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
2018-2019

Prepared by

IQAC
Vidya Bharati Mahavidyalaya Camp, Amravati

And

Shri Shri Enviro Consultancy, Amravati

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Date : 20/04/2019

To,

Principal,

Vidya Bharati Mahavidyalaya Camp, Amravati

It is to certify that we Shri Shri Enviro Consultancy, Amravati conducted "Green Audit" of the campus of Vidya Bharati Mahavidyalaya for the Academic Year 2018-2019. In consultation with the IQAC of the College, requisite format of the Audit was applied and relevant aspects were minutely observed and the factual report on the same is duly prepared. This report consists of pages 1 to 49.

SHRI SHRI ENVIRO CONSULTANCY AMRAVATI

(V. D. Bute)

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Executive Summary

The IQAC Committee 2018-19 of Vidya Bharati Mahavidyalaya and Shri Shri Enviro Consultancy, Amravati has conducted a "Green Audit" in the academic year 2018-19. "Green Audit" is one of such potential tool which can be used effectively by any educational institution for resource usage identification and optimization. It will increase the sustainability of the institutions and reduce their resource consumption, which will benefit the institutions and the nation in many ways. "Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable". The main objective to carry out green audit is to check green practices followed by the college and to conduct a well formulated audit report to understand where we stand on a scale of environmental soundness. For Green Auditing questionnaires prepared based on the guidelines, rules, acts and formats set by Govt. of India, Ministry of Environment and Forest, New Delhi and Central Pollution Control Board, New Delhi. For preparation of questionnaires and in conducting "Green Audit" guidelines and help is taken from Dr. P. G. Bansod HOD, Department of Botany and Dr. Y. D. Akhare Asst. Professor Department of Zoology and Mr. V. D. Bute Director, Shri Shri Enviro Consultancy, Amravati. Questionnaires were prepared for solid waste, energy, water, hazardous waste and e-waste. For green audit purpose and suitability 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, and Parking. The environmental audit was carried for water, air, electricity and energy, solid waste and hazardous waste and noise.

1. Water audit: Water audit includes the onsite survey and assessment of source, water requirement, water storage, analysis of drinking water sample from selected location and collect information about waste water generation and water losses through leakage 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, Canteen, Toilet Laboratory, Gardening etc and in Girls Hostel for daily routine activity. In survey water used at toilets, laboratory, garden etc and leakages and over flow of water from overhead tanks is also been evaluated. The data collected from all the departments is

examined and verified. For monitoring of water use number of times of filling of tanks per day, time for overflowing, is periodically is supervised by members. On an average the total use of water in the Vidya Bharati Mahavidyalaya campus is 46500 L/Day. During the survey no loss of water is observed neither by any leakages nor by over flow of water from overhead tanks in all over the college campus.

College adapted the different water conservation, water harvesting and management practices in over all campus including rain water harvesting unit, rain water recharge, roof top rain water harvesting etc. College build up the rain water harvesting unit which located at near MCVC building in college campus. The total build up area is 144 sqft and total capacity is 20094600 liter/year. This unit help to recharge of well and tube well in college campus.

The three tubes well in campus located at such natural geographical places where the peculation of rain is trapped in these. As the wells in the campus are located down, the rain water and peculated 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, garden, play ground etc present in college campus is helps to trap and percolation of rainwater in ground.

Drinking water analysis is perform by analyzing water sample from twelve location in college campus including Main 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, Electrical Conductivity, Total Dissolved Solids, Dissolved Oxygen, Alkalinity, Sulphate, Chlorine, Nitrate, Iron, Total Hardness, Calcium Hardness and Total Coliforms. In general all parameters are within standard desirable limits of drinking water quality (BIS IS: 10500:1991). It was found that water available in the campus is free from any contamination and microorganisms, indicates its high quality and proper water management system.

2. **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 pollen grains, natural dust, vehicular emissions and laboratory fumes etc. All the pollutants are measured by the Mr. Vikrant D. Bute and his technical team. For monitoring air quality of Vidya Bharati Mahavidyalaya total three locations are selected for the ambient air quality monitoring , selection of stations is based on the Meteorological conditions of the area includes Boys Parking Area (back side of Sport Complex and Jim), Staff Parking Area and front side of MCVC Building. The air pollutants monitored on regular basis are Sulphur Dioxide (SO_2), Oxides of Nitrogen as NO_2, Carbon Monoxide (CO) and Repairable Suspended Particulate Matter (RSPM) etc. The chief sources of air pollution in the study area are mainly due vehicular activities and natural dust etc. 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 the air quality parameters are within standard limits of CPCB, New Delhi, and suggesting ambient air quality at Vidya Bharati Mahavidyalaya campus.

In campus total 153 plants are present including tree, shrubs, herbs etc. The college has planted different types of large number of trees in the campus, hence the greenery around the institute helps to neutralize whatever carbon and its by products generated. Most of the non teaching staff and student use public transport to reach college. Usage of bicycle and vehicle pooling activity adapted in college.

3. **Electricity and energy audit:** This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliances, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. Main energy source in campus is electricity of MSEB and Photovoltaic Panels. Energy sources utilized by all the departments and common facility centres include electricity, liquid petroleum and LPG. Major use of energy is in science department, office, canteen, hostel and laboratories for lighting, transportation and laboratory work. The total energy utilization of the college for different purposes is approximately 13230 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 starrer etc were noted during the survey and on site visit.

All the departments and common facility centres are equipped with CFL lamps and LED bulbs. Equipments like Computers are used with power saving mode. Also, campus administration runs switch–off drill on regular basis. In science department like Physics, Electronic, Chemistry, Mathematics, Botany and Zoology electricity was shut downed after occupancy time is one of green practices for energy conservation. 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. Besides this, Photovoltaic Cells are installed in the campus of 100 KVA capacities on the top of Main Building and B. Tech. Building which generate 510 units per day as an alternate renewable source of energy.

Consumption of LPG for education or practical purpose is very less but high consumption is observed at common facility centre like canteen. College allotted the canteen facility on contract basis to private person. So, LPG cylinder use at canteen is not included in LPG consumption of college. At the time of practical, no leakages and off mode regulators are seen at time of verification in laboratories of various department of college.

Vidya Bharati Mahavidyalaya is situated at Amravati city which is district place so along with local student most of the student belonging to the nearby village and town. These students use state transportation to reach college. Most of the local students come to college by walking and using bicycle. Total average recorded vehicles in college campus are 11 cars, and 358 bikes 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 practice followed by the college.

4. Solid Waste: Solid waste pollution is a biggest problem of 21st century. The "Use and Throw" culture is highly growing and spreading in society. When useful things become useless they are thrown out as a waste, it makes serious affect to environmental. Waste management is one of the burning problems not only in India but also in the world. Hence it is necessary to use the things properly and manage them cautiously. Solid waste audit include the waste production and disposal of different wastes like paper, food, plastic, biodegradable, hazardous, construction, glass, E- waste etc. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus. The average total solid waste collected in the campus is 19 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. College adapted the segregation of Bio-degradable and Plastic waste at source by providing separate dustbins. 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. The college has adopted Vermiculture Composting in open space on 300 sqft lands and Pit Compositing for tree leave and garden waste in campus. The main purpose of this is to reduce disposable waste in the college campus. After complete process of vermicomposting, it is used as manure in the garden and lawns.

5. Noise audit: Noise pollution is one of the biggest problems of our society. Unwanted sound or sound at wrong place at wrong time is considered as a noise pollution. The noise levels / Sound pressure level (SPL) measurements were carried out using precision sound level meter or dB meter. The noise level measurement was periodically carried out at six locations, at outside as well inside the college campus. Which are found to be within a limit given by CPCB. 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.

