

# **GREEN AUDIT REPORT**

**2022-2023**



**CHHAYGAON COLLEGE**

**CHHAYGAON, KAMRUP**

**ASSAM-781124**



## **ECO CLUB: GREEN AND CLEAN INITIATIVES**



**ECO CLUB**

CHHAYGAON COLLEGE

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**CHHAYGAON, KAMRUP**

**ASSAM-781124**



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**NAAC Grade 'B'**

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Date: 16/05/2023

## **PREFACE**

I, on behalf of Chhaygaon College fraternity, would like to convey my best wishes to the members of the Eco Club for their vision to prepare the 'Green Audit' of the college campus and also like to thank and welcome our well-wishers. I think this Green Audit report appears to be an important and meaningful documentation which throws light on the important parameters of the campus environment, such as water management, healthcare, improvement of energy efficiency and formulation of action plan to reduce misuse of power, importance of renewable energy, air quality and pollution level etc. This is a constructive initiative undertaken by the members of the Eco Club Committee for the benefit of the college. This will also assist educate all concerned on eco-friendly environment and living therein.

In this context, I would like to offer my thanks and gratitude to Prof. Ashok Kumar Bora, Department of Geography, Gauhati University for his valuable guidance and suggestions to bring out this Green Audit pertaining to green and clean campus issues. All the stakeholders including the members of the Eco Club Committee who have extended their all-possible help and co-operation towards completion of this Green Audit Report deserve my sincere thanks.

I believe that the Green Audit Report of the institution is a valuable documentation for our college for the process of regular monitoring of the campus environment.

(Dr. Naba Kumar Kalita)

Principal  
Chhaygaon College, Chhaygaon

## ACKNOWLEDGEMENT

The Green Audit Report helps in the process of achieving an eco-friendly attitude towards the sustainable development of the college. The Green Audit Assessment Team sincerely would like to offer thanks to the authority of Chhaygaon college for assigning the job. We also like to appreciate the support and co-operation of the college authority extended to our team during the whole process.

Our special thanks from our end will proceed towards Dr. Naba Kumar Kalita, Principal, Chhaygaon college, Dr. Ashok Kumar Bora, Professor, Department of Geography, Gauhati University, Dr. Banamali Nath, college IQAC coordinator including all the members of the Eco Club Committee of the college.

Moreover, all the stakeholders deserve special thanks due to offering us necessary inputs to this exercise of Green Audit. I, on behalf of the Eco club, express my deep sense of gratitude to Professor Ashok Kumar Bora of Gauhati University for his suggestions and guidance received at various stages of Green Audit preparation. I also would like to offer my sincere thanks to Sri Arup Jyoti Bora and Sri Amrit Borah, research scholars of the Department of Geography, Gauhati University for conducting Campus GPS Survey and GIS mapping. I appreciate all my colleagues of the Eco club for their heart-felt constant and continuous supports.

I think that the results reflected in the Green Audit Report will surely serve as guide to educate the college fraternity on the present environment related practices and resource usage at college and also assist new actions and innovative planning. Hope, the college authority will surely implement the recommendations. I, on behalf of the Eco Club, would like to submit the Green Audit Report to the authority of Chhaygaon College, Chhaygaon.



(Dr. Bablu Rabha)

Convener, Eco Club

Chhaygaon College, Chhaygaon

# **ECO CLUB : GREEN AND CLEAN INITIATIVES**

## **ABOUT THE COLLEGE**

Chhaygaon College was established in the year 1974. Since its establishment, Chhaygaon College protects and promotes academic and environmental values in society. The College is situated on the southern bank of the mighty river Brahmaputra. The College Campus and the surroundings of the Campus are full of a variety of flora and fauna. The College is almost 40 km away from Guwahati and can be reached by road and train routes. The College is almost 27 km away from LGB International airport.

## **ABOUT ECO CLUB**

The Eco Club of the Chhaygaon college is an organization or club constituted by the faculty members and student representatives that focuses on promoting environmental awareness, sustainability, and eco-friendly practices within and around the college campus. The primary objective of the Eco Club is to educate the members of the Chhaygaon College family and the local community and create a platform for them to actively participate in environmental initiatives and conservation efforts.

## **OBJECTIVES OF THE ECO CLUB**

The Eco club was laid out to teach maintainable and eco-accommodating practices in the grounds. Through environmentally responsible practices, it aims to integrate environmental awareness and action into college life. The college's Eco club has collaborated with students and teachers to promote environmental awareness, conservation, and protection. The Eco Club provides services not only on the college campus but also in conjunction with the community outside of the campus. The Eco Club's awareness programs aim to educate people about how to live a sustainable lifestyle. It is becoming increasingly clear that environmentally friendly and sustainable practices can have a lasting impact on environmental protection. The Eco club's motto is "instill these habits in the students." Students' awareness of environmental problems, obstacles, and possible solutions is greatly enhanced by the Eco Club. The establishment of Eco Club primarily aims to raise student awareness of biodiversity and local environmental conservation. Some of the objectives are included as:

- To promote the educational institution as an environmental institution.
- To make an eco-friendly society in and around the campus.
- To preserve, identify and utilize various kinds of local plants.
- To provide a green and clean environment on campus.
- To bring awareness among the students towards environmental protection.
- To maintain and manage the college properties (electricity consumption, Water Consumption etc).
- To preserve and understand the nature of biodiversity.
- To spread awareness regarding pollution.
- To understand climate change and weather conditions of the area.
- To spread awareness about natural disaster and how to take necessary precautions.
- To create an eco-friendly zone (Plastic-free Zone, No Smoking Zone, Tobacco Tree Zone, etc).
- To promote awareness about health and hygiene.
- To ensure the ideas of sustainable development.
- To promote outreach activities for the environment and social development.
- To provide emphasis on use of renewable energy resources.
- To prepare an eco audit from time to time.

