Green Audit Report 2022-23

UTTAR BHARATIYA SANGH'S

MAHENDRA PRATAP SHARADA PRASAD SINGH COLLEGE OF COMMERCE AND SCIENCE

PREPARED BY

Vrindavan Landscape & Ecological Solutions

GREEN AUDIT REPORT

2022-23

UTTAR BHARTIYA SANGH'S

MAHENDRA PRATAP SHARADA PRASAD SINGH

COLLEGE OF COMMERCE AND SCIENCE

Plot No. 629 /1243, Behind Teacher's Colony, Bandra (E), Mumbai – 400051.
Ph:7738445493
mpspscollege@rediffmail.com

Prepared by

Vrindavan Landscape & Ecological Solutions
20/G, Malvankar House, Worli Fort Mumbai-400030

भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM-MH-19-0065047

TABLE OF CONTENTS

1.EXECUTIVE SUMMARY

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 institute which will lead for sustainable development.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology included: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

2. ABOUT COLLEGE

The college campus is located in the middle of city, The total area of campus is 7346 sq meter. Out of total area 1380 sq meter is under green area and that means more than 30 % area is under greenery.

Collage campus has more open spaces with lush green and huge trees.

The college building has Sith floor with two stare case and two lifts. Each floor has washrooms and wash basin. The college have water filter system at each floor.

The college class rooms are specious and natural source of lights with specious corridors.

2.1 COLLEGE GOOGLE LOCATION

3. GREEN AUDIT

The green audit aims to analyze environmental practices within and outside the university campuses, which will have an impact on the eco-friendly atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of university environment. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the green audit, a direction as how to improvethe structure of environment and there are include several factors that have determined the growth of carried out the green audit.

- **GOALS OF GREEN AUDIT**

College has conducted a green audit with specific goals as:

1. Identification and documentation of green practices.
2. Identify strength and weakness in green practices.
3. Analyze and suggest solution for problems identified.
4. Assess facility of different types of waste management.
5. Increase environmental awareness throughout campus
6. Identify and assess environmental risk.
7. Motivates staff for optimized sustainable use of available resources.
8. The long-term goal of the environmental audit program is to collect baseline data of environmentalparameters and resolve environmental issue before they become problem.

- **OBJECTIVES OF GREEN AUDIT**

- To examine the current practices, which can impact on environment such as of resource utilization, waste management etc.
- To identify and analyze significant environmental issues.
- Setup goal, vision, and mission for green practices in campus.
- Establish and implement Environment Management in various departments.
- Continuous assessment for betterment in performance in green

4. METHODOLOGY

Methodology In order to perform green audit, the methodology that included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations was adapted.

Onsite Visit

Field visit was conducted by the Green Audit Team. The key focus of the visit was on assessing the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc.