1. Introduction

The world in 21st century is facing many challenges related to environment. On one hand world is developing at alarming rate while on the other hand the destruction of natural resources is going on. That means world present development path is not sustainable. Efforts to meet the needs of a growing population in an interconnected but unequal and human-dominated world are ignoring the Earth's essential life-support systems. Today, the human society is facing severe environmental problems like climate change, greenhouse effect, energy crisis, depletion of natural resources, biodiversity loss, pollution of air, water, soil, etc. The ever increasing population and changing life styles are increasing the severity of the environmental problems. The time has come to protect the natural environment through precise efforts.

Sustainable development is widely used in these days by different key holders. Sustainability is not only spoken in various levels but also practiced by industries, organizations and educational institutes to optimize their resource utilization and make them environmental friendly. 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. At the same time sustainable development through higher education provides a pivotal role in nations building. Sustainable development remains barely a significant social, economic or environmental challenge for any country. Though teaching and learning must begin to reflect environmental issues, there is an emerging consensus that institutions must also model sustainable practices. Such education contributes strongly to sustainable development by training and expanding young minds in researching solutions to the environmental challenges. After graduation the students become leaders of tomorrow and get dispersed from the world of higher education into their specific career. In doing so, they take with them the green practices and approaches they were involved with at their institution.

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. Educational institutions must play an active role in creating and

modelling solution for such environmental problems. "Green audit" is one such concept or principle introduced to make the educational institute environmentally sustainable.

Hence sustainability is the need of the hour for our country to provide our future generation a cleaner, safer environment. To achieve it there are many paths, one should be able to identify the best path related to their educational organization to achieve sustainability. Various models and tools are already developed by researchers working on this domain which helps them to identify the focus areas where the optimization is possible to improve the environmental performance of the educational institutes.

The term 'Green' means eco-friendly or not damaging the environment. This can acronymically is called as "Global Readiness in Ensuring Ecological Neutrality" (GREEN). 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. "Green Auditing", an umbrella term, is known by another name 'Environmental Auditing'. To implement the green audit other important aspects such as objective of green audit. Drivers of green audit, future scope, benefits, and advantages are necessary to understand. The green audit practically involves energy conservation, use of renewable sources, rain water harvesting, efforts of carbon neutrality, plantation, hazardous waste management & E-waste management etc. The parameters such as activity, waste management, noise, soil, air and water pollution risks of the site are tested and corrective measures to be implemented (if the particular site threatens the surroundings with potential of damage) are suggested. Establishment of green cover through tree plantation and use of non conventional energy resources are included in the survey of a site for determining its environmental safety.

1.1 Mission / Goal

In recent year Vidya Bharti Mahavidyalaya adopted the 'Green Campus' system for environmental conservation and sustainability. The goal is to reduce energy and water use, while creating an atmosphere where students can learn and be healthy. The college administration works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity. It helps for protection and conservation of environment, natural resources and lead institution sustainable campus in social, economical and environmental views and finally developing an environmental ethic and value systems in student and staff.

2. 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-ad 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 5' 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.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

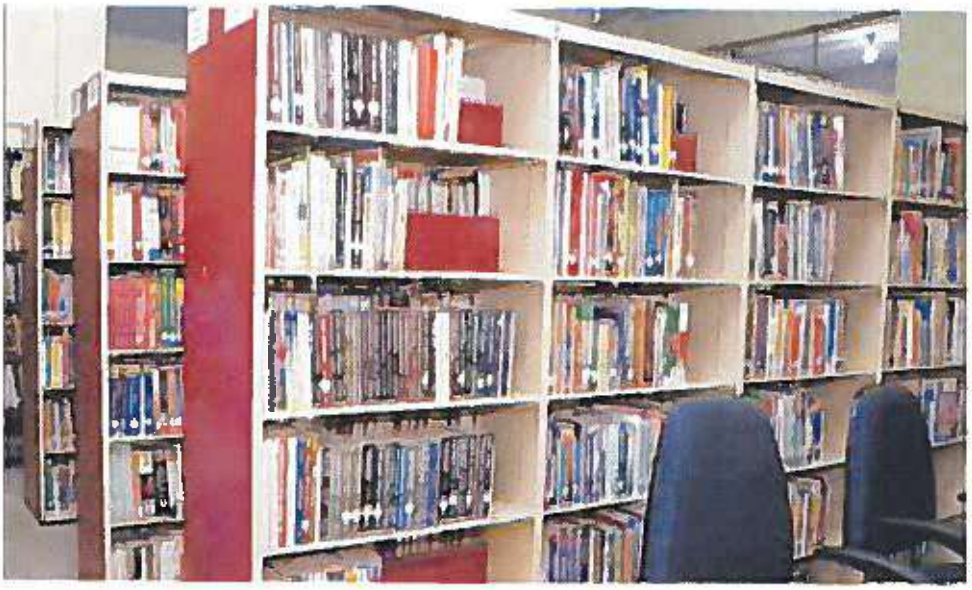
Photographs of VBM:

Building

Play Ground

Sports Complex

Library



2.1 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. The ancient name of Amravati is "Audumbaravati", in Prakrit, "Umbravati". The variant "Amravati" is the presently accepted name. It is said that Amravati is named for its ancient Ambadevi temple.

Amravati is located at 20.93^{0}N 77.75^{0}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 ^{0}C on 25 May 2013 and 5.0 ^{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%.

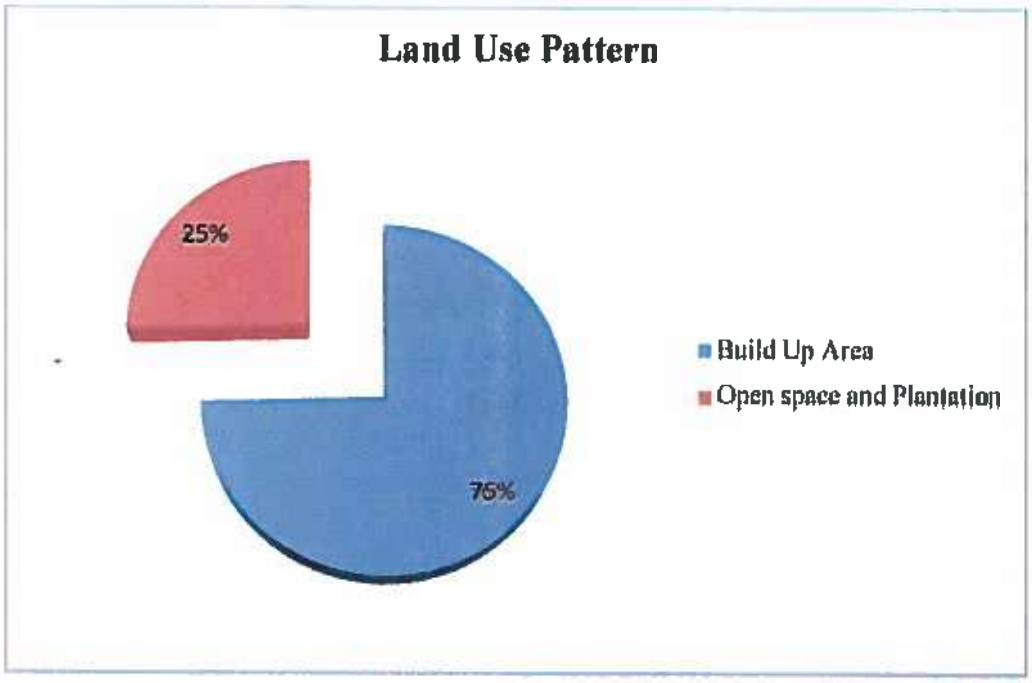
The soil of the Amravati region can be classified as red, brown, sandy and black cotton soil. The Black Cotton Soil covers most of the parts of the Deccan trap, sandy and silts soil occurs along the alluvial plains of the rivers.