## **GREEN AND CLEAN INITIATIVES**

The initiatives of the Eco Club of Chhaygaon College can vary depending on the specific goals and interests of its members, but they typically involve organizing events, campaigns, and projects related to environmental conservation and sustainability. Some common activities include:

1. **Awareness Campaigns:** The Club may organize awareness campaigns to educate students and raise awareness about various environmental issues such as climate change, pollution, waste management, deforestation, and conservation.
2. **Sustainable Initiatives:** The club may initiate projects that promote sustainable practices on campus, such as implementing recycling programs, reducing energy consumption, promoting water conservation, or encouraging the use of renewable energy sources.
3. **Tree Plantation and Clean-up Drives:** The Eco Club often organizes tree plantation drives to increase green cover on campus and in surrounding areas. They may also arrange clean-up drives to keep the campus and nearby areas clean and free from litter.

4. **Workshops and Seminars:** The club may organize workshops, seminars, or guest lectures featuring experts in the field of environmental conservation and sustainability. These events provide students with the opportunity to learn from professionals and gain insights into environmental issues and solutions.
5. **Eco-friendly Events:** Eco Clubs often strive to make campus events and festivals more sustainable by promoting practices such as minimizing waste, using eco-friendly decorations, encouraging recycling, and reducing energy consumption.
6. **Collaboration and Advocacy:** The Eco Club may collaborate with other student organizations, local environmental groups, or NGOs to support environmental causes and engage in advocacy work to bring about positive change in environmental policies and practices.

By actively participating with the help of the Eco Club, students can learn about environmental issues, develop leadership skills, and contribute to a more sustainable and eco-friendly campus community. The club also serves as a platform for like-minded individuals to come together, share ideas, and take collective action for the betterment of the environment.

#### **ECO CLUB COMMITTEE, CHHAYGAON COLLEGE, 2022-23**

1. **Advisor:** Dr. Naba Kumar Kalita, Principal, Chhaygaon College.
2. **Convenor:** Dr. Bablu Rabha, Asst. Professor, Deptt. of Accountancy
3. **Teacher Members:**
  - Dr. Rajiv Deka, Asst. Professor, Deptt. of English
  - Dr. Kakali Bezbaruah, Asst. Professor, Deptt. of Philosophy
  - Mr. Debobrat Doley, Asst. Professor, Deptt. of History
  - Dr. Sristi Shawanam, Asst. Professor, Deptt. of Assamese
  - Miss Jyotshna Rahang, Asst. Professor, Deptt. of Political Science
  - Mr. Jogesh Bhattacharyya, Asst. Professor, Deptt. of English
4. **Student Member:** Shri Arjun Das
5. **Student Representative from NSS:**
  - Md. Jubair Hassan
  - Miss Nirmali Kalita



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**Dr. Ashok Kumar Bora, M.Sc ; Ph.D.**

**Professor in Geography and Former Head**

**Former Director, UGC – HRDC, GU**

**Former Director, College Dev. Council, GU**

**Former Director, GUIDOL**

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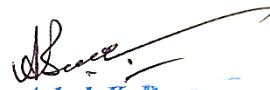
**GREEN AUDIT**

**CHHAYGAON COLLEGE**

***Certificate***

This is to certify that this Green Audit Report of Chhaygaon College, Kamrup has been prepared based on the original data received and acquired during the study period. It is also certified that the necessary data and information on various aspects of the Green Audit are collected and compiled by the Eco Club team (Internal Green Audit Team) and the same are submitted to me for verification. The data and information incorporated in this report have been thoroughly checked with spot verification for assessing their reliability. It is further certified that the data and information presented in the report are original and these are neither published nor produced anywhere else. The field survey data and photographs depicted here were taken and acquired either by the undersigned and his assistants or by the internal audit team (Eco Club) of the college.

Date: 22-05-2023

  
**Dr. Ashok K. Bora**  
Professor  
Department of Geography  
Gauhati University, Assam  
Expert in Environmental  
Study and Research



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## **I: INTRODUCTION**

Green audit involves the process of assessing the environmental and ecological conditions prevalent in an establishment. It is carried out with a purpose to identify and assess whether the institutional practices are environmentally sound, eco-friendly and sustainable. It is a regular process to be undertaken by any institution in order to identify, quantify, document, report and monitor the environmentally important aspects and components in a specified site. Besides assessing the environmental and eco-friendly status of a campus, the practice of green auditing helps identify the green practices and their future progression. Therefore, green audit presented in the form of a report is essentially required and helpful for an institution which provides ample scope to plan for taking up green initiatives and best environmental practices.

The working environment of all the stakeholders in an institute needs to be eco-friendly and environmentally viable for better, healthy and efficient performances. In an educational institution, efforts are made for the development of healthy and prospective human resources of the nation. In this context, the campus of any educational institution should enjoy congenial environmental situations and health-supporting system. With this aim in view, the Green Audit of Chhaygaon College has been prepared. It is importantly notable that our Honorable Prime Minister, Shri Narendra Modiji has rightly declared the globally admired programme ‘Swachh Bharat Abhiyan’ as a national mission. In the light of this mission, the University Grants Commission (UGC) has upheld the concept of ‘Green Campus, Clean Campus’ for the higher educational institutions. The National Assessment and Accreditation Council (NAAC), an autonomous body funded by the UGC has incorporated green auditing as one of the important components of the criterion VII for NAAC accreditation.

It is a fact that environmental degradation and associated problems are taking place at rapid pace everywhere on the earth. This has led to think with due concern and thus environmental awareness is increasing at all levels – global, national, regional and local levels. Environment at local level, especially at specific working place, site or campus has become a matter of concern and thus the apex educational bodies of the country have laid importance on green and clean initiatives in the educational institutions. In this regard, Chhaygaon College authorities have also laid due importance and priority to its campus environment, besides prioritizing the management of a healthy academic environment in the institution. Keeping this point in view, the Chhaygaon College has taken keen interest to prepare the Green Audit Report for its campus.