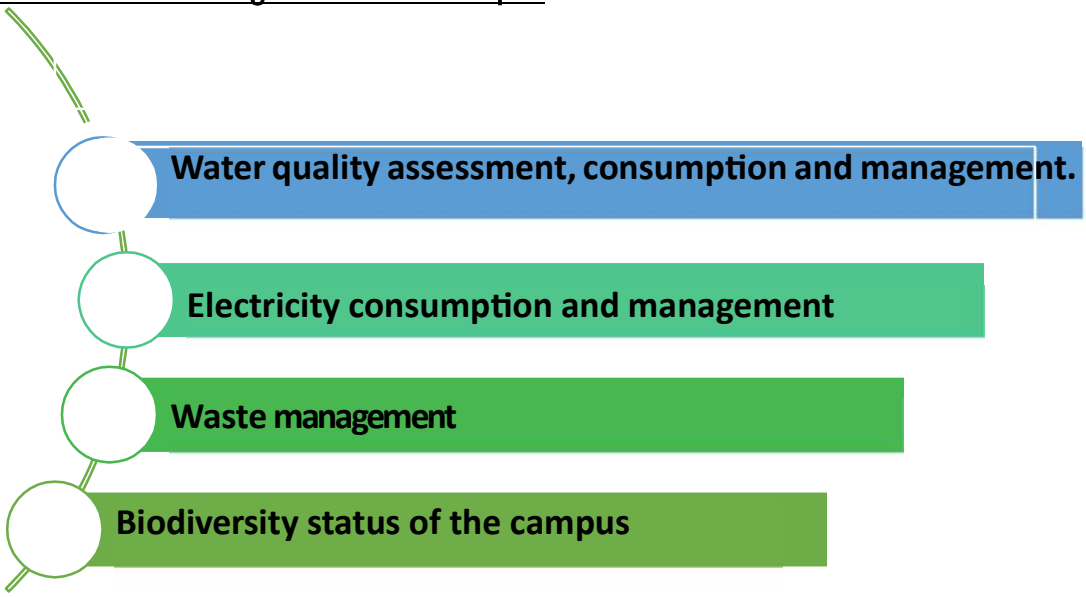
Focus Group Discussion

The Focus Group discussions were held with staff members and the management focusing various aspects of Green Audit. The discussion was focused on identifying the attitudes and awareness towards environmental issues at the institutional and local level.

Energy and waste management

With the help of Teaching, Non- teaching staff, students, administrative officer, Building Management Engineer and electrical Supervisor, the audit team has assessed the energy consumption pattern and waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method.

The Green Audit covered the following areas to summarize the present status of environment management in the campus:



5. AUDIT FRAMEWORK AN DETAILEDFINDINGS

The following audit framework is used for conducting Green Audit in 2022-23. The frame work also lists the findings and observations for every standard.

Control objective	Control(s)	Audit Observation
• **WATER MANAGEMENT**	• Repair sources of water leakage,such as dripping taps.	• Regular checking and maintenanceof pipelines are done to control Water wastage.
	• Encourage to decrease excesswater usage.	• Though water is used nominal in the Institute, but to ensure a further minimal rate, placards and warnings are not set up in the Institute premise. That must be adopted at every water delivery Point.
	• Install water recycling mechanism.	• There is no such water recycling mechanism adopted by the college.
	• Minimize wastage of water anduse of electricity during waterfiltration process, if used, such as Aqua guard filter	• Institute has Aqua guard filter on each floor which gives safe drinking water.
	• Rainwater Harvesting project execution	• Though Rainwater is collected through underground pipelines, it is recharged to ground water tank , and it is use for garden purpose.
• **WASTE MANAGEMENT**	• Compost, or cause to be composted, all organic	• The municipal collects the waste. Hence, automatic waste composting is strongly recommendation for better waste Management,

	• Make full use of all recyclingfacilities	• Institute does not have any such recycling device to carry on the procedure. Primary segregation is carried out and partly paper, plasticand E waste is sold or shared to local kabaddi walas or few NGOs.
	• Waste, green waste and non- recycled collected from gardens, offices and rooms.	• Compost plant that ensures propertreatment of all organic wastes. However, it is absolutely primaryprocessing. Better and scientific Treatment is expected.
	• Recycle or safely dispose of dry wastes, computers and electricalappliances.	• Recycle or safely dispose of dry wastes, computers and electrical appliances is done at primary level is done. E wasteis given to any authorized E waste recyclers.
	• Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated	• The Institute has set up separate two bins on each floor to ensure proper segregation and collection of the various wastes. The responsibility of recyclable waste is however still not taken up by the Institute
	• Dispose all waste, whether solid orotherwise, in a scientific mannerand ensure that it is not released directly to the environment	• Yes, the is trying to dispose all wastes, whether solid or other wise, in a scientific manner and ensure that it is not released directly to the environment; however, there is a lot of scope for improvement in current waste handling methods.

• **GREEN CAMPUS**	• Encourage the faculties andstudents to plant trees in thegarden.	• Encourage the faculties and students to plant trees in the garden. Existing plantation is not marked properly. However, more plantation can be adopted with more native trees.
	• Establish a Garden in the campus	• college already has a well-Maintained garden.
	• Disposal of the chemical waste generated from the laboratories in a scientific manner	• There is no as such treatment isgiven to the laboratories waste generated.
	• Minimize the use of fertilizers andPesticides in Institute ground & garden.	• Moderate amounts of bio-fertilizers are used in the Institute.
• **ENERGY MANAGEMENT**	• Look in to the possibility of on-sitemicro-generation of renewable electricity.	• Institute has installed Solar Street lights.
	• Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs	• The Institute is using all LED lights ..
	• Ensure that all cleaning productsused by Institute staff have aminimal detrimental impact on the environment, i.e. are biodegradable and non-toxic	• Negligible amounts of washing liquids are used in the Institute andall the toilet cleaners are eco-friendly

6. BIODIVERSITY STATUS OF THE CAMPUS

Biodiversity describes the richness and variety of life on earth. It is the most complex and important feature of our planet. Without biodiversity, life would not sustain.

