

VIDYA BHARATI MAHAVIDYALAYA, AMRAVATI

C. K. Naidu Road, Camp, Amravati – 444602. (M.S.) India

- Affiliated to Sant Gadge Baba Amravati University, Amravati.
- Re-accredited with Grade A by the NACC (CGPA 3.26-Second Cycle).
- College with Potential for Excellence (CPE) Status by the UGC.
- Star College Status by Department of Biotechnology, New Delhi.
- Identified as 'Lead College' by S.G.B. Amravati University, Amravati



GREEN AUDIT REPORT 2017-2018

Prepared by

IQAC

Vidya Bharati Mahavidyalaya Camp, Amravati

And

Shri Shri Enviro Consultancy, Amravati

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Date : 12/04/2018

To,
Principal,
Vidya Bharati Mahavidyalaya Camp, Amravati

This is to certify that Shri Shri Enviro Consultancy, Amravati has conducted the "Green Audit" of Vidya Bharati Mahavidyalaya campus. It has been observed that the life sustainability is quite possible and does not threat to any habitat. The audit is conducted sincerely by applying requisite parameters and the report is prepared scientifically. This report consists of pages 1 to 36.



V.D. Bure
(V.D. Bure)

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Executive Summary

A nation's growth starts from its educational institutions, where the ecology is thought as a prime factor of development associated with environment. A clean and healthy environment aids effective learning and provides a conducive learning environment. Educational institutions now a day are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc. The activities pursued by colleges can also create a variety of adverse environmental impacts. Environmental auditing is a process whereby an organisation's environmental performance is tested against its environmental policies and objectives. Green audit is defined as an official examination of the effects a college has on the environment. As a part of such practice, internal environmental audit (Green Audit) is conducted to evaluate the actual scenario at the campus.

The IQAC Committee 2017-18 of Vidya Bharati Mahavidyalaya and Shri Shri Enviro Consultancy, Amravati has conducted a "Green Audit" in the academic year 2017-18. "Green Audit" is one of such potential tool which can be used effectively by any educational institution for resource usage identification and optimization. The total build up area of college is 211542.09 sqm and open space area is 7339 sqm. For performing green audit college campus is divided in to following pattern i.e. Main Building, College of Management, Vidya Niketan, Sports Complex, B. Tech. Building, Girls Hostel, Botanical Garden, play Ground, Canteen, Parking etc. All the building and class room are equipped with standard furniture and fixtures and have all adequate basic facilities on each floor including toilet and drinking water.

Biodiversity: In total, based on our data collected by consulting agency there are 144 plants in the college campus including trees, shrubs and herbs during the the academic session 2017-18. There are 70 plants present in the college Botanical Garden representing different family. Biodiversity of fauna is also maintained by college campus. The campus is working as a habitat for different faunal species. Spiders, Moths and Butterflies, Insect, Amphibians, Reptiles, Birds, Mammals of campus were studies by consulting agency. Biodiversity present in campus shows eco friendly association of plant, animals and human being.

Water: The study observed that the Well Water (01), Corporation Tap Water (01) and Tube Well water (03) are major sources of water in College campus. Overall one well present near the MCVC Building, one corporation tap and three tubes well present in campus complete the overall need of water in college. Necessary drinking water parameters are periodically analyzed for the detection of possible hazardous and microbial contents with the help of Government Public Health Laboratory by following the standard procedure. The analysed parameters included pH, Colour, Total Dissolved Solids, Dissolved Oxygen, Chlorine, Nitrate, Iron, Total Hardness, Calcium Hardness and Total Coliforms. All the parameters were within standard desirable limits of drinking water quality (BIS IS: 10500:1991).

Air: The air pollutants monitored on regular basis are Sulphur dioxide (SO₂), Oxides of Nitrogen as NO₂, Carbon Monoxide (CO) and Repairable Suspended Particulate Matter (RSPM). High Volume Sampler is an instrument used for monitoring of air quality parameters in the college campus by following the guidelines, rules and formats prepared by Ministry of Environment and Forest, New Delhi, Central Pollution Control Board. All above mentions air parameter are below the standard limits given by CPCB. In campus total 144 plants of different varieties are present including trees, herbs and shrubs. College campus has a lot of open area and all buildings are discrete hence airy, clean atmosphere is seen. College created a green zone in college campus helps to reduce pollution level and for carbon offset. Other than vehicles there is no other source of air pollution present in college campus.

Noise: The noise level measurement was periodically carried out at six locations, at outside as well inside the college campus. The major source of noise identified in the college campus has been predominantly the vehicular movement, and the transportation activities inside and outside the college. Other than near Main Gate location all reading is within a limit which given by CPCB.

Energy: Main energy source in campus is electricity of MSEB and Solar Photovoltaic Panels. Energy source utilized by all the departments and common facility centre is electricity, liquid petroleum and LPG. Major use of the electricity is observed at office, laboratories for lighting, laboratory work and minor use of LPG for practical purpose in laboratories. The total energy utilization of the college for different purposes is approximately 13000 kwh/month. Photovoltaic Cells are also installed in the campus of 100 KVA capacities on the top of Main Building and B. Tech. Building which generate 510 unit per day as an alternate renewable source of energy. College already given preference to the

most energy efficient and environmentally light appliances such as energy-saving CFL and LED bulbs and LED tubes with reflectors but in some section old incandescent bulbs, Tubes are in working replace these on priority base. Consumption of LPG for education or practical purpose is very less. At the time of practical, no leakages and off mode regulators are seen at time of verification in laboratories of various department of college. The college follows “No Vehicle Day” on second and fourth Saturday of every month was minimizes the fuel consumption for a day, which is a one of green practices followed by the college.

Solid Waste: The average total solid waste collected in the campus is 21 Kg/day including all categories. Waste generation from tree droppings and garden management and paper waste is a major solid waste generated in the campus. Most of the departments including office, library are major contributing in the paper waste generation. Single sided used papers reused for writing and printing in all departments and office work. Followed by paper plastic is secondary contributing solid waste generated in large quantity in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Plastic waste. The college have 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. Metal waste, e-waste and wooden waste is stored and given to authorized scrap agents for further processing.

