 2 supervisors are working with general maintenance department.
  - This department is supervised one in charge.
  - The department maintenance College, Hostels, Central Library, Staff Quarters, Filtration Plant & Sewage Treatment Plant.
- **Electric Maintenance Department**
  - It consists of well qualified technical staff headed by Electrical Engineer.
  - There is AMC for generators, UPS, Vacuum Compressor in OT and air conditioning system which is supported by our team.
  - The Electric Maintenance department looks after over all preventive maintenance as well as break down maintenance.
  - The electric supply to the campus by High Tension line supported by 250 KVA diesel generator sets.
  - We maintain the power factor to save electricity for which we are been regularly awarded incentive by Maharashtra State Electric Board.



## **1. DRINKING WATER PLANT (D.W.T.P.)**

- The plant having capacity of 200 LPH for Raw Water and Filtered Water each.
- **Source of Water** – Bore as well as well water lifted from Kandalgaon approximately 2 km from Bharati Vidyapeeth College Campus.

## **2. Green Campus:**

- College maintain a lush green campus.
- There are more than 700 trees and lawns of 500 sqmt.
- We have also maintained 1000 garden pots.
- We have maintained diverse flora with fruit bearing, flowering and ornamental plants.
- We have developed nursery for nurturing saplings. We are also outsourcing these garden pots to other institutes.
- Water is supplied through drip irrigation, sprinklers and gun method.
- All the water required for the gardening is recycled water from STP plant.
- We practice composting of garden waste.
- The garden facility is maintained by 4 gardeners, 1 supervisor.

## **3. Solar water heating system :**

- Solar water heating system of flat plate collector type of total 500 litre capacity is installed in the campus. This provides hot water facility to all the hostels and laboratory.
- It is eco-friendly system which helps in reducing use of electricity and other conventional fuels.

## **6. Fire Safety:**

- College have installed various types of fire extinguishers at various locations, certified by external agency authorised by fire department of Municipal Corporation.
- The system consists of 08 No's of various types & capacities of fire extinguishers.
- There are ample and easily accessible fire alarms and fire extinguishers.
- The fire extinguishers are well displayed in each building.
- External agency is employed for regular maintenance of fire extinguishers and water pumps.
- Regular maintenance is looked after by well-trained personnel.

It is maintained through AMC with professional service provider

# **SURVEY DETAILS**

**A SIMPLE PROFORMA FOR GREEN AUDIT**  
**Bharati Vidyapeeth New Law College, Kolhapur.**

The University as well as its constituent colleges may monitor the environmental conditions in the respective institutes and campuses from various angles that are relevant to Indian requirements, without stress on legal issues or compliance. They should answer a series of questions on a regular basis regarding environmental conditions in their respective units. This innovative scheme, developed by the P. R. Environmental Education Centre, Chennai, is simple and user-friendly. This environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.

The broad aims/benefits of the eco-auditing scheme would be

- Environmental education through systematic environmental management
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Reduction in resource use
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the college/ institute and its environment
- Enhancement of college/ institute profile
- Developing an environmental ethic and value systems in young people
- The areas of eco auditing to be followed / practiced by participating institutions:
  - A. Waste Minimisation and Recycling
  - B. Greening
  - C. Energy Conservation
  - D. Water Conservation
  - E. Animal Welfare

**The Head of Department are requested to fill the following simple questionnaire for the period 2022-23.**

1) What is the total strength of students and teachers in your College/ Institute?

Total no. of Students: 608. No. of Teaching & Non-Teaching Staff : 33

2) Which of the following are available in your college/ institute?

- i) Garden area - Available
- ii) Playground - Available

- iii) Kitchen - Available
- iv) Toilets (number) - 14
- v) Garbage dump (number) - 01
- vi) Laboratory – Available
- vii) Canteen - Available
- viii) Others (specify)- NA

3) Which of the following are found near your college/ institute? Mark the level of disturbance it creates for the college/ institute in a scale of 1 to 9.