2.2 Land Use Data

Vidya Bharati Mahavidyalay is within the geo-position between latitude $20^0$56' N and longitude $77^0$46' 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

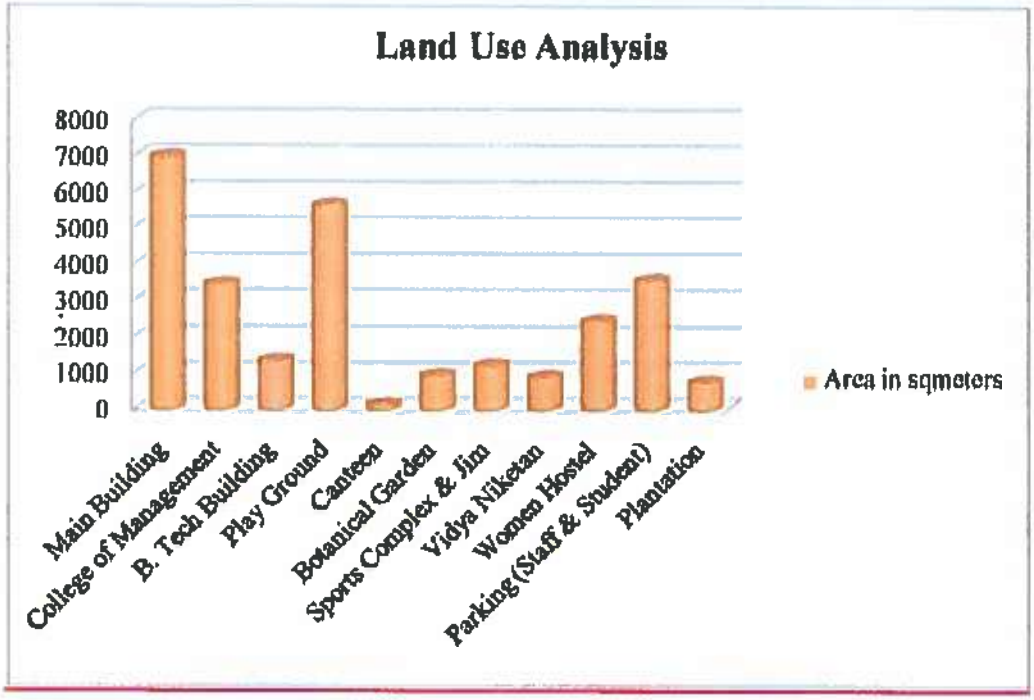
The total area of Vidya Bharati Mahavidyalay is 28881.16 sqm out of which the build up area 74.58 % (i.e. 21542.09 sqm) and open space and plantation area is 25.41% (i.e. 7339.07 sqm).



2.3 Land Use Analysis

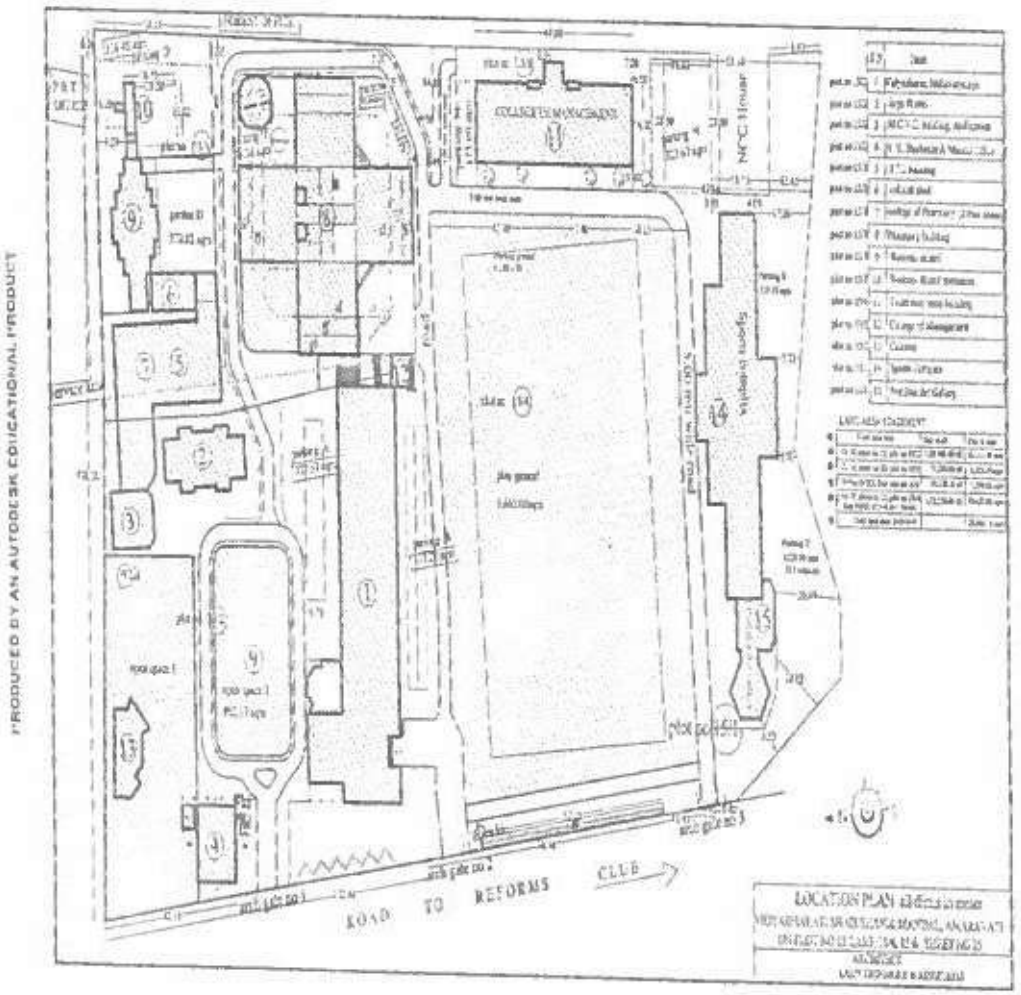
Following are the land use analysis of Vidya Bharati Mahavidyalaya:

Category of Land Use	Area in sqmeters
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 specious classrooms, administrative office, well equipped and specious laboratories, parking facilities are the main features of this campus.

Collage Layout Plan



2.4 Floral Diversity of College

The Vidya Bharati Mahavidyalaya area is immensely diverse with a variety of tree species performing a variety of functions. To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session different ornamental, medicinal plant with beautiful trees was planted in Botanical Garden and other parts of college campus. To keep the greeneries in the campus, college authority regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Seasonal flower garden is also a unique feature of this college. The campus maintains the biodiversity of plants including Monocotyledons, Dicotyledons, Gymnosperms, Pteridophytes, and Fungi. Some members of Algae, Bryophytes are also recorded in the campus, *Riccia. Funaria* from Bryophytes, are very abundantly found in campus.

In total, based on our data collected by consulting agency there are 153 plants in the college campus including trees, shrubs and herbs. There are 75 plants present in the college Botanical Garden.

A total of 91 species of flowering plants are documented in which 43 were Herbs, 25 Shrubs, and 24 Angiospermic trees distributed in 22, 13, and 12 families respectively.