1. Introduction

An environmental audit as defined in ISO 14000 is a systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process. The International Chamber of Commerce defines environmental auditing as, "a management tool comprising a systematic documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of contributing to safeguarding the environment by facilitating management control of environmental practices and assessing compliance with company policies which could include meeting regulatory requirements. Environmental audits are generally performed on a routine or periodic basis. More frequent assessments may be appropriate at any facility that has been targeted for more frequent federal, state/province and/or local inspections, and/or been issued a notice of violation, or subject to some form enforcement proceeding since the last assessment. The audit should be carried out following the ISO Standard 14011 on Environmental Auditing Procedures including a kick-off meeting, detailed inspection, interviews, document review as well as a closeout meeting with the plant management.

Green auditing is a means of assessing environmental performance (Welford, 2002). It is a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices related to meeting environmental requirements (EPA, 2003). It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all water, air, solid waste, energy noise status examination.

It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience. Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self enquiry is a natural and necessary

outgrowth of a quality education, it could also be stated that institutional self enquiry is a natural and necessary outgrowth of a quality 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.

2. Goals

Vidya Bharati Mahavidyalaya, Amravati conducted a green auditing in the academic session 2017-2018 with specific goals as follows:

1. To conduct a baseline survey to know the reality status of green practices.
2. To identify strength and weakness in green practices conducted in college campus.
3. To analyze and suggest solution for problems identified from Audit Report.
4. To increase environmental consciousness throughout the campus among all the stakeholders.
5. To identify and assess if some environmental risks inside the college campus.
6. To motivate staff as well as students for optimized sustainable use of available natural resources.
7. To give the direction to work on some local environmental issues.

3. About College

Vidya Bharati Mahavidyalaya one of the foremost educational institutions of Vidarbha, was established in 1972 first as a Science College at the graduate and Junior College levels. Later it blossomed into a multi-faculty institution with Arts, Commerce, Management and Cosmetic Technology. The College offers courses from the Junior College level, through Graduation and Post-graduation to Research for PhD in all the faculties.

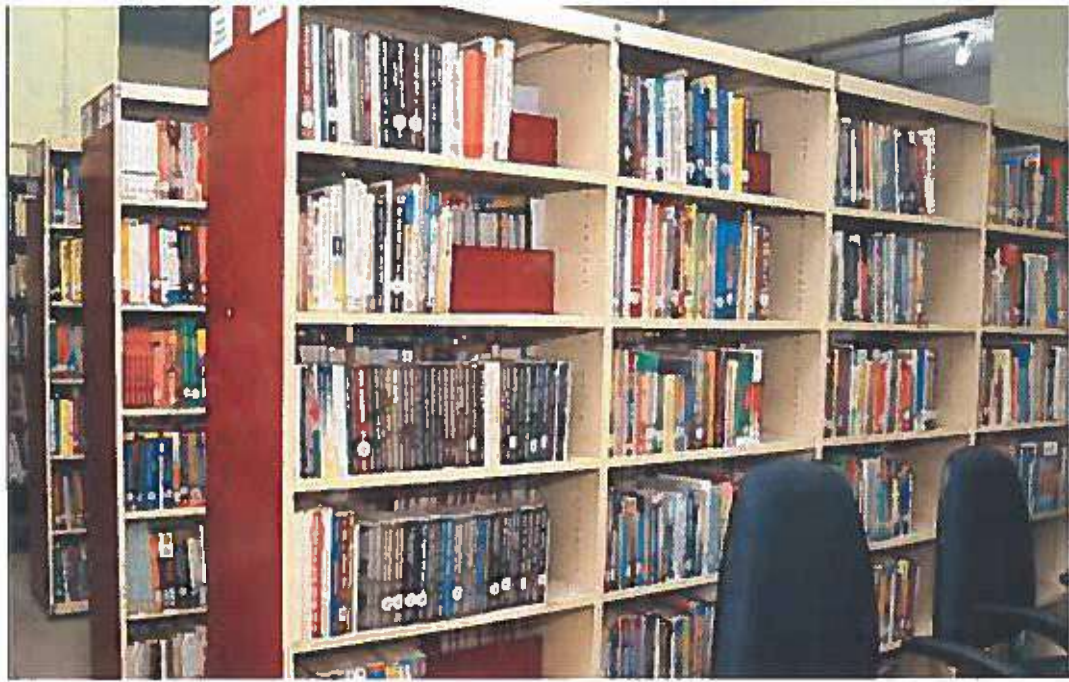
The institution has well-equipped laboratories, ample computer and internet facilities, an excellent library, an immense playground with a Sports Complex, a well-equipped Gymnasium, a state-of-the-art AV Theatre, an Astronomy Club and two Girls' Hostel in the campus itself. These facilities along with exemplary teaching staff have taken the results of the college to greater heights of glory with each passing year. Student achievers in the fields of Academics and Sports and Cultural activities are felicitated every year by the College with prizes, certificates, mementoes and track suits.

On 5th January 2013, the College was re-accredited by NAAC, Bangalore with Grade 'A' and a CGPA of 3.26, the highest till date among all the colleges in the four Universities of Vidarbha. The College was also awarded the Star College status by the Department of Biotechnology, New Delhi. It was also accorded College with Potential for Excellence (CPE) status by the UGC, New Delhi for the second time. The College has significant representation of teachers in the University, with 02 members as Deans of the Faculties of Science and Commerce and 12 members on the different Boards of Studies. Researches being a major activity, the faculty members have 05 Major and 30 Minor UGC-approved Projects to their credit.

Photographs of College







3.1 Topography of Amravati City

Amravati city is a city in the state of Maharashtra, India. Amravati is the second largest and most populated city of Vidarbha after Nagpur. It is said that Amravati is named for its ancient Ambadevi temple.

Amravati is located at 20.93°N 77.75°E . It has an average elevation of 343 meters (1125 feet). The city is located near the passes through the hill that the cotton growing regions of the Purna basin to the West and the Wardha basin to the East. There are two lakes in the eastern part of the city Chhatri Talao and Wadali Talao. Pohara and Chirodi hills are to the east of the city. The Shivtekadi hill is inside the city, it is 60 meters high.

Amravati has a tropical wet and dry climate with hot, dry summer and mild to cool winter. Summer lasts from March to June, monsoon season from July to October and winter from November to March. The highest and lowest temperature ever recorded was 49.1°C on 25 May 2013 and 5.0°C February 1887 respectively. Average rain fall of Amravati city is 248 mm.

The population of Amravati city in the year of 2011 was 647057 with male and female population placed at 329992 and 317065 individually. The sex ratio of the Amravati city is 957 female for 1000 males. In terms of literacy, the total number of literates is 535594. 278897 are literate male and 256697 females. The average literacy rate of the city of Amravati is about 92.07%.