## II: OBJECTIVES AND METHODOLOGY

### A. Objectives

The following objectives have been applied in the process of documenting and preparing the Green Audit of the college:

- (i) To identify and document the green practices followed by the college.
- (ii) To set up goals, vision and mission for green practices in the campus.
- (iii) To identify the strengths and weaknesses in green initiatives and practices.
- (iv) To implement and promote the green practices in various sectors and departments of the college.
- (v) To arouse a sense of environmental awareness throughout the campus.
- (vi) To facilitate the preparation of Green Audit Report of the college, which will serve as an all-time reference in the years to come.

### B. Methodology Adopted

A set of methods and techniques mentioned below is applied in the process of designing and preparing the Green Audit:

- (i) **Field visit:** Spot visits were conducted by the Green Audit team in the college campus in order to take stock of the environmental aspects and situations.
- (ii) **Spot interviews:** Spot interviews were held with all the stakeholders in respect of their water use, waste disposal, energy consumption pattern, campus cleaning and sanitizing, etc. and necessary relevant data and information were collected from them.
- (iii) **Water sample collection and water quality analysis:** The water use and supply sources in the campus have been identified. Water samples from each of the water source points were collected following standard norms. In order to analyze the water qualities of the collected samples, a laboratory test was conducted in the Geomorphology Laboratory of the Department of Geography, Gauhati University using standard methods and instruments. Laboratory results on water quality are then interpreted.
- (iv) **Sophisticated technologies like GPS and GIS applied for LULC mapping of the campus:** The Global Positioning System (GPS), a set of satellite-based system is used in collecting the locational co-ordinates of various features of the campus

and the authentic satellite-based GPS data are processed in Geographic Information System (GIS) to generate a Land Use Land Cover (LULC) map of the college campus using the ArcGIS software. Areas under different land use categories have been also computed using the software.

- (v) **Monitoring air quality and pollution level:** The air quality and pollution level in the college campus have been assessed with the help of internet for both winter and summer seasons.
- (vi) **Measurement of noise level:** A measure of noise level at different locations in the college campus has been taken with the help of standard equipments.
- (vii) **Survey on floral and faunal species of the campus:** The floral and faunal species available in the campus were reported and recorded by the Green Audit team during the survey.

### **III: LAND USE LAND COVER MAPPING AND ASSESSMENT**

Chhaygaon College is situated in Kamrup district, Assam with its campus extension of 26°2'41" N to 26°2'41" N latitude and 91°22'21" E to 91°22'26" E longitude. It has an average elevation of 49 m from the mean sea level. The campus has a closed boundary bordered by agricultural fields and human settlements on the north, the national highway on the south, road and human settlements on the east and human settlements on the west. The campus map presented in **Figure 1** has been prepared with the help of GPS survey and GIS mapping techniques showing various land use and land cover patches and their corresponding areas.

The college campus spans over a total area of 16161.48 m<sup>2</sup>. So far the land use land cover types are concerned, an area of 4390.69 m<sup>2</sup> is covered by Buildings and Establishments which accounts for highest coverage of area (27.17%) among all the land use types. The Play Ground of the college covers 22.88% of the campus, while the Open Space covers 16.76% of the campus. Besides, the Grassland and Vegetative area represents 14.07% and the Kitchen Garden area represents 12.04% of the campus. Area under Internal Roads accounts for 2.89% of the campus. It is good that the campus contains sufficient open space and grassland with vegetative cover. The land use land cover (LULC) type of the campus and their corresponding statistics are depicted in **Table 1**. These statistics are computed using appropriate GIS software.