List of Herbs:

Sr. No.	Botanical Name	Family
1	*Vernonia cineria* (L.)Less.	Asteraceae
2	*Calendula officinalis L.*	Asteraceae
3	*Zinnia peruviana* (L)	Asteraceae
4	*Zinnia angustifolia* kunth.	Asteraceae
5	*Blainvillea acmella* L.	Amaranthaceae
6	*Aerva Lanata* (L.) Juss.	Amaranthaceae
7	*Achyranthus aspera* L.	Amaranthaceae
8	*Amaranthus poligonides L.*	Amaranthaceae
9	*Andrographis paniculata* (Burm.f.)Wall ex Ness	Acanthaceae

10	*Diplocyclous palmatus L.*	Cucurbitaceae
11	*Cocculus hirsutus* (L.) Deils	Menisparnaceae
12	*Oxalis corniculata L.*	Oxalideaceae
13	*Colocasia esculanta* (L.) Schott	Araceae
14	*Ocimum sanctum L.*	Lamiaceae
15	*Catharanthus roseus* (L.)	Apocynaceae
16	*Datura metal L.*	Solanaceae
17	*Withania somnifera* (L) Dunal.	Solanaceae
18	*Acalypha indica L.*	Euphorbiaceae
19	*Curcuma longa* L.	Zingiberaceae
20	*Zingiber officinale* Rosc.	Zingiberaceae
21	*Ipomoea cairica* (L.) Sweet.	Convolvulaceae
22	*Passioflora edulis* Sims.	Passifloraceae
23	*Aloe vera* L.	Liliaceae
24	*Asparagus racemosus* (L.) Willd.	Liliaceae
25	*Cissus quadrangularis* L.	Vitaceae
26	*Agave americana* (L.)A.L.Juss. ex Schutt	Agavaceae
27	*Hymenocallis littoralis* (Jacq.)	Amaryllidaceae
28	*Jasminum auriculatum* Roxb.	Oleaceae
29	*Dianthus chinensis* L.	Caryophyllaceae
30	*Trigonella foenumgraecum* L.	Fabaceae
31	*Cynodon dactylon* (L.)Pers	Poaceae
32	*Dicanthium annulatum* (Hook.f.) Blatt. & Mc C.	Poaceae
33	*Lophopogon tridentatus* Hack.	Poaceae
34	*Andropogon pumilus* Roxb.	Poaceae
35	*Aristida hystrix* L.F.	Poaceae
36	*Chloris virgata* Swartz.	Poaceae
37	*Dactylotenium aegyptium* (L) P.Beauv.	Poaceae
38	*Eleusine indica*(L.)Gaertn.	Poaceae
39	*Setaria pumilla* (poir)R.	Poaceae
40	*Melanocenchris jacquemontii* Jaub.and Spach.	Poaceae
41	*Alpuda mutica*	Poaceae

42	*Eragrostis namaquensis* Schard var.*diplachnoides* (Steud)	Poaceae
43	*Eragrostis tanella*	Poaceae

List of Shrubs:

Sr. No	Botanical name	Family
1	*Hibiscus rosa-sinensis* L.	Malvaceae
2	*Abelmoschus moschatus L.*	Malvaceae
3	*Lawsonia inermis* L.	Lithraceae
4	*Murraya koenigii* (L.) Spr.	Rutaceae
5	*Citrus aurantiifolia* (Christm.) Sw.	Rutaceae
6	*Hamelia patens* Jacq.	Rubiaceae
7	*Ixora coccinea* L.	Rubiaceae
8	*Coffee arabica* Ritter Ron.	Rubiaceae
9	*Nyctanthes arbortristis* L.	Oleaceae
10	*Nerium oleander L.*	Apocynaceae
11	*Tabernaemontana divaricata* (L.) R. Br.	Apocynaceae
12	*Calotropis procera* (Ait) R. Br.	Asclepiadaceae
13	*Solanum nigrum* L.	Solanaceae
14	*Barleria cristata* L. var. *cristata*	Acanthaceae
15	*Adhatoda beddomei* Hong Gao	Acanthaceae
16	*Vitex trifolia L.*	Verbenaceae
17	*Lantana camara* L. var. *aculeatea*(L.) Mold	Verbenaceae
18	*Jatropha curcas L.*	Euphorbiaceae
19	*Ricinus communis* L.	Euphorbiaceae
20	*Acalypha wilkesiana* Muell. Arg.	Euphorbiaceae
21	*Euphorbia tithymaloides* L.	Euphorbiaceae
22	*Cajanus cajan*(L.)Millsp DC.nom. cons.	Fabaceae
23	*Calliandra calothyrsus* (Meisn.)	Fabaceae: Mimosoideae
24	*Indigofera tinctoria L.*	Fabaceae: Papilionaceae
25	*Punica granatum* L.	Punicaceae

List of Angiospermic Trees:

Sr. No	Botanical name	Family
1	*Azardirecta indica* A. Juss.	Meliaceae
2	*Ficus benghalensis L.*	Moraceae
3	*Ficus religiosa* L.	Moraceae
4	*Ficus glomerata* Roxb.	Moraceae
5	*Aegle marmelos* (L.) Corr.	Rutaceae
6	*Feronia limonia L.*	Rutaceae
7	*Mangifera indica* L.	Anacardiaceae
8	*Emblica officinalis* Gaertn.	Euphorbiaceae
9	*Psidium guajava* L.	Myrtaceae
10	*Santalum album L.*	Santalaceae
11	*Tectona grandis* L. f.	Verbenaceae
12	*Cocos nucifera* Linn.	Arecaceae
13	*Ziziphus mauritiana* L.	Rhamnaceae
14	*Butea monosperma* (Lam.) Taub.	Fabaceae
15	*Gliricidia sepium* (Jacq.)Walp.	Fabaceae
16	*Pongamia pinnata* (L.) pierre	Fabaceae

2.4.1 Floral Economic and Environmental Importance

The college campus has variety of trees, shrubs, climbers, herbs, plants etc, These all plants have their own economic and ecological importance. Most of the trees of the campus are medicinal plants and they have their economic importance. There are around 18 trees of *Azadirachta indica* which has pesticide and insecticidal properties and also used as fertilizer along with this economic importance it has ecological importance also. Varity of plant present in campus helps to maintain water level, fertility of soil, check soil erosion, reduce pollution level etc.

Catharanthus roseus

Hymenocallis littoralis

Calliandra calothyrsus

Nyctanthes arbortristis

Butea monosperma

Delonix regia

Dianthus chinesis

Acalypha wilkesiana

2.1 Faunal Diversity of College

The green cover and availability of ample food and water in Vidya Bharati Mahavidyalaya campus is very suitable for a different faunal species. 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. 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-

FAUNAL GROUP	SCIENTIFIC NAMES
SPIDERS	Myrmachne orientalis (Family Salticidae); Nephila plipes (Family-Nephilidae); Heteropoda sp (Family-Sparassidae); Phintella vitatta (Family Salticidae)
MOTHS & BUTTERFLIES	Antheria assmensis;Bombyx mori;Philosamia ricini; Junonia atlites atlites ; Commander (Moduza procris procris);Ethope himachala ; Melanitis leda leda ; Paltoporia paraka paraka; Ypthima baldus ; Acraea terpsicore ; Elymnias hypermnestra undularis ; Mycalesis perseus blasius ; Tanaecia lepidea lepidae ;
OTHER INSECTS	Apis indica; Apis dorsata; Apis florae, Crocothemis erythraea (Scarlet dragonfly); Pantala flavescens (wandering glider)
AMPHIBIANS	Duttaphrynus melanostictus (Assian common toad), Leptobrachium smithi; Fejervarya pierrei; Hoplobatrachus tigerinus; Hylarana tytleri;