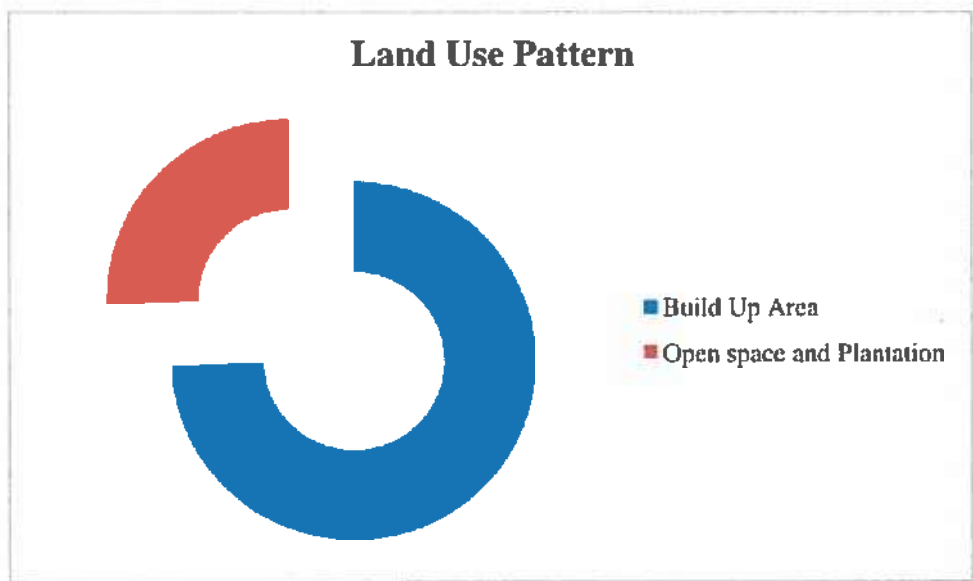
The soil of the Amravati region can be classified as red, brown, sandy and black cotton soil. The black cotton soil covers most of the parts of the Deccan trap, sandy and silts soil occurs along the alluvial plains of the rivers.

3.2 Land Use Data

Vidya Bharati Mahavidyalay is within the geo-position between latitude 20⁰56' N and longitude 77⁰46' E in Amravati, Maharashtra, India. It encompasses an area of about 28881.16 sqmeter. The college has following land use pattern:

Categories of Land Use	Area in sqm
Build Up Area	21542.09
Open space and Plantation	7339.07
Total Area	28881.16

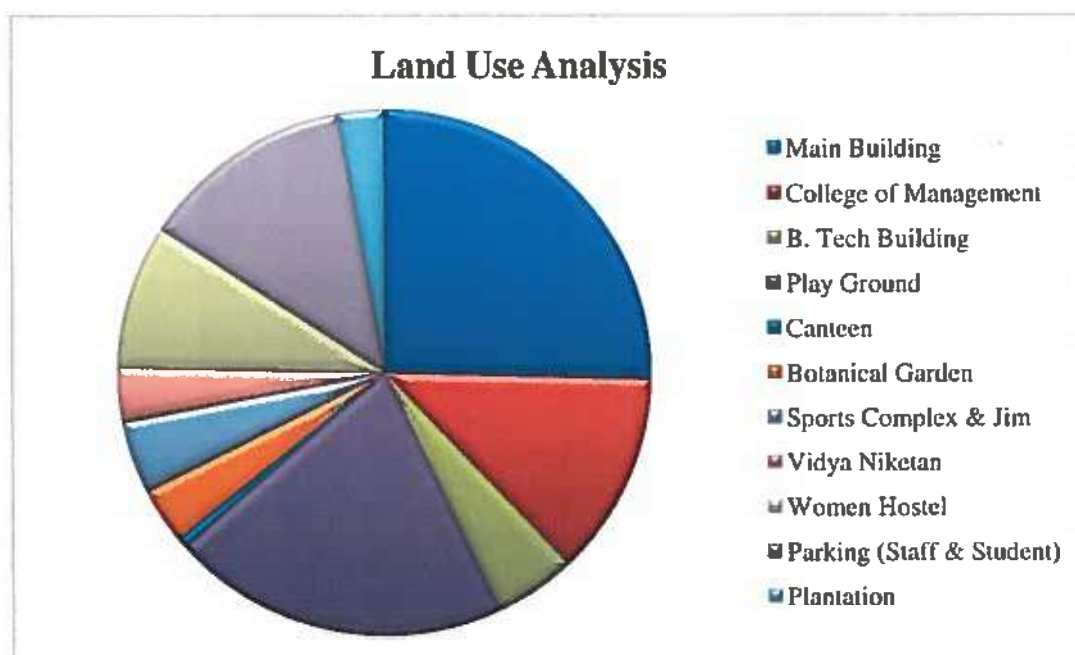
The total area of Vidya Bharati Mahavidyalay is 28881.16 sqm out of which the build up area 74.58 % (i.e. 21542.09 sqm) and open space and plantation area is 25.41% (i.e. 7339.07 sqm).



3.3 Land Use Analysis

Following are the land use analysis of Vidya Bharati Mahavidyalaya:

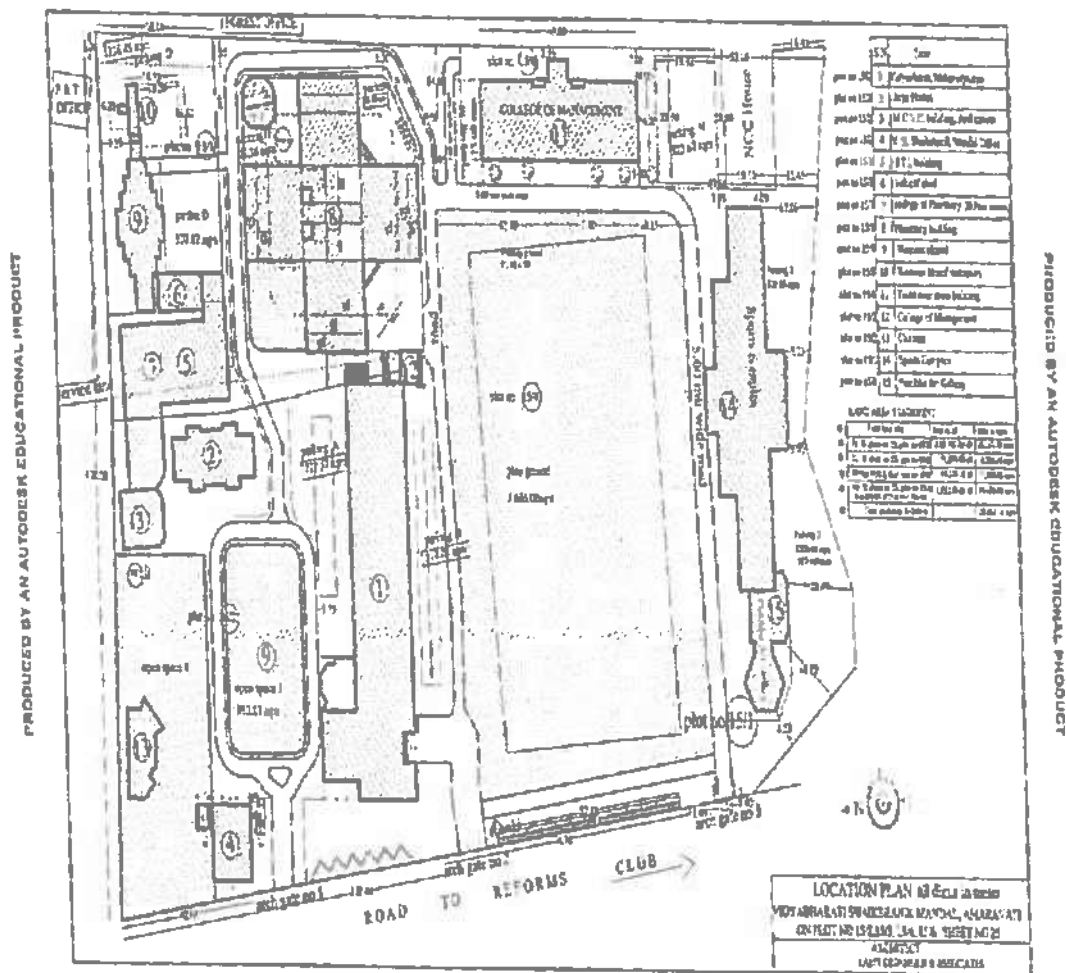
Category of Land Use	Area in sqm
Main Building	7007
College of Management	3472
B. Tech Building	1370
Play Ground	5665
Canteen	147
Botanical Garden	963.17
Sports Complex & Jim	1234
Vidya Niketan	911
Women Hostel	2457
Parking (Staff & Student)	3579.62
Plantation	777.57



The total build up area of college is 211542.09 sqm and open space area is 7339 sqm. For performing green audit college campus is divided in to following pattern i.e. Main Building, College of Management, Vidya Niketan, Sports Complex, B. Tech. Building, Girls Hostel, Botanical Garden, play Ground, Canteen, Parking etc. All the building and class room are equipped with standard furniture and fixtures and have all adequate basic facilities on each floor including toilet and drinking water. The spacious classrooms, administrative office, well equipped and spacious laboratories, parking facilities are the main features of this campus.

Collage Layout Plan

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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

3.4 Floral Diversity of College

Vidya Bharati Mhavidyalaya, which was established in the year 1972, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 25.41 % of the total area is occupied by open land and plantation that generates a better and sustainable campus environment. Every year before Monsoon College organized the plantation programme with help of management and students. College well maintain the Botanical Garden. The college premises indicate the awareness level on floral biodiversity among the staff and students of the college. The campus maintains the biodiversity of plants.

In total, based on our data collected by consulting agency there are 144 plants in the college campus including trees, shrubs and herbs during the the academic session 2017-18. There are 70 plants present in the college Botanical Garden representing different family.

Flora of the Campus

Sr. No.	Botanical Name	Family
1	<i>Vernonia cineria</i> (L.)Less.	Asteraceae
2	<i>Calendula officinalis</i> L.	Asteraceae
3	<i>Zinnia peruviana</i> (L)	Asteraceae
4	<i>Zinnia angustifolia</i> kunth.	Asteraceae
5	<i>Blainvillea acmella</i> L.	Amaranthaceae
6	<i>Aerva Lanata</i> (L.) Juss.	Amaranthaceae
7	<i>Achyranthus aspera</i> L.	Amaranthaceae
8	<i>Amaranthus polygonides</i> L.	Amaranthaceae
9	<i>Andrographis paniculata</i> (Burm.f.)Wall ex Ness	Acanthaceae
10	<i>Diplocyclous palmatus</i> L.	Cucurbitaceae
11	<i>Cocculus hirsutus</i> (L.) Deils	Menispermaceae
12	<i>Oxalis corniculata</i> L.	Oxalideaceae
13	<i>Colocasia esculanta</i> (L.) Schott	Araceae
14	<i>Ocimum sanctum</i> L.	Lamiaceae
15	<i>Catharanthus roseus</i> (L.)	Apocynaceae
16	<i>Datura metal</i> L.	Solanaceae

17	<i>Withania somnifera</i> (L) Dunal.	Solanaceae
18	<i>Acalypha indica</i> L.	Euphorbiaceae
19	<i>Curcuma longa</i> L.	Zingiberaceae
20	<i>Zingiber officinale</i> Rosc.	Zingiberaceae
21	<i>Ipomoea cairica</i> (L.) Sweet.	Convolvulaceae
22	<i>Passiflora edulis</i> Sims.	Passifloraceae
23	<i>Aloe vera</i> L.	Liliaceae
24	<i>Asparagus racemosus</i> (L.) Willd.	Liliaceae
25	<i>Cissus quadrangularis</i> L.	Vitaceae
26	<i>Agave americana</i> (L.)A.L.Juss. ex Schutt	Agavaceae
27	<i>Hymenocallis littoralis</i> (Jacq.)	Amaryllidaceae
28	<i>Jasminum auriculatum</i> Roxb.	Oleaceae
29	<i>Dianthus chinensis</i> L.	Caryophyllaceae
30	<i>Trigonella foenumgraecum</i> L.	Fabaceae
31	<i>Setaria pumilla</i> (poir)R.	Poaceae
32	<i>Melanocentris jacquemontii</i> Jaub. and Spach.	Poaceae
33	<i>Alpuda mutica</i>	Poaceae
34	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae
35	<i>Abelmoschus moschatus</i> L.	Malvaceae
36	<i>Lawsonia inermis</i> L.	Lithraceae
37	<i>Murraya koenigii</i> (L.) Spr.	Rutaceae
38	<i>Citrus aurantiifolia</i> (Christm.) Sw.	Rutaceae
39	<i>Hamelia patens</i> Jacq.	Rubiaceae
40	<i>Ixora coccinea</i> L.	Rubiaceae
41	<i>Coffea arabica</i> Ritter Ron.	Rubiaceae
42	<i>Nyctanthes arbortristis</i> L.	Oleaceae
43	<i>Nerium oleander</i> L.	Apocynaceae
44	<i>Tabernaemontana divaricata</i> (L.) R. Br.	Apocynaceae
45	<i>Calotropis procera</i> (Ait) R. Br.	Asclepiadaceae
46	<i>Solanum nigrum</i> L.	Solanaceae
47	<i>Barleria cristata</i> L. var. <i>cristata</i>	Acanthaceae
48	<i>Adhatoda beddomei</i> Hong Gao	Acanthaceae