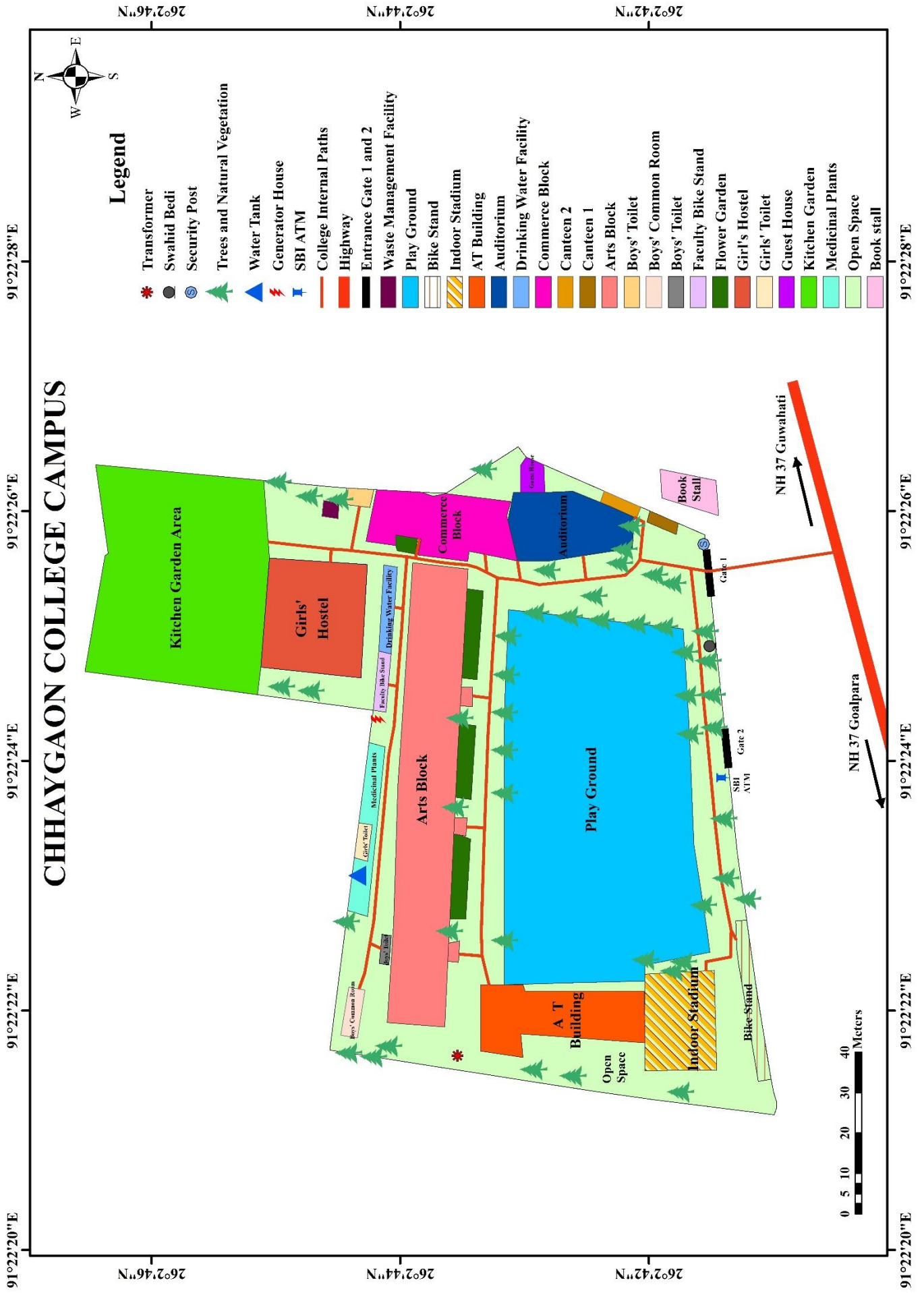


Figure 1: Land Use Land Cover (LULC) Map of Chhaygaon College Campus

**Table 1: Statistics in respect of Land Use Land Cover (LULC) categories of Chhaygaon College Campus**

Sl. No.	LULC Categories	Area Covered (m <sup>2</sup> )	Percentage of Areas out of the Total Campus Area
1	Open Space	2709.13	16.76%
2	Grassland and Vegetative Area	2274.2	14.07%
3	Garden Area	236.26	1.46%
4	Buildings & Establishments Area (All)	4390.69	27.17%
5	Medicinal Plants Area	173.56	1.07%
6	Parking Space	184.3	1.14%
7	Area under Internal roads (Paths)	467.30	2.89%
8	Kitchen Garden Area	1945.7	12.04%
9	Play Ground	3697.95	22.88
10	Waste Management Site Area	19.7	0.13%
11	Drinking Water Facility Shed	62.69	0.39%
Total Area		16161.48	100 %

**Source :** Based on GPS survey carried out in the campus

#### **IV: WASTE MANAGEMENT AUDIT**

Natural and human factors are involved in generation of wastes. But, human factors and activities are largely responsible for creating wastes at a massive scale worldwide. Wastes have become an integral part of our daily life. Production of wastes of various types causes a host of environmental problems. Wastes are the real threats to the eco-environmental landscape of any region or place. The three basic resources necessary for our life-supporting system are the land (soil), air and water and these are highly polluted by wastes leading to environmental and human health hazards.

Wastes are basically of three types – biodegradable, non- biodegradable and hazardous wastes. All these wastes may be either solid wastes or liquid wastes as distinguished from their state, i.e solid or liquid. As the term implies, biodegradable wastes get easily degraded, hence these wastes can be easily managed. Wastes usually generated from kitchens or canteens are the food wastes, vegetables wastes etc. which are biodegradable wastes. In contrary to these, the wastes like glass, tins, plastic substances etc. are of non-degradable type which need different approach and methods for their management. Again, the hazardous wastes usually generated from industries and chemical laboratories comprise the toxic and chemical substances which have their direct harmful effects on human health and other plants and animal organisms. The solid wastes, on the other hand can be managed through the process of reduction, reuse, recycle and recovery.

As in the other establishments, wastes of various types are also generated in educational institutions. The students, office staff, teachers and other personals visiting the institution generate solid as well as liquid wastes through their different activities and events. Such wastes generally include plastic wastes, paper wastes, organic wastes, e-wastes, sewage mud etc. which are produced mostly from the administrative office, academic departments, hostels, canteen, classrooms, meeting venues etc.

### **Solid Waste Management**

The Chhaygaon College has solid waste management system controlled by the Eco Club of the College. The biodegradable and non-biodegradable solid wastes are separately collected at two collection points as shown in photographs (**Photo 1 and 2**). Efforts are made to reduce and eliminate the adverse impact of waste materials on human health and the environment. The institution has taken all the precautionary measures to make the campus plastic free. The dustbins made from bamboo are used which is an alternative to plastic because it is durable, sustainable, and eco-friendly.

The bamboo-made dustbins are placed near all the classrooms and departments on every floor to collect different types of waste separately such as plastics, e-waste, paper wastes, food wastes, organic wastes products, etc. Biodegradable wastes collected from all the floors are emptied into a compost pit and set burnt every evening and transformed into manure which is later utilized as biofertilizer in the botanical and kitchen garden as well as in other areas of the college campus, wherever required. No chemicals and other toxic substances are produced on the campus, as there are no science laboratories in the college.

## E-Waste Management

Electronic wastes such as damaged parts of computers, batteries, computer accessories, spare parts and other electronic goods accumulated in the campus are properly collected in separate places under the label ‘scrap’ and disposed of by an outsourcing agent called Ali Hussain, Chhaygaon, Kamrup.