	Humerana humeralis; Hylarana leptoglossa; Polypedates leucomystax.
REPTILES	Calotes versicolor; Hemidactylus frenatus; Hemidactylus brookii; Hemidactylus platyurus; Hemidactylus flaviviridis; Xenochrophis schnurrenbergeri; Xenochrophis cerasogaster; Rhabdophis subminiatus; Amphiesma stolatum; Chrysopelea ornate
BIRDS	Acridotheres tristis (Common myna); Athene noctua (little owl); Pycnonotus cafer (Redvented Bulbul)
MAMMALS	Macaca mulatta (The rhesus macaque); Sciurus carolinensis (Eastern gray squirrel); Pteropus giganteus (The Indian flying fox)

3. Objective

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

I. To understand the current practices of sustainability with regard to the use of water, generation of wastes, purchase of goods, transportation and for efficient resource management etc

II. To identify strength and weakness in green practices conducted in college campus.

III. Reduce energy consumption, especially of energy derived from fossil fuels (transportation)

IV. To perform monitoring and estimation of environmental components (air, RSPM, water, noise) of the college by following standard procedure

V. To enable waste management through reduction of waste generation, solid waste etc

VI. To take appropriate measured for carbon footprint and carbon offset

VII. Minimize the use of unsustainable transport

VIII. Minimize consumption of water

IX. Minimize the use of chemical pollutants

X. To create plastic free campus and evolve health consciousness among the stakeholders

XI. Impart environmental education through systematic environmental management approach and Improving environmental standards Benchmarking for environmental protection initiatives

XII. For developing an environmental ethic and value systems in youngsters.

XIII. To increase environmental consciousness throughout the campus among all the stakeholders

XIV. To Enhance the alertness for environmental guidelines and duties

XV. To promote environmental awareness through participatory auditing process

XVI. To motivate staff as well as students for optimized sustainable use of available natural resources

XVII. To empower the organizations to frame a better environmental performance and to enhancement of college profile

4. Methodology

This is the first attempt to conduct Green Audit of Vidya Bharati Mahavidyalaya Camp, Amravati. In order to perform green audit, the methodology divided into three stages i.e. Pre-Audit stage, Audit stage and Post Audit stage.

The Audit Process:

In achieving a successful audit, the value of good planning and preparation cannot be overemphasised. Proper planning should ensure that appropriate resources and equipment are available and adequate time is allocated to carry out the audit in the most efficient and effective way.

4.1 Pre-Audit Stage

Pre- Audit stage is primary stage of green audit and various preparatory works. The first action of pre-audit is to conduct the pre-audit meeting with different representative of stakeholder of college. A pre-audit meeting provided an opportunity to face to face discussion on green audit. The pre-audit meeting was held at Vidya Bharati Mahavidyalaya Camp, Amravati on 18 April, 2018. The pre-audit activity includes the identified and establishing the scope and objective of green audit. Dividing the college campus according to green audit performing point of view. The audit plan was designed based on available resources, time duration for achieving the sustainability. The target areas of green auditing, audit team and assignment of responsibility were established. Collection and review of all necessary documents, relevant standards were collected and preparation of questionnaire for audit (Humphrey and Hadley, 2000).

4.1.1 Management's Commitment

The Management of the college has shown the commitment towards the green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environment friendly such as awareness programs on the environment, campus farming, planting more trees on the campus etc., after the green auditing. The management of the college was willing to formulate policies based on green auditing report.

4.2 Audit Stage / On-Site Audit Activity

The audit stage include survey by questionnaire, review of documents and records, review of policies, interviewing of key persons (stakeholders), physical inspection of college campus, monitoring and analysis of air, water, noise quality, biodiversity, energy consumption, solid waste generation and disposal, carbon footprint in campus.

4.2.1 Survey by Questionnaire

Data for green audit report preparation was collected by questionnaire survey method. Questionnaires prepared for actual green auditing in the college campus is based on the guidelines, rules, acts and formats prepared by Ministry of Environment and Forest, New Delhi, Central Pollution Control Board. Most of the guidelines and formats based on road aspects and some of the issues or formats were not applicable for college campus. The sets of questionnaires were prepared as solid waste, energy, water, hazardous waste, and e-waste, etc. With the help of questionnaires some data related to Green Audit is collected from students, employers by interaction with them. All the questionnaires comprise general information of the concerned section. Questionnaires includes name of the section, month and year, total number of students and employees, visitors of the department, average working days and office timings etc. The next format of questionnaires is related to the present consumption of resources like water, energy, fuel or the handling of solid waste and hazardous waste. Last part of the questionnaires shows possibilities of loss of resources like water, energy due to improper maintains. Consulting agency starts filling the questionnaire in month of June 2018 to August 2018. The generated data is subsequently gathered and used for further analysis.

4.2.2 Review of Documents and Records

In this step the audit team collect the entire document which essential for performing green audit. Documents were collected from office and different sources of college. Documents and records include college map, college campus layout, college annual report, college prospectus, total numbers of staff and student, electricity bill and water sources and bill, infrastructure details, rain water harvesting project, solar plates, NAAC guideline document regarding to green audit, eco-friendly

activities and programmes conduct by college etc. All collected document was properly read and study by consulting agency and noting used for future analysis.

4.2.2 Review of Policies

Discussions were made with the college management, principal, HOD of different departments regarding their policies on environmental sustainability and future activities regarding to different sectors of environment.

4.2.3 Interviewing of Key Persons (Stakeholders)

In order to collect information for green auditing interviews were conducted with the management, principal, office staff, teaching and non-teaching staff, students, parents and other stakeholders of the college. Interview was conducted regarding to strength and weaknesses of green practises taken by college.

4.2.5 Physical Inspection of College Campus

Physical inspection of college includes the onsite inspection and monitoring of college campus. The college and its premises were visited and analyzed by the audit teams several time to gather information. The audit team was in the college to inspect the campus regarding to the data related to infrastructure, biodiversity and tree census, transportation (vehicles), energy survey, solid waste generation, E- solid waste generation, carbon footprint, water use and waste etc. All data is verified personally by audit team. Personal observations were made during the onsite visit. For monitoring of water use, number of times of filling of tanks per day, time for overflowing, rate of flow, water wasted in liters per day etc is periodically supervised.

4.2.6 Monitoring and Analysis of Air, Water and Noise Quality

All the pollutants are measured by the consulting agency expert and his technical team. Two 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 periodic basis are Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO) and Repairable Suspended Particulate Matter (RSPM) etc. 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.

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. In college campus total twelve location are selected for drinking water sampling and analysis of different parameters of water including pH, Colour, Total Dissolved Solids, Dissolved Oxygen, Acidity, Alkalinity, Sulphate, Chlorine, Nitrate, Iron, Total Hardness, Calcium Hardness and Total Coliforms.

The noise levels / Sound pressure level (SPL) measurements were carried out using precision sound level meter or dB meter. The noise level measurement was periodically carried out at six locations, at outside as well inside the college campus.

4.3 Post Audit Stage

The post audit stage includes the data analysis and preparation of green audit report and fallow up plan. All data collected trough survey by questionnaire, review of documents and records, review of policies, interviewing of key persons (stakeholders), physical inspection of college campus, monitoring and analysis of air, water, noise quality, were crossed checked during the personal visit. All data were tabulated in excels spreadsheets and future analysed by using different software to find out the result in percentile format. For better understanding of the results and to avoid complications, averages and percentages of the tables were calculated. Audit findings are generated by evaluating the audit evidence collected before and during the site inspection against the audit criteria. Interpretation of the overall outcomes is included in final green audit report with possible recommendations. Only information that has been verified should be used as audit evidence. In fallow up plan include periodic monitoring of environmental status of campus and the implementation of recommendation suggested by green audit expert etc will be fallow.