49	<i>Azardirecta indica</i> A. Juss.	Meliaceae
50	<i>Ficus benghalensis</i> L.	Moraceae
51	<i>Ficus religiosa</i> L.	Moraceae
52	<i>Ficus glomerata</i> Roxb.	Moraceae
53	<i>Aegle marmelos</i> (L.) Corr.	Rutaceae
54	<i>Feronia limonia</i> L.	Rutaceae
55	<i>Mangifera indica</i> L.	Anacardiaceae
56	<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae
57	<i>Psidium guajava</i> L.	Myrtaceae
58	<i>Santalum album</i> L.	Santalaceae
59	<i>Tectona grandis</i> L. f.	Verbenaceae

Garden of College





3.5 Faunal Diversity of College

Biodiversity of fauna is also maintained by college campus. The campus is working as a habitat for different faunal species. Spiders, Moths and Butterflies, Insect, Amphibians, Reptiles, Birds, Mammals of campus were studied by consulting agency. Biodiversity present in campus shows eco friendly association of plant, animals and human being. Many animals are present in campus are dependent on the trees mainly for food and shelter. Flowers and fruits are eaten by monkeys, and nectar is a use by birds and many insects. Leaf – covered branches of tree keep many animals, such as birds and squirrels, out of reach of predators.

The faunal Diversity of Vidya Bharati Mahavidyalaya campus has been studied and documented as below-

Fauna of the Campus:

Sr. No.	Scientific name	Common name
1	<i>Patrobus longicornis</i>	Black ground beetle
2	<i>Cybister fimbriatus</i>	Water beetle
3	<i>Apis dorsata</i>	Rock honey bee
4	<i>Apis mellifera</i>	Honey bee
5	<i>Oecophyla smaragdina</i>	Red ants
6	<i>Componotus compresus</i>	Black ant
7	<i>Periplaneta american</i>	Cockroach
8	<i>Hottentotta tamulus</i>	Scorpion
9	<i>Sternocera basalis</i>	Orintalis
10	<i>Castalius rosimon</i>	Common pie sot
11	<i>Lycaena tilyrus</i>	Sooty copper
12	<i>Pythisa nominus</i>	Spot sword tail
13	<i>Mwlanitis leda</i>	Common evening brown
14	<i>Baronia brevicornis</i>	Moth

4. Objective

1. Develop a green policy (vision document) and framework for the college
2. To map the Geographical Location of the college
3. To document the floral and faunal diversity of the college
4. To examine the current practices which can have impact on the environment such as of resource utilization, waste management, energy conservations, etc.
5. Detecting any leakage, spills or other such problems with the operations and processes
6. To identify and analyze significant environmental issues in campus
7. To introduce and aware students to real concerns of environment and its Sustainability
8. To identify gaps and suggest recommendations to improve the Green Campus status of the college
9. Measuring the environmental impact of each and every process and operation on the air, water, noise, solid waste, energy etc.
10. Measuring the environmental performance of an organisation against best practices
11. Providing a database for corrective action and future plans
12. Communicating its environmental performance to its stakeholders though reporting will enhance the image of the company

5. Methodology

Following methodology adapted for conducting green audit of Vidya Bharati Mahavidyalaya for the academic session 2017-2018

General steps

1. Define the time line and existing resources for audit
2. Systematic and comprehensive data collection required for green audit
3. Collection and reading of documentation with physical evidences
4. Independent periodic evaluation with regulatory requirements and appropriate standards
5. Systematic review of existing environmental policy of

The audit process

The present audit is a Pre-audit to collect the details required for external auditing.

Pre-audit activities

The pre-audit activities include the following:

1. The pre-audit meeting was held at Vidya Bharati Mahavidyalaya Camp, Amravati on 10 April, 2017. The purpose of audit, the procedure and the time schedule were discussed.
2. The sites / area /division that are to be audited need to be determined and selected.
3. Questionnaires prepared for actual green auditing in the college campus
4. The green audit scope and objective were identified.
5. The audit plan was designed in such a way that it accommodated changes based on information gathered during the audit and effective use of resources.
6. The audit team collect the entire document which essential for performing green audit.
7. Audit team and assignment of responsibility were established.
8. The background information on the facility including the facility' organisation, layout and processes, and the relevant regulations and standards, were collected.

Onsite audit activities

The onsite audit includes:

1. Collect information about land use pattern and land use analysis of college campus.
2. Site inspection is the first step for onsite activity. In this step the audit team discovered matters which are important to the audit but which were not identified at the planning stage.
3. Onsite phase of the audit developed a working understanding of how the facility manages the activities that influence the environment.
4. Gathering audit evidence ie, collecting data and information using audit protocol.
5. Evaluated the audit evidence against the objectives established for the audit.
6. Monitoring of air, water and noise parameter is performing.
7. Collection and site inspection of data regarding to solid waste, energy and leakages of water.
8. An exit meeting to explain the audit findings.

6. Observations and Recommendations

(A) Water Audit

The world's water resources are finite but exist on a planet with a constantly growing population. The development of water resources to man's benefit has been a fundamental factor in the evolution of civilizations throughout history. But, as our populations continue to grow and shift, the availability of quality water resources is in decline. Pollution, climate change and construction of cities in dry regions are some of the factors exacerbating evolving supply/demand imbalances. To account this, it is essential that man utilize existing water resources in the most careful, efficient manner. Water audits provide a rational, scientific framework that categorizes all water use in your system. It is a tool to overcome drought related problem, shortage, leakage and losses.