## Liquid Waste Management

Liquid waste is an important category of wastes, because it is difficult to deal with. Unlike solid wastes, liquid wastes cannot be easily picked up and removed from the site and the environment. Liquid wastes get spread out and easily pollute other sources of liquid if these come into contact. In the case of liquid waste disposal, a drainage system in the college campus works to drain out the liquid wastes from the campus.

Taking all the sources of waste generation into account, it is estimated that about 12.1 Kg. of solid wastes are produced in the college campus on the average per week. The **Table 2** depicts the scenario of solid waste generation in the college through the varied activities of the stakeholders.



**Photo 1:** Biodegradable Waste Collection Site (Shifted to a new site)

**Photo 2:** Non-Biodegradable Waste Collection Site (Shifted to a new site)





**Table 2: Amount of Solid Waste Generated from Various Establishments**

Sl. No.	Establishments	Solid Wastes Types	Solid Wastes Generated per week on average in Kg.	P.C. of the Waste Generated (%)
1	Administrative Units	• Paper waste	1.00	54.06
		• Plastic waste	0.20	10.81
		• Organic waste	0.40	21.62
		• E - waste	0.25	13.51
			1.85	100.00
2	Academic Departments	• Paper waste	1.00	40.82
		• Plastic waste	0.20	8.16
		• Organic waste	1.00	40.82
		• E - waste	0.25	10.20
			2.45	100.00
3	Hostel	• Paper waste	2.00	76.92
		• Plastic waste	0.30	11.54
		• Organic waste	0.20	7.69
		• E - waste	0.1	3.85
			2.6	100.00
4	Canteen	• Paper waste	0.50	11.91
		• Plastic waste	0.60	14.29
		• Organic waste	3.10	73.80
		• E - waste	—	—
			4.2	100.00
5	Outdoor	• Paper waste	0.20	22.22
		• Plastic waste	0.40	44.45
		• Organic waste	0.20	22.22
		• E - waste	0.10	11.11
			0.9	100.00
6	Washrooms	• Paper waste	0.10	100.00
		• Plastic waste	—	—
		• Organic waste	—	—
		• E - waste	—	—
			0.10	100.00
Total = 12.1 Kg				

## V: WATER RESOURCE AUDIT

Water is a crucial natural resource, essential for sustaining the life-support system. Without access to clean water, many ecosystems would be at risk of degradation and degradation would impact the health of the environment. It is a common knowledge that the Earth is often referred to as “the water planet” as it conjures up the image of a world with an abundance of water. However, despite this nickname, only a small fraction of the total water on Earth i.e, about 0.3 percent is usable by humans and other living organisms. The majority of freshwater on the planet, i.e more than 99 percent lies in inaccessible sources such as underground aquifers. Thus, it is essential to ensure that water resources of the earth remain clean and safe from pollution and contamination in the environment. This imperative objective and need must also be pursued within the campus of Chhaygaon College in order to properly monitor, utilize, and manage the available water resources.

### Sources, Uses and Management of Water Resources

#### Sources of Water in the Campus

Water used in the college for various purposes is obtained from different sources which are identified as (i) Hand Tube Wells (ii) Deep Boring (iii) Water Reservoir (storage tanks) and (iv) Rain Water Harvesting Unit. The status of these water sources is presented in **Table 3**.

**Table 3: Water Sources and their Status**

Sl. No.	Water sources	Units/ Numbers	Status of water quantities
1	Hand-operated tube well	01	Necessary quantities acquired.
2	Motor-driven Deep Boring	03	Necessary quantities acquired.
3	Water Storage Tanks (Reservoirs)	03	Adequate water is reserved with a total capacity of 6500 liters.
4	Rain water harvesting unit	01	Season-wise collection of rain water to be used, especially for gardening purposes with a total capacity of 500 liters.

## **Different Purposes of Water Use in the Campus**

The college communities use water for a variety of purposes like drinking, cleaning, washing, use in the toilets, hostels, canteen, flower gardens, etc. The following are the purposes for which water is used in the college campus.

### **1. Primary Purposes for Water Use**

- Drinking.
- Use in the toilets and washrooms meant respectively for the boys and girls students, teachers, principal, guests, office staff, library staff, hostel boarders, canteen staff, and other employees.
- Gardening and landscaping.
- Cleaning and washing of room floors etc.
- Use in cooking purpose in the hostel and canteen.
- Use in all types of construction works.

### **2. Provisions of Water Use**

- Total number of toilets and urinals available in the college: 49 nos.
- The number of water filters complex centrally available: 03 nos.
- The number of small water tanks/ water storage: 03 nos.
- The number of total water taps/ water use points: 112 nos.

## **Water Treatment and Quality Maintenance**

A situation of abundance of water resources is good, but at the same time, efficient water resource management can only be achieved through an expert management system. Chhaygaon College campus has no shortage of water for any purpose. Availability of water is assured for all the time. In order to facilitate and ensure this, 6,500 liters of water are stored in 03 reservoir tanks. Moreover, rainwater harvesting helps collect extra water during monsoons which is, especially used for gardening purposes. All the four sources collectively provide

water for an average daily use of 3,000 liters of water in the campus. For drinking purposes, a number of water purifiers are installed in the campus (**Photo 3**).



**Photo 3:** Water Purifiers Installed in the Campus



**Photo 4:** A Water Reservoir

Water quality assessment is essentially important so as to know about the status of water of the campus which is used by all the stakeholders. In this regard, water samples were collected from various sources to go for water testing in laboratory. Water samples were collected from the sources like (a) Hand-operated tube well (b) Moto-driven deep boring, (c) Water storage tanks and (d) Rain water harvesting reservoir. The samples so collected had been analysed with 24 hours of collection in the Laboratory of the Department of Geography, Gauhati University. In the laboratory a standard water testing instrument ‘OTT Hydro Lab DS 5’ is used. The

computer-aided analysis gave the results of water qualities of the samples in terms of 13 water parameters. The laboratory results are presented in **Table 4** for the four sources of water. Among the parameters, iron content, pH, alkalinity, turbidity, chloride, total dissolved solids (TDS), arsenic, fluoride and total hardness are the important water quality parameters. The parametric values indicate that the overall water quality in the college campus falls with the tolerance and permissible limits with reference to guidelines.