What is urban biodiversity?

Urban biodiversity is the variety and abundance of life in a city (Puppim de Oliveira et al. 2014). Urban nature refers to all life in a city, including expansive and relatively wild green and blue spaces, as well as gardens, green roofs, street trees, birds, and butterflies (Turini and Knop 2015). Different elements of urban nature can be home to different types and amounts of biodiversity. For example, a city park with forested trails, a stream, and a pond may be rich in urban biodiversity because it is home to many types and large numbers of trees, birds, frogs, fish, and beneficial microbes.

Importance Of biodiversity

Biodiversity is essential for the processes that support all life on Earth, including humans. Without a wide range of animals, plants and microorganisms, we cannot have the healthy ecosystems that we rely on to provide us with the air we breathe and the food we eat. And people also value nature of itself.

A. LIST OF FLORA

Botanical Name	Common Name	Total No	Approx Age (Yrs)	Ecological	Economic
Mangifera indica	Amba	10	20	Evergreen	Important commercial fruit
Cocos nucifera	Naral	25	20	Evergreen	Important commercial fruit
Terminalia catappa	Deshi Badam	02	20	Evergreen	Important commercial fruit
Ficus blacki	Ficus sps	01	2	Evergreen	
Areca Palm	Areca Palm	50	3	Evergreen	Cultivated in garden
Ficus Religiosa	Pipal	01	45	Deciduous	
Delonex regia	Gulmohar	02	15	Deciduous	Avenue
Azadirachta indica,	Kaduneem	02	12	Evergreen	Medicinal
Sterculiya Foitida	Jungli Badam	01	25	Evergreen	Avenue
Ficus Glomuratus	Kala Umber	02	2	Evergreen	
Papaya sps	Papaya	01	1		Important commercial fruit
Tabernum Montanum	Tager	02	2	Cultivated in garden	Flowering
Hibiscus rosa sinensis	Hibiscus	04	2	Cultivated in garden	Flowering
	Total Trees	**103**			

B. LIST OF FAUNA

COMMON NAME	SCIENTIFIC NAME	LOCAL NAME	SEASONAL STATUS1
Order Pelecaniformes			
Family Phalacrocoracidae			
Little cormorant	*Phalacrocorax niger*	Pan kawla	RM
Family Ardeidae			
Gery Heron	*Ardea cinerrea*	Rakhi Balaak	RM
Large egret	*Casmerodius albus*	Lahaan Bagla	RM
Indian pond heron	*Ardeola grayii*	---	R
Cattle egret	*Bubulcus ibis*	Gaay Bagla	RM
Median egret	*Mesophoyx intermedia*	Bagla	RM
Little egret	*Egretta garzetta*	Bagla	R
Western reef egret	*Egretta gularis*	---	RM
Family Ciconiidae			
Order Falconiformes			
Family Accipitridae			
Black kite[2]	Milvus migrans	Ghar	R
Order Columbriformes			
Family Columbidae			
Spotted dove	*Streptopelia chinensis*	Kawda	R
Order Cuculiformes			
Family Cuculidae			
Asian koel	*Eudynamys scolopacea*	Kokila	R
Order Coraciiformes			
Family Alcedinidae			
Common kingfisher	*Alcedo atthis*	Khandya	RM
White throated kingfisher	*Halcyon smyrnensis*	Khandya	R
Order Piciformes			
Family Capitonidae			
Brown headed barbet	*Megaliama zeylanica*	---	R
Family Dicruriidae			
Black drongo	*Dicrurus macrocercus*	Kotwal Pakshi	R