Overall agenda of conducting a water audit is to conservation of water and to create awareness among the stakeholder of college. Water audit includes the onsite assessment of source, water requirement, water storage, analysis of drinking water sample from selected location, collect information about waste water generation and water losses through leakage in college campus. For water audit necessary data is generated through the on site visit, survey by questioner and interviews etc methods applied by consulting agency.

(a) Observations

The study observed that the Well Water (01), Corporation Tap Water (01) and Tube Well water (03) are major sources of water in College campus. Overall one well present near the MCVC Building, one corporation tap and three tubes well present in campus complete the overall need of water in college. Water is used for Drinking Purpose, Play Ground, Canteen, Toilet, Laboratory, Gardening etc and in Girls Hostel for daily routine activity. During the survey loss of water is observed by leakages of pipe and by drinking water tap in college campus. The data collected from all the campus is examined and verified.

On an average the total use of water in the Vidya Bharati College campus is 45000 L/Day, which include 13500 L/Day for Girls Hostel, 3500 L/Day for Garden purposes, 3500 L/Day in Main Building for drinking, laboratory, toilet etc.

Sources of Water

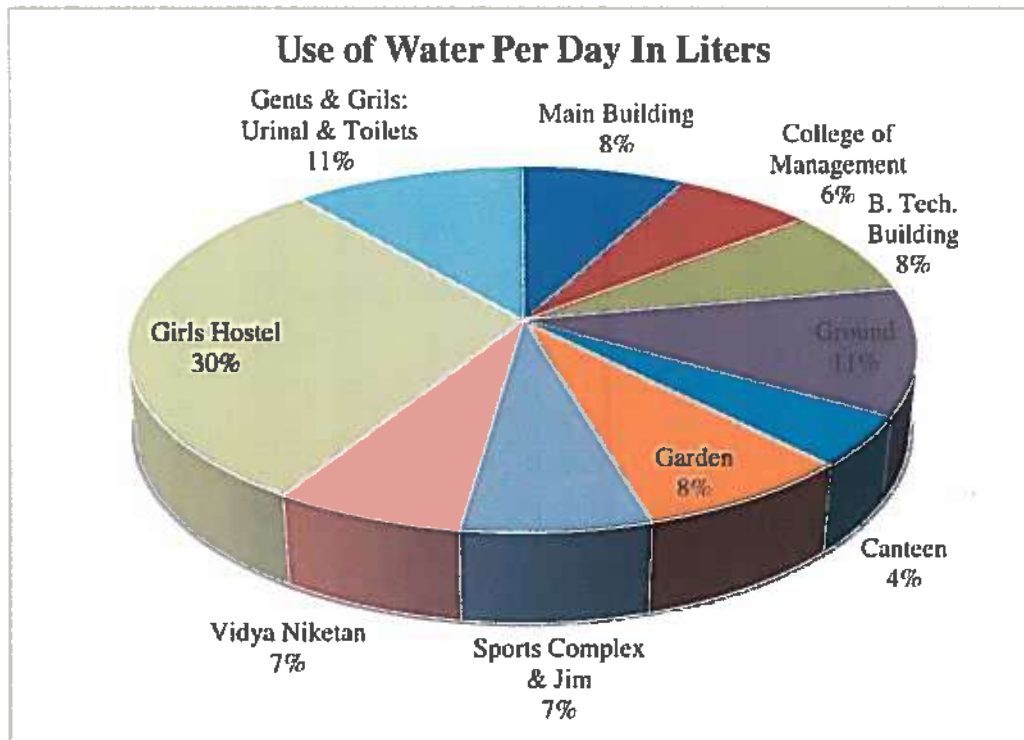
The source and per day average water consumption in Vidya Bharati Mahavidyalaya is given below:

Sources	Well	Corporation	Tube Well	Other
Total No.	01	01	03	-

Capacity of Storage Tank & Per Day Use of Water

Following are the campus location wise capacity of storage tank and per day consumption of water in college campus

Sr. No.	Name of Location	Source of Water	Capacity of Storage Tank in Liters	Use Per Day In Liters
1	Main Building	Well and Tube Well	5000	3500
2	College of Management	Tube Well	5000	3000
3	B. Tech. Building	Well	5000	3500
4	Play Ground	Well and Tube Well	10000	5000
5	Canteen	Well	2000	2000
6	Garden	Well	2000	3500
7	Sports Complex & Jim	Tube Well	4000	3000
8	Vidya Niketan	Tube Well	2000	3000
9	Girls Hostel	Well	20000	13500
10	Gents: Urinal & Toilets Ladies: Urinal & Toilets	Well	5000	5000



Above graphical presentation reveals that section wise and site wise water assessment of water requirement per day in which maximum water use is seen in Girls Hostel and maintains of ground. Less use of water is observed at, Sports complex and Jim and Vidya Niketan etc.

Drinking Water Analysis

The purpose of this study is to assess the drinking water characteristic at different location of college campus. For the analysis of drinking water sample total twelve sampling location are selected in all over the college campus ie. New Building, College of Management, B.Tech Building, Vidya Niketan, Sports Complex and Jim, canteen, Girls Hostel, Well Water, Tube Well (03) and Tap Water. Necessary drinking water parameters are periodically analyzed for the detection of possible hazardous and microbial contents with the help of Government Public Health Laboratory by following the standard procedure. The analysed parameters included pH, Colour, Total Dissolved Solids, Dissolved Oxygen, Chlorine, Nitrate, Iron, Total Hardness, Calcium Hardness and Total Coliforms.

Drinking Water Analysis of Vidya Bharati Mahavidyalaya

Sr. No.	Parameters	Average Results	Unit
1	pH	7.8	-
2	Colour	4.1	Hazen units Max
3	Total Dissolved Solids	465	mg/l Max
4	Dissolved Oxygen	3.12	Mg/l
5	Chlorine	0.04	mg/l Max
6	Nitrate	30	mg/l Max
7	Iron	00.8	mg/l Max
8	Total Hardness	180	mg/l Max
9	Calcium Hardness	150	mg/l Max
10	Total Coliforms	35	MPN/100 ml

All the parameters were within standard desirable limits of drinking water quality (BIS IS: 10500:1991).