**Table 4: Water Quality Parametric Values for the Water Samples Collected from Different Sources of the College Campus**

Sl. No.	Water Parameters	Parametric values in respect of the water sources			
		Hand Operated Tube well	Deep Boring	Water storage tanks	Rain Water Harvesting storage
1	Temperature ( <sup>0</sup> C )	23.4	22.8	24.1	23.7
2	Total Dissolved Solids (mg/l)	18	22	26	27
3	pH	6.55	6.62	6.78	6.65
4	Turbidity (N.T.U)	0	0	0	0
5	Alkalinity (mg/l)	75	78	102	122
6	Total Hardness (mg/l)	65	68	91	101
7	Iron (mg/l)	0.14	0.16	0.27	0.15
8	Manganese (mg/l)	0.19	0.21	0.22	0.18
9	Magnesium (mg/l)	9	11	10	14
10	Arsenic (mg/l)	nil	nil	nil	nil
11	Fluoride (mg/l)	0.14	0.20	0.25	0.22
12	Chloride (mg/l)	2	4	5	6
13	Calcium Hardness (mg/l)	10	11	13	12

**Source:** Water quality analysis of water samples conducted in the Laboratory of Geography Department, Gauhati University

## VI: HEALTH AUDIT

Health is the precious wealth for human being in the entire lifetime. The institution firmly believes that without a safe and clean environment no healthy working conditions are possible. A safe and healthy working environment is recognized as a fundamental human right. Seeking this belief, the Chhaygaon College authorities attempts to achieve a healthy atmosphere among the students, faculty members, staff members, and other stakeholders. The general objectives of the health audit are:

- To conduct a general health check-up of the students, faculty members, and staff members of the college.
- To make health-centric awareness about hygienic environment and good health among the students.
- To provide healthcare facilities for the students in the campus.
- To create a healthy and happy environment in the college.

In view of the importance of health concern and care, the Chhaygaon college has taken steps to make the students aware of the health status. In this regard, the college has organized some health camps at its campus in collaboration with Life Safe Hospital, Bijoy Nagar, and Life Support Diagnostic Centre, Chhaygaon, Kamrup District. These health programmes include free health check-up camp, COVID-19 awareness camp, Eye check-up camp and Blood donation camp (**Photo 5, 6 and 7**). The aim of these health camps are to make students, teachers, and office staff aware of their health status and to help them with necessary medical services and advice to be received from the medical team. The following are the health camps held in the college campus at different dates, which are presented in **Table 5**.

**Table 5: Different Health Programmes organised in the College Campus**

Sl. No.	Date of holding the health camp	Programmes	Site	Numbers of participants
1	29 <sup>th</sup> September, 2020	Awareness Campaign on COVID-19	Chhaygaon College	300
2	11 <sup>th</sup> -14 <sup>th</sup> April, 2021	COVID-19 Vaccination Drive Awareness Campaign	Chhaygaon College	240
3	8 <sup>th</sup> June, 2021	COVID-19 Vaccination Camp	Chhaygaon College	330
4	15 <sup>th</sup> July, 2022	Free Health Check-up Camp	Chhaygaon College	180
5	24 <sup>th</sup> November, 2022	Mega Blood Donation Camp	Chhaygaon College	20

**ছয়গাঁও মহাবিদ্যালয়ৰ উদ্যোগত** 

**লাইফ চেভ হস্পিটাল (বিজয়নগৰ) আৰু**  
**লাইফ চাপোৰ্ট ডায়'গনষ্টিক চেণ্টাৰ(ছয়গাঁও)ৰ তৰফৰপৰা**  
**বিনামূলীয়া স্বাস্থ্য আৰু চিকিৎসা শিবিৰ**

স্থান : ছয়গাঁও মহাবিদ্যালয়  
 তাৰিখ : ১৫ জুলাই ২০২২, শুক্ৰবাৰ

 **LIFE SAVE HOSPITAL**  
 Your Health. Our Responsibility

 **24 EMERGENCY SERVICES**



**Photo 5:** Free Health Check-up camp on 15<sup>th</sup> July, 2022 in collaboration with Life Safe Hospital, Bijoynagar and Life Support Diagnostic Centre (Chhaygaon).

During the covid-19 period, various awareness programs have been held with the help of the students and organized by the NSS unit of Chhaygaon College. One Covid-19 awareness program was held on 29th Sept 2020, and Covid 19 vaccination Drive awareness campaign was held from 11th to 14th April 2021 in different places in the Chhaygaon area including Chhaygaon College. In addition, Chhaygaon college students under the NSS unit provided service at Covid 19 vaccination camps from 8th June 2021.

The College organized a “Mega Blood Donation Camp” at its campus on the occasion of “Lachit Borphukon’s 400th Birthday Celebration” in collaboration with the District Health

Society, Kamrup, District AIDS Prevention & Control Unit, Kamrup and Internal Quality Assurance Cell (IQAC), Red Ribbon Club, Students Union, NSS unit, Alumni Association of Chhaygaon College, and SPs Blood Donor Cell, Chhaygaon on 24th November 2022.



**Photo 6:** Blood Donation Camp on 24<sup>th</sup> November, 2022 participated by the Students and Teachers of Chhaygaon College.