Family Corvidae			
House crow	*Corvus splendens*	Kawla	R
Jungle crow	*Corvus macrohyncos*	Dom Kawla	R
Family Pycnonotidae			
Red vented bulbul	*Pycnonotus cafer*	Laalbudya Bulbul	R
White cheeked bulbul	*Pycnonotus leucotis*		R
Red whiskered bulbul	*Pycnonotus jocosus*	Shipahi Bulbul	R
Family Muscicapidae			
Oriental magpie robin	*Copsychus saularis*	Dayal	R
Indian robin	*Saxicoloides fulicata*	Dayal	R
Family Nectariniidae			
Crimson sunbird	*Aethopyga siparaja*	Shinjeer, Surya Pakshi	R
Purple rumped sunbird	*Nectarinia zeylonica*	Shinjeer, Surya Pakshi	R

Oriental Magpie Robin

Purple Rumped Sunbird

7. ENERGY MANAGEMENT:

Electricity is both a basic part of nature and one of the most widely used forms of energy. The electricity that we use is a secondary energy source because it is produced by converting primary sources of energy such as coal, natural gas, nuclear energy, solar energy, and wind energy into electrical power.

Electricity: The Brihanmumbai Electricity Supply and Transport Undertaking (BEST) is an electricity provider. After and maintenance of

Electricity bill reduce by 10 %. Because of following reason:

1. Replacement of old lights with LED lights.
2. Use of Solar lights in the campus area
3. Regular Maintenance of electricity system
4. Replacement of old Switches & boards with new one
5. Using The most energy-efficient appliances
6. Consider painting the walls a lighter color and using less lighting fixtures or lower wattages
7. Use booster pumps for small loads requiring higher pressures
8. Turn fans off when not needed.

Solar Light in the campus Area

Replacement of LED lights with old one

Use of Natural Day Lights

8.1 CARBON FOOTPRINT - EMISSION & ABSORPTION

9. Electricity used per year - CO2 emission from electricity

(electricity used per year in kWh/1000) x
0.84581988.00 kWh/1000 x 0.84

= 581988.00 /1000x0.84

= 3.02 ton

2.Diesel used per year CO2 emission (Diesel)

(Diesel used per year in litres) x 2.68

212.14 x 2.68

=212.14 x 2.68

=0.57 ton

3.Transportation per year (car) CO2 emission from transportation (Bus and Car)

College doesn't have any owned vehicles, so emission because of the transportation isZero.

Total CO2 emission per year cumulative by electricity usage + bus and car transportation (3.02 + 0.57 = 3.59 ton)

Fruiting Trees in the campus

8.2 CO_2 ABSORPTION BY FLORA

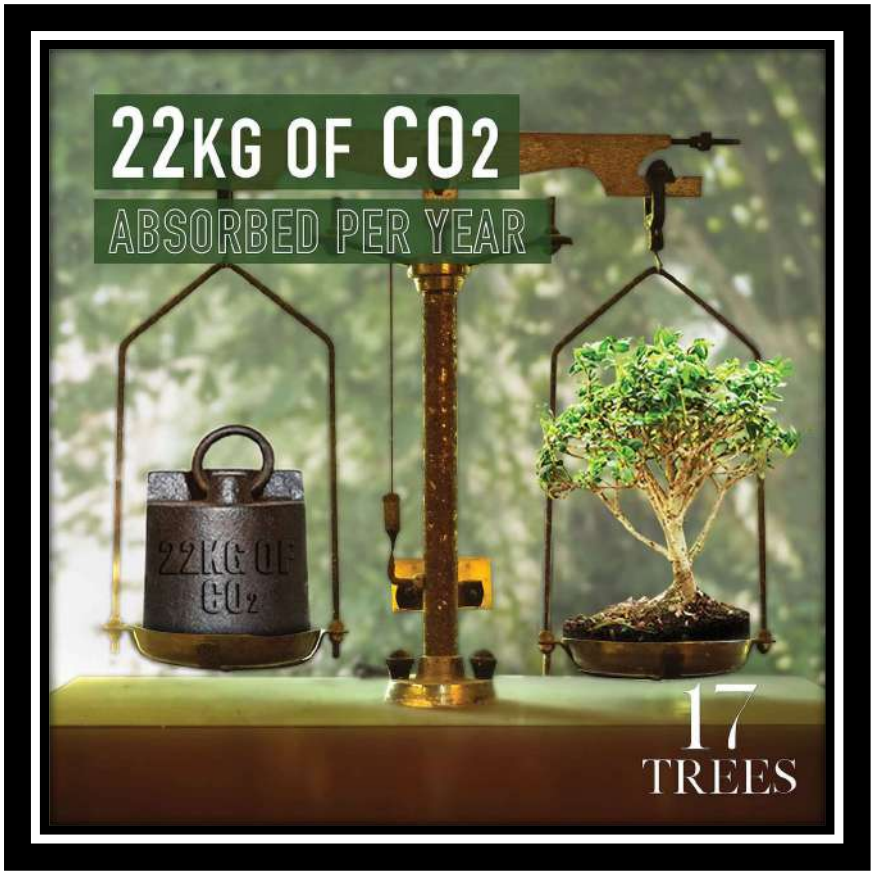
There are 103 full grown trees and 200 semi grown trees of different species, on the campus spread over 2 acres.

Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of

103 full-grown trees 103 x 22 kg CO2 =2266 kg tons of CO2.

The carbon absorption capacity of 200 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption 200 x 6.8 kg of CO2 = 1360 kg of CO2.

Grand total of carbon absorption capacity of the campus is 3362 kg of co2



8. WATER MANAGEMENT

Water conservation is a key activity as water availability effects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out. The source of water used in the college are municipal water supply.

Mumbai Municipal Corporation (MMC) supplies water to the institute. MC has installed water meters to monitor water consumption & for water charges. The charges are as per water consumption in the premises.

The rain harvesting is secondary source. The college stores the water in overhead tank and rainwater is stored in underground tank.

The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from Toilets of college, hostel, kitchen and canteen. Wate water treatment tank is installed in the campus

List uses of water in your institute

Basic use of water in campus:

Drinking *– 20.67 KL/day*

Gardening *– 150.47 Kl/day*

Kitchen and Toilets *– 250.81 KL/day*

Others *– 28.49 KL/month*

The source of water used in the college are municipal water supply.

1. How does your institute store water? Are there any water saving techniquesfollowed in your institute?

There is total 4,50,000 litters water storage capacity of two tanks one tank is underground while

Saving Techniques

- *Avoid overflow of water-controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*
-

2. Locate the point of entry of water and point of exit of waste water in yourinstitute.

Entry *– A. Water comes from Municipal corporation, Mumbai*

B. Rain water harvesting

Exit- *From Canteen, Toilets, bathrooms, Hostels and Labs through covered drainage which is connected to sewage*

1. Write down ways that could reduce the amount of water used in your institute

Basic use of water in campus:

Drinking *– 20.67 KL/day*

Gardening *– 150.47 Kl/day*

Kitchen and Toilets *– 250.81 KL/day*

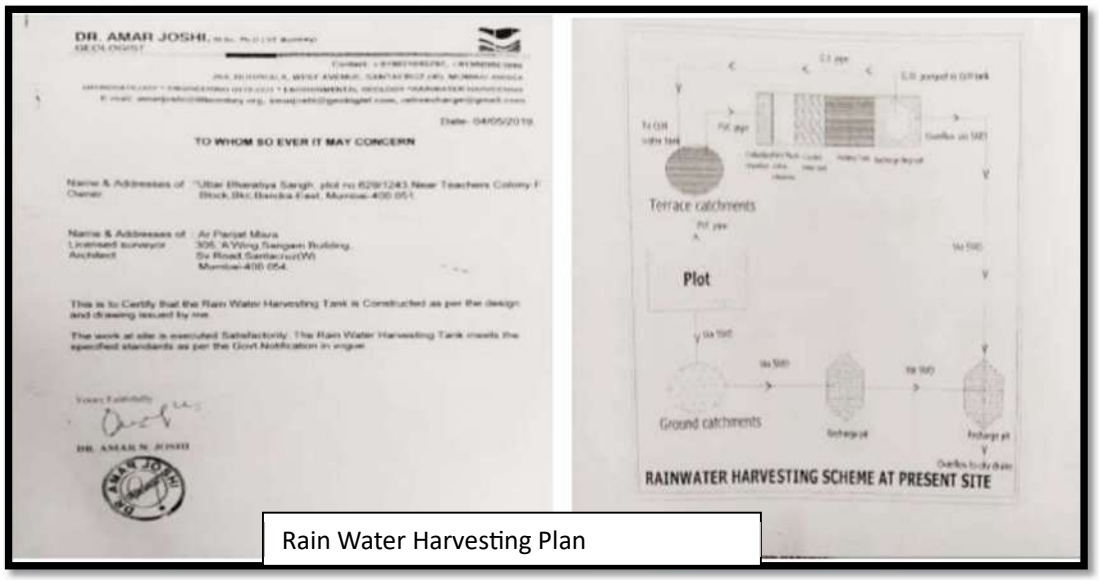
Others *– 28.49 KL/month*

Basic ways:

1. *Close the taps after usage*
2. *Water Conservation awareness for new students*
3. *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*

	
Water Management System on campus	**Water Management System on campus**

Rain Water Harvesting Units



Rain Water Harvesting Plan

Water Conservation Awareness

9. WASTE MANAGEMENT

Waste management is important for an eco-friendly campus. In a college, different types of wastes are generated, its collection and management are very challenging. The following data provide the details of the waste generated and the disposal method adopted by the college.

1. Does your institute generate any waste? If so, what are they?

Yes, Solid waste, Canteen waste, paper, plastic, horticulture, laboratories waste, e-waste, etc.

1. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste - 85 Kg

Non-biodegradable waste - 18 Kg

Hazardous Waste < 2 Kg
Others - 2 Kg

1. How is the waste managed in the institute? By Composting, Recycling, Reusing,Others (specify)

- *Composting is done for horticulture waste management.*
- *Hydroponics technique is used to recycle the grey water from college mess*
- *Aerobic Composting is done for bio-degradable waste management.*
- *Diluted solutions are used instead of concentrated solutions in laboratories*
- *One side printed Paper is re-used for internal communication.*
- *Solid waste is taken by Municipal Corporation*
- *Single use plastic is banned in the campus*
- *Paper recycling plant is installed in the campus*

2. Do you use recycled paper in institute?

- *No*

3. How would you spread the message of recycling to others in the community?

Following are the ways through which college is spreading the awareness about recycling

- *Poster competition activities*
- *Campaigns*
- *Rally*
- *Webinars and seminars*

4. Can you achieve zero garbage in your institute? If yes, how?

Not yet achieved. Possible through waste management policy and planning.

Basic ways:

4. *Close the taps after usage*
5. *Water Conservation awareness for new students*
6. *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*

2[B] Management of Non-degradable waste

Waste- Segregation

10. THE PRE-AUDIT STAGE

In the pre-audit stage, meetings provide an opportunity to support the capacity and objectives of the audit and enable discussions on the feasibility associated with the audit. The meeting provides the first opportunity to meet the audit and deal with several practical knowledge and concerns. The meeting provided the chance to gather information that the audit team can study before arriving on the site. The audit procedure and audit plan were handed over at this meeting and discussed in advance of the audit itself. In MPSPS College, the planning of audit processes was discussed in the pre-audit meeting. Audit team was also selected in this meeting with the help of staff and the Institute management. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself. The Management of the Institute 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 planting more trees on the campus, etc., after the green auditing. The management of the Institute was willing to formulate policies based on green auditing rep

11. THE AUDIT STAGE

The Audit Stage encompasses of the team selection and the field works performed. Looking after the unique structure, location and ambiance of the Institute, the Green Audit Team focused on Material Issues pertaining to Institute which have the highest influence on the Green Attributes of the Institute. The Audit stage also focused on the Methodology adopted. Checklist approach is adopted for transparent evaluation of the topics and increase readability for independent reader. Discussions were made with the college management regarding their policies on environmental management. Future also discussed, the purpose of plans of the college where the green audit was to ensure that the practices followed in the campus in accordance with the Green Policy adopted by the institution.

College and its premises were visited and analyzed by the auditor to gather information. Campus trees were counted and identified. Canteen, library, office rooms and parking grounds were also visited to collect data. Number and type of vehicles used by the stakeholders were observed.