(A) Observations and Recommendations

4.3.1 Water Audit

Water is our most precious resource. Without it no plant or animal can survive. India is predicted to become drier, because of rising population and urban demand so the need to save water and ensure sustainability will grow. We all have a role to play by reducing our usage of water. We can secure our water supply for generations to come. We have to find new ways of source and preserve our precious water and we need educational institute to help by saving as much water as they can. This will save the money and reduce the impact on the environment. Now-a-day colleges have become more aware regarding usage of water .The water audit of educational institute provide a fun and educational way to investigate ways that water is used every day, determine which areas of the campus may be causing problems and to spread the message of water conservation.

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, Corporation Tap Water and Tube Well water are major sources of water in College and for the girls hostels. 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, Canteen, Toilet Laboratory, Gardening etc and in Grils Hostel for daily routine activity. During the survey no loss of water is observed neither by any leakages nor by over flow of water from overhead tanks in all over the 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 46500 L/Day L/Day, which include 15000 L/Day for Girls Hostel, 3000 L/Day for Garden purposes, 4000 L/Day in Main Building etc.

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

(b) Sources of Water

Following are the sources of water in college campus

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

(c) Capacity & 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	4000
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	3000
7	Sports Complex & Jim	Tube Well	4000	3000
8	Vidya Niketan	Tube Well	2000	3000
9	Girls Hostel	Well	20000	15000
10	Gents: Urinal & Toilets Ladies: Urinal & Toilets	Well	5000	5000

(d) 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, Alkalinity, Sulphate, 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	7.9	-
2	Colour	4.9	Hazen units Max
3	Total Dissolved Solids	480	mg/l Max
4	Dissolved Oxygen	3.90	Mg/l
5	Alkalinity	110	mg/l Max
6	Sulphate	160	mg/l Max
7	Chlorine	0.05	mg/l Max
8	Nitrate	35	mg/l Max
9	Iron	00.9	mg/l Max
10	Total Hardness	210	mg/l Max
11	Calcium Hardness	190	mg/l Max
12	Total Coliforms	38	MPN/100 ml

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

(e) 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.

(i) Rain Water Harvesting Unit

Vidya Bharati Mahavidyalaya build up the Rain Water Harvesting Unit which located at near MCVC building in college campus. The total build up area Rain Water Harvesting Unit is 144 sqft, Catchment area 3.13 ha and total capacity is 20094600 liter/year. This unit help to recharge of well and tube well in college campus.

(ii) Rain Water recharge

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 peculated water from campus is easily collected in it.

(iii) Roof Top Rain water Harvesting

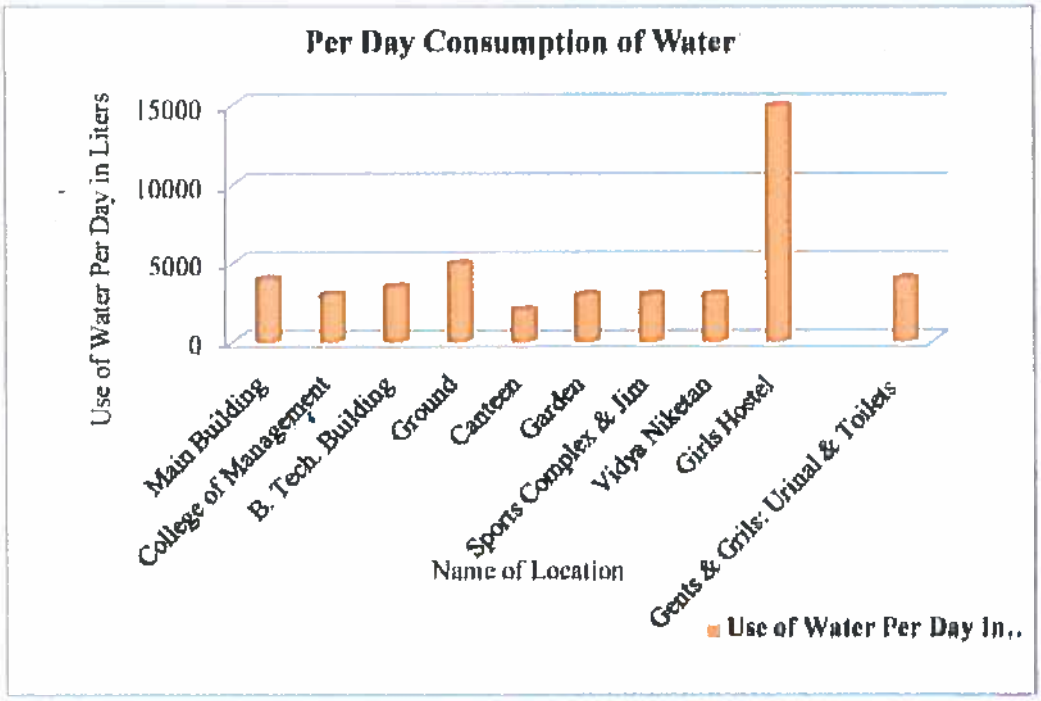
The Roof Top Rain water from all buildings is use recharged tube well and well present in college campus by using appropriate pipe line mechanism.

(iv) Plantation in campus

Plantation and canopy of tree present in college campus is helps to trap and percolation of rainwater in ground.

(f) Recommendation

- Responsibility of monitoring the overflows of water tank is fixed on peons/ non -teaching staff in the concerned section.
- Reduce chemical wastes formation in chemistry laboratory. Adopt the principles of green chemistry to reduce chemical wastes.
- Pipes, overhead tanks and plumbing system should be maintained properly to reduce leakages and wastages.
- Installing waste water treatment plant for purification of waste water generated through girls hostel treated water is useful for gardening purpose and other purpose.
- Water quality testing laboratory will be installed in chemistry department to test the potability of the drinking water to ensure the students are free from water-borne diseases.



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.

4.3.2 Air Audit

Air quality in the academic college is very important for producing good educational atmosphere as well as for the health of the students, faculty, staff and other stake holder of the college.

(a) Observation

For monitoring air quality of Vidya Bharati Mahavidyalaya total three locations are selected for ambient air quality monitoring in all over the campus selection of stations is based on the Meteorological Conditions of the area i.e Boys Parking Area (back side of Sport Complex and Jim), Staff Parking area and front side of MCVC Building. The analysed air parameters included Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), Suspended Particulate Matter (SPM) and Repairable Suspended Particulate Matter (RSPM) etc. 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. Overall air monitoring and analysis is perform by consulting agency and there expert team.

(b) Air Quality Measurement (24 hours)

Sr. No.	Parameters	Average Reading	Unit	CPCB Standards	Remarks
1	RSPM	47	µg/ m^3	100.0 µg/ m^3	All within limits
2	SO_2	55	µg/ m^3	80.0 µg/ m^3	
3	NO_2	48	µg/ m^3	80.0 µg/ m^3	
4	CO (8 hours)	0.8	mg/m^3	2.0 mg/m^3	

All above mentions air parameter are below the standard limits given by CPCB.

In campus total 153 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 neutrality. Other than vehicles there is no

other source of air pollution present in college campus. Total average recorded vehicles in college campus are 11cars, 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.

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.

4.3.3 Electricity and Energy Audit

(a) Energy Consumption at Campus

Electricity and energy audit include the energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles overall use in college campus. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

(b) Observations

Main energy source in campus is electricity of MSEB and 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 13230 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 starrer etc were noted during the survey and on site visit.