**Photo 7:** Certificate Distribution to the Blood Donors.



## Hygiene Aspect

The College is a place where knowledge is earned and knowledge says that one can survive only by keeping the surrounding environment safe, clean and green. So, the cleanliness of the college campus is important for health and safe stay. Therefore, keeping the hygiene aspect in mind, the following provisions are made available in the college campus: (i) Staff washroom with sanitary facilities, (ii) Students' washrooms and sanitary toilets separately for boys and girls, (iii) Canteens with hygienic food, (iv) Boys' and Girls' common rooms with sanitary facilities, (v) Teachers' common room with sanitary toilets and washrooms. The college authority regularly monitors the hygiene and cleanliness aspects of all the facilities and the working environment of the college.

## Fitness Aspect

The college has a well-equipped gymnasium center that provides facilities of physical exercise primarily for students. The gymnasium remains open daily from 7 am to 8:30 am and there is an experienced instructor-cum-trainer in the centre who assists the students and looks after the smooth functioning of the programmes in the centre. The facilities available in the gymnasium centre are listed below (**Table 6**).

**Table 6: Facilities Available in the Gymnasium Centre**

Sl. No.	Equipments	Operational mode	Quantity (Nos.)
1	Iron bars	Manual	3 pc
2	Weight Plate	Manual	1 Pound 2 pc 1 Kg 2 pc 2.5 Kg 2 pc 3 Kg 2 pc 5 Kg 2 pc 10 Kg 2 pc 12 Kg 2 pc
3	16 Station Gym	Manual	1 pc
4	Dumbell Bar	Manual	2 pc
5	Fold Bench	Manual	1 pc
6	Skipping Rope	Manual	2 pc
7	Power Spring	Manual	2 pc
8	Sit Up Bench	Manual	1 pc

Besides the gymnasium centre, there is also one Indoor Stadium in the college campus which provides facilities to play indoor games like badminton, table tennis, etc. The campus has also an open playground for football, kabaddi, and volleyball playing for students.

Moreover, the Chhaygaon College NSS unit also organized some important fitness programs for the students from time to time in collaboration with different Units of College for keeping mind and body fit. The following programs were conducted:

- (i) A seven days workshop on “Self Defense for Women” from 5th March to 11th March 2021. More than 50 girls students participated in the program.
- (ii) ‘Two km Fit India Plog Run’ organized on 2nd October 2020 on the birth anniversary of Mahatma Gandhi.
- (iii) A ten-day Yoga Camp was organized by the NSS unit from 11th to 20th June 2022 and more than 100 students participated in the program.
- (iv) The college NSS team participated in International Yoga Day organized by Govt. of Assam on 21st June 2022.

## **VII. ENVIRONMENTAL QUALITY AUDIT**

### **Air Quality and Pollution Level**

From environmental points of view, air quality and pollution and noise level are essentially important, as these are the integral components of the environment. In order to know the status of air quality which primarily depends on the level of air pollution, the internet source and related data are taken into account during both summer and winter seasons for greater Chhaygaon area in order to assess the air quality of the college campus. The status of air quality of Chhaygaon college is presented in **Table 7**.

**Table 7: Air Quality and Pollution Level in the College Campus (Based on Air Quality Status for Chhaygaon Area)**

Locations	Air Quality Index (AQI)		Pollution Level as per Central Pollution Control Board, Govt. of India Norms	
	Summer	Winter	Summer	Winter
Chhaygaon College Campus	106	85	Moderately Polluted  <b>(101 - 200 for moderately polluted air)</b>	Satisfactory  <b>(51 – 100 for satisfactory air quality)</b>

The college is located mostly in a rural area, where no major industrial activities are going on. Hence, the air quality level in the college campus falls with permissible limit. Seasonal variation in air pollution reveals that air pollution is little more during summer season as compared to that during winter season.

#### **Noise Level Status**

Noise level is an important index of environmental pollution and it comes under the purview of the Air (Prevention and Control of Pollution) Act, 1981 of Govt. of India. As per guidelines of the concerned authorities, pollution level is assessed usually in two situations, viz. (i) Community area, where noise is categorised as community-induced noise and (ii) Industrial area, where noise is categorised as industry-induced noise. The World Health Organization (WHO) has issued guidelines for community-induced noise in residential area which is about less than 30 dB. The noise level permissible for teaching and learning environment in classrooms suits to less than 35dB.

In order to assess the noise pollution level in Chhaygaon college campus, a survey was conducted by Professor Kushal Kalita and his assistant from the Department of Physics, Gauhati University at different locations in the campus with a Sound Level Meter (Model: Envirotech SLM 100, Type II db A). Five locations have been selected for measuring noise level in the campus, such as (i) At main college gate, (ii) At northern boundary, (iii) At southern boundary, (iv) At eastern boundary and (v) At middle position of the campus during working

daytime. The tabulated data presented in **Table 8** give the noise level scenario in the college campus.

**Table 8: Noise Levels at Different Locations of the College Campus**

Selected locations	Noise Level in dB Leq		Permissible (daytime) noise limit as per Central Pollution Control Board (CPCB)
	10 am – 12 noon	2 pm – 4 pm	
(i) Main College Gate	62.2	61.4	For silence zone - 50  For residential zone - 55
(ii) Near Northern Boundary	51.60	51.80	
(iii) Near Southern Boundary	48.20	46.30	
(iv) Near Eastern Boundary	49.40	50.20	
(v) At Mid-Campus position	50.10	49.80	

As revealed from the data presented in table 8, the highest noise level has been observed at the college gate with 62.2 dB Leq between 10 am – 12 noon and 61.4 dB Leq during 2 pm – 4 pm. This noise level is found little higher due to more traffic on the main road. As the college buildings are some distance away from the main road, the noise level is found less in different locations of the college campus. The noise levels on the northern boundary, southern boundary, eastern boundary and middle of the campus are within the permissible limits ranging between 46.30 and 51.80 dB Leq. As a whole, the college campus is not affected by noise pollution and level of beyond permissible limit prescribed by the concerned authorities.