12. THE POST AUDIT STAGE

The base of any green audit is that its findings are supported by documents and verifiable information. The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and in the correct manner. Green audits form a part of a process. Although they are individual events, the real value of green audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Although green audits are carried out using policies, procedures, documented systems and objectives as a test, there is always an element of subjectivity in an audit. The post-audit stage ensures formulation of Draft findings and sent to management response. Since the audit is done internally, it was important to ensure management approval for the draft. After getting draft approval, the audit team went for final report formulation.

13. E-WASTE MANAGEMENT

In India, the quantity of “e-waste” or electronic waste has now become a major problem. Disposal of e-waste is an emerging global environmental and public health issue, as this waste has become the most rapidly growing segment of the formal municipal waste stream in the world. E-waste or Waste Electrical and Electronic Equipment (WEEE) are loosely discarded, surplus, obsolete, broken, electrical or electronic devices. In India most of the waste electronic items are stored at households as people do not know how to discard them. This ever-increasing waste is very complex in nature and is also a rich source of metals such as gold, silver, and copper, which can be recovered and brought back into the production cycle. So, e-waste trade and recycling alliances provide employment to many groups of people in India. Around 25,000 workers including children are involved in crude dismantling units in Delhi alone where 10,000-20,000 tones of e-waste is handled every year by bare hands. Improper dismantling and processing of e-waste render it perilous to human health and our ecosystem. Therefore, the need of proper e-waste management has been realized.(4) It is necessary to review the public health risks and star tagines to combat this growing menace

E-WASTE ROOM

E-waste generated in the campus is of minimal quantity. It is being effectively managed, keeping in mind the environmental hazards that may arise if not disposed properly.
The cartridges of laser printers are refilled outside the college campus. Awareness programmed was conducted by college regarding E-waste Management. The E- wastes and defective items from computer laboratories are being stored properly and recycled in effective Manner.

The dismantled hardware of personal computers is used in PC trouble shooting lab. The dismantled electronic spare parts are immediately sold for reuse. The minimal amount of e- waste that is generated is taken by external vendor.

14. GREEN INITIATIVES BY CAMPUS

Solid Waste Management

Waste management is done by composting
Recycling of used paper is carried out in paper recycling plant.
There is ban on single use plastic and plastic crockery in the campus.

Renewable Energy

Solar power plant of capacity 7 KW is installed on building roof.
College has signed an agreement with third party solar power provider for 1 MW.
The college is using solar lights for street lights.

Tree Plantation Drives

Five plantation drives were carried out in the current year in the Campus.
Plants survival rate is around 85%

Air Pollution Reduction

Personal Vehicles (Students) are not allowed in the campus
College is in process to pursue air quality monitoring system,

Back Yard Avenue Trees

			29 Coconut Trees
			3 Mango Trees
			24 Ashoka Trees

Back Yard Avenue Trees

15. GREEN INITIATIVES

WORLD ENVIRONMENT DAY
DATE-17/6/2022

BEACH CLEANING DRIVE – I
08/07/2022


BEACH CLEANING DRIVE – II
05/07/2022


BEACH CLEANING ACTIVITY (CARTER ROAD, BANDRA WEST) 12/8/22

PLASTIC FREE SOCIETY AREA BASED ACTIVITY 30/09/22

SWACCHATA HI SEVA AT CARTER ROAD(SHRAMDAN)

1/10/22

SWACCHATAABHIYAAN

My Green Society (Mangrove clean up Drive)

28/10/22

B.Sc. Dept & Nature Club Activity 2023

16.RECOMMENDATIONS

- Environmental parameters should be included in purchase policy to achieve a cradle tograve approach for sustainability.
- College should go for water balancing / audit for monitoring the use and wastage of water.
- Water Meter should be installed at every building of college for monitoring of water consumption per capita.
- College should start drip irrigation to save water in campus
- College should increase the use of Sprinklers gardening purpose
- Flow rate of taps should be checked, it should not be more than 2.5 liters/minute.
- Increase plantation drives in nearby villages, local bodies, NGO and Municipal Corporation.
- Arrange training programmed on environmental management system and natureconservation for schools and local people.
- Establish an E-waste collection center in campus.
- Green building guidelines for future expansion projects of the campus