Water Management Practices in college Campus

Vidya Bharati Mahavidyalaya is a leading educational institute to take action towards the water conservation, water harvesting and management of water available on campus. The three Tubes Well in campus located at such natural geographical places where the percolation of rain is trapped in these. As the wells in the campus are located down, the rain water and percolated water from campus is easily collected in it. The Roof Top Rain water from all buildings is use recharged tube well and well present in college campus by using appropriate pipe line mechanism. Plantation and canopy of tree present in college campus is helps to trap and percolation of rainwater in ground.

(b) Recommendation

- Rainwater harvesting facilities may be established at both Main building and College of Management building, foreseeing future needs of water.
- Gardens should be watered by using drip/sprinkler irrigation system to minimise water use.
- Installing waste water treatment plant for purification of waste water generated through Girls Hostel treated water is useful for gardening purpose and other purpose.
- Considering contamination of water with coliform bacteria, water purification treatment facilities may be installed within the campus in order to ensure safe drinking water.
- Responsibility of monitoring the overflows of water tank and check of leakages is fixed on peons/ non-teaching staff in the concerned section.
- Pipes, overhead tanks and plumbing system should be maintained properly to reduce leakages and wastages.
- Reduce chemical wastes formation in Chemistry laboratory. Adopt the principles of green chemistry to reduce chemical wastes.

(B) Air Audit

Air quality in the academic institute is very important for health of the students, faculty and staff of the institute. The air pollution sources in the college campus are wind storm, pollen grains, natural dust, vehicular emissions, fires and laboratory fumes etc

(a) Observation

All the pollutants are measured by the Mr. V. D. Bute and his technical team. Three locations are selected for the ambient air quality monitoring; selection of stations is based on the Meteorological conditions of the area. The air pollutants monitored on regular basis are Sulphur dioxide (SO₂), Oxides of Nitrogen as NO₂, Carbon Monoxide (CO) and Repairable Suspended Particulate Matter (RSPM). Boys Parking Area (back side of Sport Complex and Jim), Staff Parking area and front side of MCVV Building are the locations selected for ambient air monitoring. High Volume Sampler is an instrument used for monitoring of air quality parameters in the college campus by following the guidelines, rules and formats prepared by Ministry of Environment and Forest, New Delhi, Central Pollution Control Board.

Air Quality Measurement (24 hours)

Sr. No.	Parameters	Average Reading	Unit	CPCB Standards	Remarks
1	RSPM	45	$\mu\text{g}/\text{m}^3$	100.0 $\mu\text{g}/\text{m}^3$	All within limits
2	SO ₂	53	$\mu\text{g}/\text{m}^3$	80.0 $\mu\text{g}/\text{m}^3$	
3	NO ₂	45	$\mu\text{g}/\text{m}^3$	80.0 $\mu\text{g}/\text{m}^3$	
4	CO (8 hours)	0.7	mg/m^3	2.0 mg/m^3	

All above mentions air parameter are below the standard limits given by CPCB. In campus total 144 plants of different varieties are present including trees, herbs and shrubs. College campus has a lot of open area and all buildings are discrete hence airy, clean atmosphere is seen. College created a green zone in college campus helps to reduce pollution level and for carbon offset. Other than vehicles there is no other source of air pollution

present in college campus. Total average recorded vehicles in college campus are 11 cars, 358 bikes and moppets which may contribute to high carbon emission. But beside that most of the non teaching staff and student use public transport to reach college. Usage of bicycle and vehicle pooling are noted in college. The college follows “No Vehicle Day” on second and fourth Saturday of every month was minimizes the fuel consumption for a day, which is a one of green practices followed by the college.

(b) Recommendation

- Cycle Bank Scheme for girl students is run to promote use of bicycle in girl students.
- The limited the use of air-conditioners in college campus.
- Vehicle pooling should be promoted both among students and faculty and use of bicycles should be promoted as a policy of the institution.
- Promote the indoor plantation in all departments of college.
- 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.

(C) Noise Audit

Noise pollution is caused by noise that can come from natural or anthropogenic sources. Noise is defined as sound or combination of sounds discordant strong, unpleasant noise, noise, noise, thunder, etc. Noise is unwanted sound and unpleasant hearing. It is characterized by two of its important attributes: intensity, measured in decibels [dB], and frequency, measured in hertz [Hz]. Noise intensity is measured in dB and measuring scale is logarithmic.

(a) Observation

The noise level measurement was periodically carried out at six locations, at outside as well inside the college campus. The major source of noise identified in the college campus has been predominantly the vehicular movement, and the transportation activities inside and outside the college. The Vidya Bharati Mahavidyalaya is located in residential and commercial area. Other than staff and student vehicles no more source of noise are identified in college campus. The major source of noise not identified in the college campus.

Average Noise Monitoring Results

Sr. No.	Location	Average Reading dB (A) Leq (Day Time)	Ambient Noise Standard dB (A) Leq (Day Time)
1	Near Main gate	65	50
2	Boys Parking	48	50
3	Near College of Management	45	50
4	Near Main Building	50	50
5	Near B. Tech Building	47	50
6	Canteen	50	50

Other than near Main Gate location all reading is within a limit which given by CPCB. At main gate area outside noise of transplantation is contributed.

(D) Energy Audit

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

(a) Observations

Main energy source in campus is electricity of MSEB and Solar Photovoltaic Panels. Energy source utilized by all the departments and common facility centre is electricity, liquid petroleum and LPG. Major use of the electricity is observed at office, laboratories for lighting, laboratory work and minor use of LPG for practical purpose in laboratories. The total energy utilization of the college for different purposes is approximately 13000 kwh/month. Major energy consumption equipments are the high wattage electrical appliances such as electrical motors for pumping the water, air conditioners, water coolers, freezers, ovens, incubators, centrifugal machine, magnetic starter etc were noted during the survey and on site visit.

College already given preference to the most energy efficient and environmentally light appliances such as energy-saving CFL and LED bulbs and LED tubes with reflectors but in some section old incandescent bulbs, Tubes are in working replace these on priority base. Besides this, Photovoltaic Cells are also installed in the campus of 100 KVA capacities on the top of Main Building and B. Tech. Building which generate 510 unit per day as an alternate renewable source of energy. Equipments like Computers are used with power saving mode. Also, campus administration runs switch –off drill on regular basis. All the air conditioners installed in college campus are with Five star rating in Power saving. Classrooms are made with sufficient cross ventilation and light so that the use of electricity can be minimized. This shows the institutions commitment towards energy conservation.