Use of smart electrical appliance is necessary to save electrical energy, for this LED bulbs/tubes , solar lamb are used in college campus, is an green practice of college were noted. As LED bulbs/tubes are less wattage, bright, intense, highly fluorescent, electricity saving lighting equipment about 80% of old filament bulbs, tubes and other lightening appliance are re-placed by LED bulbs/tubes. All the departments and common facility centres are equipped with CFL lamps and LED bulbs. 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. In science department like Physics, Chemistry, Mathematics, Botany and Zoology electricity was shut downed after occupancy time is one of green practices for energy conservation. 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.

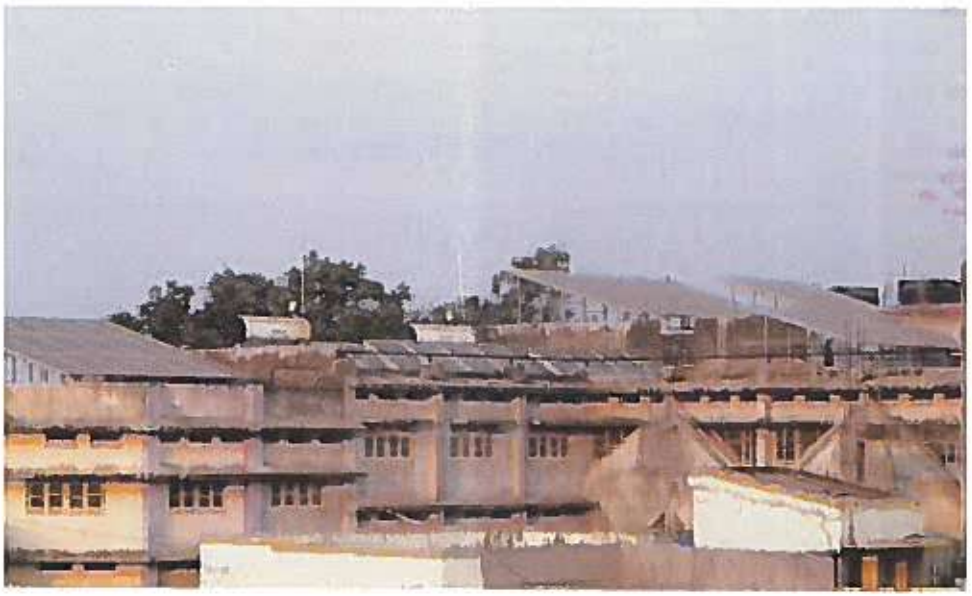
Consumption of LPG for education or practical purpose is very less but high consumption is observed at common facility centre like Canteen. College allotted the Canteen facility on contract basis to private person. So, LPG cylinder use at Canteen is not included in LPG consumption of college. At the time of practical, no leakages and off mode regulators are seen at time of verification in laboratories of various department of college.

Vidya Bharati Mahavidyalaya is situated at Amravati city which is district place so along with local student most of the student belonging to the nearby village and town. These students use state transportation for reach to college. Most of the local students come to college by walking and using bicycle. 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.

(c) Recommendations

- Prefer purchasing of more energy efficient equipment for laboratory and college purpose.
- Awareness programmes for the stakeholders to save energy may also increase sustainability in the utilization of various energy sources.
- The College should improve its monitoring and reporting of energy usage.
- Conduct switch off drills at regular intervals and fix its responsibility on teaching / non teaching staff.
- 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.

Photovoltaic Cells Plant at College



4.3.4 Solid Waste Audit

(A) Biodegradable and plastic waste

Solid waste pollution is a biggest problem of 21st century. The "Use and throw" culture is highly growing and spreading in society. When useful things become useless they are thrown out as a waste, it makes serious affect to environmental. Waste management is one of the burning problems not only in India but also in the world. Hence it is necessary to use the things properly and mange them cautiously. The main purpose behind this audit is to analyze the quantity and volume of solid waste and their proper management in college campus. Similarly, to make aware about their hazardous effects and to create awareness amongst the students, teachers about minimum use, reuse and recycle of the waste. This report will help for further solid waste management and to go for green campus development.

Solid waste audit include the waste production and disposal of different wastes like paper, food, plastic, biodegradable, hazardous, construction, glass, E- waste etc. Solid waste generation and management is a burning issue. Unscientific handling of

solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.

(a) Observations

The average total solid waste collected in the campus is 19 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. Segregation of chemical waste generated in Chemistry and zoology laboratories is also practiced. 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 reuse for storing of other chemicals. Other glass waste is thrown with solid 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.

A composting pit is highly essential for the treatment of bio degradable waste generated from the canteen, office, vegetable garden and from the college campus cleaning operations. Different methods such as Pit Composting and Vermicomposting, Bacterial Composting may be used to treat the bio degradable waste. The college has adopted Vermiculture Composting in open space on 300 sqft lands and Pit Compositing for tree leave and garden waste in campus. The main purpose of this is to reduce disposable waste in the college campus. After complete process of vermicomposting, it is used as manure in the garden and lawns.

(b) Recommendations

- Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, paper, plastic bottles, batteries, print cartridges and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
- Important and confidential papers after their validity to be sent for pulping.
- Green (biodegradable), Yellow (plastic) and red (e-waste) coloured bins are use in the class rooms for the waste segregation.
- Ban of plastic carry bags in college campus.
- Training in bag making from polyester, and cotton materials for students.
- Waste segregation is done regularly.

(B) E-Waste

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

(a) Observations

E-waste generated in the campus is very less in quantity. The cartridges of laser printers are refilled outside the college campus. Administration conducts the awareness programmes regarding E-waste Management with the help of various departments. The E- waste and defective item from computer laboratory is being stored properly. The college has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

(b) Recommendations

- Recycle or safely dispose of goods, computers and electrical appliances.
- Use reusable resources and containers and avoid unnecessary packaging where possible.
- Always purchase recycled resources where these are both suitable and available.

4.3.5 Noise Audit

Noise pollution is one of the biggest problems of our society. Unwanted sound or sound at wrong place at wrong time is considered as a noise pollution.

(a) Observation

The major source of noise identified in the college campus has been predominantly the vehicular movement, and the transportation activities. The noise levels / Sound pressure level (SPL) measurements were carried out using precision sound level meter or dB meter. The noise level measurement was periodically carried out at six locations, at outside as well inside the college campus.

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	62	50
2	Boys Parking	45	50
3	Near College of Management	44	50
4	Near Main Building	45	50
5	Near B. Tech Building	47	50
6	Canteen	48	50

From the monitoring survey of noise levels it was observed that the day time noise levels were observed in the range of 45 to 62 dB(A). 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.

5. Conclusions

"Green Audit" of Vidya Bharati Mahavidyalaya is conducted by Shri Shri Enviro Consultancy, Amravati and IQAC committee of college for the academic session 2018-2019. Through the academic session 2018-2019 all data, information, monitoring reading etc are collected, analyzed and following conclusions given by expert team. As we know that "Green Auditing" is the process of identifying and determining whether college practices are eco-friendly and sustainable. The findings of this report show that the college performs fairly well on sustainability issues. All the green practices adapted by college are eco-friendly and achieve the objective of green audit.

The campus of college fulfils all the requirements of educational institute, like infrastructural facilities, adequate space in between buildings, plantation, gardens etc. Specious Classrooms, Administrative Office, well equipped and specious Laboratories, Parking facilities are the main features of this campus. The total area of Vidya Bharati Mahavidyalay is 28881.16 sqm out of which the build up area. 21542.09 sqm.