- i) Municipal dump yard – NA
- ii) Garbage heap – NA
- iii) Public conveyance – 2
- iv) Sewer line – NA
- v) Stagnant water – NA
- vi) Open drainage – NA
- vii) Industry – (Mention the type) – 2
- viii) Bus / Railway station – 1
- ix) Market / Shopping complex / Public halls – NA

### I - WASTE

1. Do your college/ institute generate any waste? If so, what are they? –

General waste from canteen & office.

Yes, our college/ institute generate general waste i.e paper & canteen waste.

2. What is the approximate amount of waste generated per day? (Please put ✓ mark in the table below at appropriate places.)

Approximately	Bio-degradable	Non-bio-degradable	Hazardous	Others
Less than one kg.			NA	
Between 1 and 10 kg.	05	03		
More than 10kg	√	√	√	

3. How is the waste generated in the college/ institute managed By?

Composting	Garden waste is decomposed by vermi culture and composting procedure.
Recycling	Waste sewage water is recycled daily 50 m <sup>3</sup> . It is used for garden & plantation.
Reusing	Reuse of waste water by operating STP plants.
Others (specify)	NA

4. How many separate boxes do you think you would need to put into a classroom to start a waste segregation and recycling campaign?
  - A. Waste segregation in college is done through as per waste management & handling rules, 1989 in that 3 colour codes are used for segregation of waste. These codes are Yellow, Green, Red.
  - B. In classroom two dustbins one for recyclable waste and other for non-recyclable waste are required to start waste segregation and recycling campaign.
5. What would each be used for? (Develop a colour code with reasons)
  - A. College: As per waste management & handling rules 1989.
    - i) **Yellow**: Paper waste, cotton, etc.
    - ii) **Green**: General waste from garden and canteen
    - iii) **Red**: laboratory waste, solid & liquid waste
  - B. Classrooms, hostels and residential area:
 

Two: Green for recyclable waste and Black for organic waste.
6. Do you use recycled paper in college/ institute?
 

Yes we use recycled paper in our college.
7. How would you spread the message of recycling to others in the community?
 

Our students during their community outreach activities communicate and educate the people regarding importance of recycling.
8. Have you taken any initiatives? If yes, please specify.
 

We have started to sensitize the staff & students with importance of recycling.
9. Can you achieve zero garbage in your college/ institute? If yes, how?
 

Currently it is very difficult given the limitations of availability of infrastructure and cost constraints. However it is definitely a goal of the institute to achieve zero garbage in future.

## II - GREENING THE CAMPUS:

1. Is there a garden in your college/ institute? List the plants there, with approx. numbers of each species. –
 

Yes, approximately 772 plants of various species including all varieties.

<b>Sr. No.</b>	<b>Common Name</b>	<b>Botanical/Scientific Name</b>	<b>No. of Plant</b>
1	Peacock Flower	Delonix regia	102
2	African Tulip Tree	Spathodea Campanulata	26
3	Fistula	Xcassia Fistula	73
4	Rain Tree	Samanea	41
5	Foxtail Palm	Wodyetia bifurcata	19
6	Silver Oak	Grevillea robusta	35
7	Kanchan	Bauhinia accuminta	42
8	Limb	Azadirachta	13
9	Ficus	Ficus racemosa	07
10	Coconut	Cocos nucifera	06
11	Chinch	Tamarindus indica	01
12	Taman	Lagerstroemia speciosa	12
13	Christmas Tree	Araucaria columnaris	05
14	Ficus blackena	Ficus benjamina	16
15	Ficus Yellow	Ficus elastica	03
16	Morpankhi	Platyclusus Orientalis	30
17	Ixora	Ixora coccinea	19
18	Kaner	Thevetia Peruiana	10
19	Jaswand	Hibiscus rosa-sinesis	06
20	Chapha	Plumeria Obtusa	05
21	Kadamba	Neolamarckia	01
22	Ashoka Tree	Saraca asoka	12
23	Gulbhendi	Impatiens balsamina	07
24	Phanas	Artocarpas hetrophyllus	02
25	Bore	Ziziphus mauritiana	01
26	Black Berries	Syzygium cumini	06
27	Mango	Magifera indica	10
28	Areca Palm	Dypsis lutescens	13
29	Powder palm		10
30	Amla	Phyllanthus emblica	04
31	Valerian	Valerian Wallichii	07
32	Saptaparna	Astonia Scholaris	01
33	Peepal	Ficus religiosa Linn	10
34	Banyan Tree	Ficus benghalensis	11
35	Rose	Rosa	01
36	Bottle Palm	Hyophorbe lagenicaulis	10
37	Bottlebrush	Callistemon	01
38	Jacaranda	Jacaranda mimosifolia	02
39	Almond	Terminalia catappa	01