Consumption of LPG for education or practical purpose is very less. At the time of practical, no leakages and off mode regulators are seen at time of verification in laboratories of various department of college. The college follows “No Vehicle Day” on second and fourth Saturday of every month was minimizes the fuel consumption for a day, which is a one of green practices followed by the college.

(b) Recommendations

- Energy auditing should be done in every year with the help of external experts or agency.
- More lights within the campus may be run with solar panels and complete replacement of existing lights should be done with LED lamps.
- More solar panels shall be installed on top of the buildings to produce another 10,000 kW of electricity.
- 5–star rated Air Conditioners, Fans and CFLs should be used.
- To achieve the target of reduction in electricity and water consumption, there should be proper documented management programs to achieve the same.
- Prefer purchasing of more energy efficient equipment for laboratory and college purpose.
- Save electricity by proper maintenance of the wiring and electrical equipment, maintenance of electrical appliance and fitting is essential.
- Adopt solar power to light up the roads, exterior site of campus section.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it.

(E) Solid Waste Audit

Solid waste generation is a continually growing problem at global, regional and local levels. Solid wastes are those organic and inorganic waste materials produced by various activities of the society, which have lost their value to the first user. Improper disposal of solid wastes pollutes all the vital components of the living environment (i.e., air, land and water) at local and global levels. Urban society rejects and generates solid material regularly due to rapid increase in production and consumption. The problem is more acute in developing nations than in developed nations, as their economic growth as well as urbanisation is more rapid. This necessitates management of solid waste at generation, storage, collection, transfer and transport, processing, and disposal stages in an environmentally sound manner in accordance with the best principles of public health, economics, engineering, conservation, aesthetics and environmental considerations.

(a) Observations

The average total solid waste collected in the campus is 21 Kg/day including all categories. Waste generation from tree droppings and garden management and paper waste is a major solid waste generated in the campus. Most of the departments including office, library are major contributing in the paper waste generation. Single sided used papers reused for writing and printing in all departments and office work. Followed by paper plastic is secondary contributing solid waste generated in large quantity in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Plastic waste. The college have 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. Metal waste, e-waste and wooden waste is stored and given to authorized scrap agents for further processing.

(b) Recommendations

- Sufficient big waste bins are placed where essential (in classroom, near office etc) and monitored periodically.
- Segregate solid waste in to wet, dry, glass and constructional at source and biodegradable is sent for composting, while other sold waste are send to recycle or proper disposal.
- Install Vermicomposting and Pit Composting unit for proper management of biodegradable solid waste.
- Ban of plastic carry bags in college campus.
- Training in bag making from polyester, and cotton materials for students.

7. Conclusions

"Green Audit" of Vidya Bharati Mahavidyalaya is conducted by Shri Shri Enviro Consultancy, Amravati and IQAC committee of college for the academic session 2017-2018. Through the academic session 2017-2018 all data, information, monitoring reading etc are collected, analyzed and following conclusions given by expert team.

1. Overall one well present near the MCVC Building, one corporation tap and three tubes well present in campus complete the overall need of water in college.
2. All the parameters of drinking water were within standard desirable limits of drinking water quality.
3. Girls Hostel, Play Ground and Garden area are consuming more water.
4. Waste water treatment plant is not present in college campus
5. Loss of water through the leakages of tap and pipe line was observed.
6. Rain water harvesting unit is not install.
7. Air and noise quality on the campus is good.
8. CFL lamps are used in all sections, minimize use of fluorescent tubes.
9. LPG is handled in science building section for Botany, Zoology, Chemistry, for practical for educational or practical purpose.
10. The air-conditioners are not used anywhere in the campus.
11. All the rooms in all sections of college are airy and sunny and do not need electricity during day time for lightning in clear day.
12. Composting unit for the management of biodegradable waste is not installed.
13. Waste bins are not placed at solid waste collection spots in different sections,
14. Dust bins are not seen in classrooms
15. Majority non teaching and CHB teaching staff using two wheeler vehicles.
16. E-waste segregation, handling and disposal are not properly deployed at campus.
17. It seen at some places Biodegradable wastes from gardens, lawns is burnt on site , it is not composted.
18. College arrange the events, such as Cultural Events, Internal and External contact seminars in order to literate the student in both how to minimize the waste produced and maximize what is recycled / reused.

8. ACTIVITY REPORT OF “Enviro Club”

Academic Session 2017-2018

1. Conducted committee meeting to plan the activities of the club on dated 04/08/2017.
2. Encourage students for registration in Enviro Club by making awareness for the importance of club activities.
3. Registration of club members by filling student registration form.
4. Organized tree plantation programme on dated 01/07/2017 as per circular of Govt. of Maharashtra at 11:30 a.m. near Ashiyana Complex, Amravati.
5. Regularly Implementation of “No Vehicle Day” on every fourth Saturday of each month. Members of Enviro Club welcome the teaching and non-teaching staff by offering them floral bouquet for the active participation.
6. Organised Tulsi plantation programme in college campus on dated 23/08/2017.
7. Arranged one day short educational visit to fish culture centre at Morshi Dist. Amravati on dated 24/08/2017 for the B.Sc. students (members) to make them aware about balance of ecosystem and generation of self employment.
8. Visited to “Nisarg Paryatan Kendra” Morshi Dist. Amravati on dated 24/08/2017.
9. Organized one day short educational tour for the post graduate students (members) of zoology at Cikhaldara District Amravati on dated 24/09/2017. This tour was organized to study the biodiversity of various fauna also the habitat of wildlife.
10. Distribution of project to the graduate students based on environmental studies (Examples:- to study the ecosystem of various surrounding places, to study most polluted sites in Amravati City, Industrial area, hospitals, college campus etc.). This process is ongoing throughout the year.
11. Enviro club participated in Anand Mela and completed the cleanliness drive by removing the food waste, plastic waste, etc on dated 04/09/2017.
12. Enviro club manage the poster presentation on theme “ Clean India Green India” and Model Exhibition on theme “Best out of Waste” during the Annual Gathring “JOSH” on dated 29th & 30th January 2018.
13. Enviro club members presented mime on theme “Save Water” during the Annual Gathring “JOSH” on dated 29th & 30th January 2018.

Photo Gallery

Tulsi Plantation Programme



No Vehicle Day



Visit to Fish Culture Centre



Visit to Nisarg Paryatan Kendra



Study Tour at Chikhaldara



Participation in Anand Mela and performed cleanliness activity