The college campus is fully green with various trees, shrubs, herbs, climbers, medicinal plants, garden plants, ornamental plants. In the census of trees of the campus, near about 153 plants are found in the college campus. Variety of faunal species is also recorded in campus. The proper management and conservative practises is present in college. Water is used for Drinking Purpose, Canteen, Toilet Laboratory, Gardening etc and in Grils Hostel for daily routine activity. All the drinking water parameters were within standard desirable limits. No loss of water is observed neither by any leakages nor by over flow of water from overhead tanks in all over the college campus. Rain Water Harvesting Unit and Roof Top rain water harvesting are the best practise adapted by college. The installation of Solar Panels, Paperless Work System, Composting Pit and Vermicomposting practices are noteworthy. Besides, Environmental Awareness Programmes initiated by the administration shows how the campus is going green. Air quality parameters monitor in college campus are within a standard limits given by CPCB. Other than staff and student vehicles there is no any air and noise pollution source are present in campus. Use of smart electrical appliance is necessary to save electrical energy, for this LED bulbs/tubes , solar lamb are used in college campus, is an green practice of college.

6. Acknowledgement

We are grateful to the Management, Principal and committee members of Vidya Bharati Mahavidyalaya to award this prestigious project and allowed us to enter the new sector of Green Audit of College Campus. Further we sincerely thank the college staff for providing us necessary facilities and co-operation during the audit. This helped us in making the audit, a success. Further we hope, this will boost the new generation to take care of environment and propagate these views for many generations to come.

7. Carbon Offsetting

The following are the effective measures taken by Vidya Bharati Mahavidyalaya to reduce the carbon footprint value in this academic year.

- Use energy efficient fuels for transportation.
- The college adapted "No Vehicle Day" activity.
- Purchase vehicles with competitive mileage & fuel efficiency.
- Encourage use of public transport facilities.
- Vehicle pooling and use of bicycle is promoted among the students and staff members
- Ensure proper inflation of vehicle tyres.
- Encourage walking when it comes to short distances.
- Remove unnecessary weight from vehicles.
- Use unleaded petrol in vehicles.
- Reduce use of petroleum products.
- Use electricity effectively.
- Use the 'OFF' switch, rather than the 'STAND BY' mode.
- Switch off fans & lights when not in use.
- Use LEDs instead of conventional light sources.
- Check for Green Tags before purchasing goods.
- Air Conditioning should be minimally used.
- Keep equipments in power save mode.
- Use solar power.
- Avoid wasting paper.

- Avoid burning of paper waste.
- Recycle waste possible.
- Reuse resources whenever possible.
- Adopt proper waste management techniques.
- Use LPG efficiently.
- Use eco friendly construction materials with low emission co-efficient.
- Plant more trees.
- Avoid cutting down trees.

8. Eco friendly Activity Report of College Session 2018-2019

Report of activity taken in 2018-19

Name of the Department :- **Enviro Club**					
Sr. No.	**Name of the Activity/Title of Programme**	**Date of Programme conducted**	**Details of invited guest/ place visited etc.**	**Aims & objectives of the programme or activity**	**Picture/ Photographs**
1.	Cleanliness drive in campus	01/07/2018	All Staff members of college	Step towards Clean and green Campus	Photographs
2.	Tree plantation programme	07/07/2018	Dr. R. M. Patil, Dr. K. K. Taper, Dr. Shirbhate, HOD of various Dept., All Faculty Members, Students Etc.	Step towards green practices in the campus	Photographs
3.	State level One day work shop on rain water harvesting	28/07/2018	Inaugurator- Dr. Sudhir Bhongade, Editor Rashtrawadi Magzine, Mumbai Chief Guest- Dr. Dinesh Suryawanshi Chairperson- Honorable Shri Raosaheb Shekhawat Key Note Addresses- Dr. S. M. Tale,, Soil conservation Dept. PDKV, Akola	This workshop is aimed at exchanging the knowledge and experiences of the responsible minds and devoted academician in the field of environment and rain water harvesting.	
4.	Visit to Dept. of Zoology, SGBAmravati University, Amravati	11/08/ 2018	All the students members of enviro club visited to the museum of spider, Zoological museum at SGBAU Amravati University, Amravati	Observation of Diversity of Spiders from specimens.	
5.	*Brogan velia* plantation activity	15/08/ 2018	Honorable Shree Raosaheb Shekhawat	An Initiative of Green Practices	

6.	Cleanlincss activity during Trade Fair in college campus	08/09/2018	Enviro club members performed cleanliness activity in the campus	Step towards Clean and green Campus	
7.	One day work shop on e-waste management	17/09/2018	Inaugurator & Speaker- Dr. V. H. Mangale, Associate Prof. Dept. of Environmental Science, Chikhaldara	This Workshop is aimed to make awarcness about the hazards of e-waste.	
8.	Short tour at chikhaldara	22/09/2018	M.Sc. Zoology Students and enviro club members visited to Chikhaldara and Melghat Forest	Observation of wild life and biodiversity in their natural habitat	Photogra phs
9.	Visit to Apiculture Centre, Arts, Commerce & Science College, Chikhaldara	22/09/ 2018	M.Sc. Zoology Students and enviro club members visited to Apiculture Centre	Self Employment generation and study of Bee keeping Practices, their products and bioproducts	
10.	Nirmalya Collection and cleanliness drive during Ganpati Visarjan	23/09/2018	All members of Enviro-Club performed the Nirmalya collection activity and cleanliness drive at Chatri lake, Amravati	To maintain the cleanliness in the society and sensitizing the people to cleanliiness	
11.	Guest Lecture on Plastic Hazards	17/10/ 2018	Dr. Priyashree Deshmukh, Field Officer, Maharashtra Pollution Control Board, Amravati	An Initiative of Green Practices	
12.	Street Rally on Green Diwali	02/11/2018	Enviro club members Starts Street Rally from Campus up to the District Collector Office.	To Sensitize and make awareness in the Society for the hazards of fire crackers and air pollution.	

Photographs -

Activity No. 1- Cleanliness Drive in Campus 01/07/2018

Activity No. 2- Tree plantation programme in campus 07/07/2018

Activity No 3- State level Workshop on Rain Water Harvesting 28/07/2018

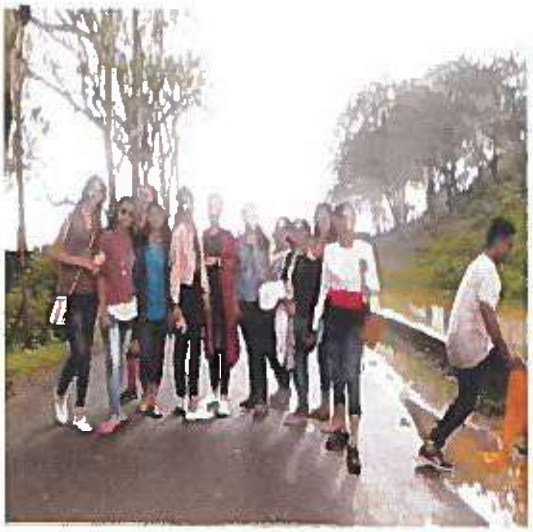
Activity No 4- Visit to Dept, of Zoology, SGB Amravati University, Amravati11/08/ 2018

Activity No 5- *Brogan velia* plantation activity 15/08/ 2018

Activity No. 6- Cleanliness activity during Trade Fair in college campus 08/09/2018

Activity No. 7- One day work shop on e-waste management 17/09/2018

Activity No. 8- Short tour at Chikhaldara 22/09/2018



Activity No. 9- Visit to Apiculture Centre, Arts, Commerce & Science College, Chikhaldara 22/09/2018

Activity No. 10- Nirmalya Collection and cleanliness drive during Ganpati Visarjan 23/09/2018

Activity No. 11- Guest Lecture on Plastic Hazards 17/10/ 2018

Activity No. 12- Street Rally on Green Diwali "No Fire Crackers" on Dated 02nd Nov. 2018