40	Millingtonia	Millingtonia hortensis	18
41	Gum Arabis Tree	Acacia auriculiformis	07
42	Rosea	Tabebuia rosea	05
43	Ramphal	Annona reticulata	01
44	Pimpran	Ficus Arnottiana	01
45	Cherry	Prunus avium	01
46	Green Champa	Artabotrys hexapetalus	01
47	Golden cyprus	Crassula ovtia	03
48	Guava	Mirabilis Jalapa	01
49	Phoenix Palm	Phoenix dactylifera	05
50	suru		01
51	Champa Khadaki	Magnolia champaca	04
52	Chenduphal	Parkia biglandulosa	24
53	Fan Palm	Palmyra Palm	02
54	Bahava	Cassia Fistula	08
55	Bakul	Mimusops elengi	04
56	Bidi leaf	Bauhinia racemosa	04
57	Maple-leaved bayur tree	Petrospermum acerifolium	14
58	Surangi	Mammea suriga	04
59	Undi	Calophyllum Inophyllum Linn	02
60	Tabebuia Makhamia	Tabebuia	05
61	Fan Palm	Livistona chinensis	02
62	Ain	Terminalia elliptica	03
63	Tecoma	Tecoma capensis	05
64	Bamboo	Bamboosa Aridinarifolia	25
65	Subabul	Leucaena Leucocephala	03
66	Similar ficus		17
<b>Total</b>			<b>772</b>

2. Suggest plants for your campus. (Trees, vegetables, herbs, etc.) – Medicinal trees, Forest trees, fruit trees & shrubs.

We are planning to plant Ayurvedic Medicinal Plants like Brahmi, Ashwagandha, Bael, Nirgundi, etc.

3. List the species planted by the students, with numbers. :

50 Cocosnucifera plants were planted by the students at the time of “**Vruksha Dindi Abhiyan**”.



### III - ENERGY

1. List the ways that you use energy in your college/ institute. (Electricity, LPG, others). Using this list, try to think of ways that you could use less energy every day.

Sr. No.	Ways you use energy	Ways that you could use less energy
1	Electricity: Illumination, Ventilation, all electric equipment.	Use of these electric appliances and instruments judiciously.
2	LPG: Cooking, experiments	Using only when absolutely necessary and using along with appliances designed to reduce the energy expenditure.
3	Diesel / Petrol	Proper maintenance and judicious use of vehicles.
4	Solar water heaters	Increase the use to conserve non-renewable energy.
5	Biogas plant	Increase the use to conserve non-renewable energy.

2. Are there any energy saving methods employed in your college/ institute? If yes, please specify and suggest more. If no, suggest some.

Employee and students are instructed and educated to use electricity judiciously and avoid wastage. Newer, energy efficient appliances like LED bulbs, LED TVs, Energy efficient refrigerators etc. are gradually inducted in day to day use replace conventional appliances. Impetus is given to utilization of solar energy in the form of solar heaters. The institute plans to use solar cells for production of energy.

3. How much is the monthly expenditure of your college/ institute on energy such as electricity, gas, etc.

Month	Expenditure on Electricity Bill	Expenditure on Gas	Expenditure on Generator (Rs/M)
January 2022	170655.00	---	12000.00
February 2022	159950.00		12000.00
March 2022	193745.00		12000.00
April 2022	198691.00		12000.00
May 2022	169035.00		12000.00
June 2022	190820.00		12000.00
July 2022	190815.00		12000.00

August 2022	190608.00		12000.00
Sept. 2022	186314.00		12000.00
October 2022	196369.00		12000.00
November 2022	217818.00		12000.00
December 2022	228422.00	---	12000.00
<b>Total</b>	<b>22,93,242.00</b>		<b>1,44,000.00</b>

4. What is the percentage of CFL bulbs has your college/ institute installed? If the percentage is less what are the reasons?

The percentage of CFL bulbs is 20%. The reason behind the low usage is necessity of proper uncompromised illumination for college. However they were planning to increase use of high capacity LED bulbs in future.

5. Are any alternative energy sources employed / installed in your college/ institute? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.)

Solar Power Generation system installed of capacity 129 KW for electricity generation.

Solar water heaters are used for providing hot water.

Similar all in one solar street light used for street lights. We plan to expand use the photo-voltaic cells for energy production.

6. Do you run “switch off” drills at college/ institute? What is the effect of such drills?

Yes and also we have advisory regarding the same displayed at various places. It has helped creating awareness and thus decreasing wastage of electricity in the institute.

7. What percentage of computers and other equipment’s in your college/ institute are usually put on power-saving mode?

Almost all the computers and majority of equipment with the facility of power-saving mode are usually put on power-saving mode.

All the staff members are instructed for the same.

8. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?

Standby mode is used on the machinery only if is utmost necessary and related to patient care or else the machinery are switched off if not in use.

#### IV - WATER CONSERVATION

1. List four uses of water in your college/ institute.
  - i. Drinking
  - ii. Laboratory
  - iii. Washing
  - iv. Gardening
  
2. How do your college/ institute store water? Are there any water saving techniques followed in your college/ institute? What are they?

Yes, the college has a water storage facility. Our institute give conservation of water an utmost importance.

  - i. We had incorporated a culture of water preservation by educating the staff and students its importance and methods.
  - ii. We have installed a state of the art water purification plant which ensures availability of pure & safe water with least amount of wastage during the process.
  - iii. The integrity of plumbing is constantly ensured and vigilance is constantly maintained to mend any leaks.
  - iv. We have an efficient sewage water treatment plant. We recycle the waste water, and this water is used for gardening and plantation in the campus. Thus we ensure that nearly 30000 litres water is reused per day.
  - v. Gardening is done using drip and sprinkler irrigation.
  
3. If there is water wastage, specify why?

Although we had strived to ensure to eliminate water wastage but some waste is inevitable due to,

  - i. Non-compliance to water saving techniques by the beneficiaries especially illiterate patients.
  - ii. Some machinery requires excess water to control the temperature rise during functioning.
  
4. How can the wastage be prevented / stopped?
  - i. Educating to all the stakeholders for judicious use of water.
  - ii. Strong vigilance on leaking areas through the plumbing & maintenance.
  
5. Write down four ways that could reduce the amount of water used in your college/ institute.
  - i. Use of the modern equipment's requiring less amount of the water for functioning.
  - ii. Expansion of capacity of water treatment plant as well as improving the

quality of output from the treatment plant, rendering it potable.

iii. Use of chemical cleaning instead of water cleaning.

iv. Use of automatic taps.

6. What is the average consumption of water (in kilo-liters) per month?

Nearly 25000 kilo – liters per day.

7. Does your college/ institute harvest rain water? If yes, how many rain water harvesting units are there?

Yes, all the buildings in the campus are equipped with rain water harvesting units.

## **VI - GENERAL**

1. Are you aware of any Environmental Laws pertaining to different aspects of environmental management?

i. Hazardous Waste Management and Handling Rules – 1989.

ii. Air Pollution & Prevention Act – 1981

iii. Water Pollution & Prevention Act – 1974.

2. Does your college/ institute have any rules to protect the environment? List possible rules you could include.

i. Our college abides to the rules & regulations under the Hazardous Waste Management and Handling Act. – 1989

3. How does the college/ institute bring environment awareness among stakeholders of the college/ institute?

The institute imparts Environmental Awareness Education to the teachers and the students by informal communication, posters and guest lectures by eminent authorities.

## **VII. PROVIDE ANY OTHER SIGNIFICANT INFORMATION.**

NA