### **Status of Soil Quality**

Soil quality of the college campus is apparently good and rich in fertility. Soils are mostly composed of high proportion of clays and silts falling in the category of old alluvial soils with humus level. In the college, chemical fertilizers are not used for manuring the trees and flower plants of the garden. Organic manures are always used in the campus, which keep the soils away from being polluted.

## Energy Use Scenario

It is to be mentioned here that energy use and utilization pattern in the college has been separately assessed and an Energy Audit for the campus is prepared separately for the college by other competent agency.

## VIII: BIODIVERSITY AUDIT

The college campus is endowed with a variety of flora which favours the prevalence of a green campus and natural environment. The trees and plants scattered over the campus are identified and recorded and presented as general plants and trees (**Table 9**) and the plants having medicinal values (**Table 10**).

**Table 9: List of Trees and Plants Identified in the campus**

Sl. No.	Local Name (Assamese)	Common name (English)	Scientific/ Botanical Name	Quantity in number
1	Bakul	Bullet-wood Tree	Mimusops elengi	4
2	Lucky Bamboo	Lucky Bamboo	Dracaena Sanderian	7
3	Pat gos	Balfour Aralia plant	Polyscias pinnata	3
4	Khejur	Date Palm Tree	Phoenix Dactylifera	1
5	Arjun tree	Arjuna Tree	Terminalia Arjuna	3
6	Pat gos	Ti Plant	Cordyline fruticosa	6
7	Mumai Tamul	Palm Nut	Pinanga gracilis	1
8	Devodaru	Deodar tree (these trees in the campus are 12 years old)	Cedrus deodara	17
9	Siris	Rain tree (these trees in the campus are 37 years old)	Albizia Saman	22
10	Karabi	Yellow Oleander	Cascabila Thevetia	1
11	Kopou ful	Foxtail Orchid	Rhynchostylis	1

Contd.

12	Payn Gos	Pine tree	Genus Pinus	14
13	Nahor	Ceylon ironwood	Mesua ferrea	10
14	Aam	Mango tree	Mangifera Indica	1
15	Haz gos	Purple Haze plant	Prostanthera ovalifolia	25
16	Konibihh	Croton plant	Codiaeum variegatum	11
17	Parijat	Cleopatra plant	Canna generalis	2
18	Tagar	Pinwheel plant	Tabernaemontana divaricata	1
19	Kathal	Jackfruit tree	Artocarpus heterophyllus	1
20	Tamul	Betelnut tree	Areca catechu	11
21	Shishu	Indian Rosewood	Dalbergia Sissoo	4
22	Kol	Banana tree	Musa	3
23	Joba	Shoebblack plant	Hibiscus rosa Sinensis	3
24	Krishnashura	Flamboyant	Delonix regia	2
25	Mosonda	Tropical Dogwood	Mussaenda Erythrophylla	1
26	Khorikajai	Jasmine	Jasminum	7
27	Bidyar pat gos	Thuja	Thuja occidentalis	8
28	Dalim	Pomegranate tree	Punica granatum	1
39	Jolokia	Chilli plant	Capsicum frutescens	4
30	Bengena	Brinjal plant	Solanum melongena	2

The Chhaygaon college campus not only houses a wide range of floral species, but also serves as a habitat for various faunal species. Despite the lack of forests and water bodies in the camps, various local birds, owls, reptiles, grasshoppers, spiders, ants and other creatures are also found. Some medicinal plants occurring in the campus are identified and recorded with their benefits and are shown in the **Table 10**.

**Table 10: Medicinal Plants Reported from the College Campus**

Local Name	English Name	Botanical Name	Medicinal value
Sal Konwari	Aloe vera	Aloe barbadensis miller	Aloevera is a medicinal plant with antioxidant and antibacterial properties. It is useful for reducing dental plaque, accelerating wound healing, preventing wrinkles and managing blood sugar.
Tulshi	Holy Basil	Ocimumtenuiflorum	Holy Basil is a natural immunity booster which reduces fever, cold, cough, respiratory disorders, reduces stress and blood pressure. It has anti-cancer properties and is good for heart health and diabetes patients.
Neem	Neem	Azadirachta indica	Neem treats acne, wounds, fungal infections, helps in nourishing skin, increases immunity, useful in detoxification.
Narasingha	Curry leaf	Murrayakoenigii	Curry leaves are popularly known for its aroma and it has antioxidant, antidiabetic, anticancer, antibacterial, antiviral properties.
Pasatia	five-leaved chaste tree	Vitex negundo	It has analgesic, anti-bacterial and anti-inflammatory properties. It is useful in the treatment of fever, arthritis, headaches, swelling, digestion problems, mouth related problems.
Nayantora	Periwinkle	Catharanthus roseus	It is used for treating a host of health anomalies including diabetes, sore throat, lung congestion, skin infections, eye

Contd.

			irritation and even reduces the risk of cancer.
Moha neem	Neem	<i>Azadirachta indica</i>	Branch, leaf and bark of Moha neem are used as medicine to relieve tooth and gum pain. It is also useful for ear and eye diseases, reduces face spots, cures leprosy, kills worm in human body, increases immunity.
Bhedailota	skunkvine	<i>Paederia foetida</i>	It is helpful in increasing appetite and is used to treat stomach ailments, gastric problems, nerve related problems, rheumatic pain.
Madhurium	Guava	<i>Psidium guajava</i>	Guava, the richest sources of dietary fiber is immunity booster and can do wonder to skin, promotes fertility and helps in regulating metabolism which leads to weight loss.
Haldhi	Turmeric	<i>Curcuma longa</i>	Turmeric has anti-inflammatory properties. It helps in preventing arthritis, diabetes, cancer and helps in wound healing, improving skin health, digestion, promotes weight loss.
Bor Manimuni	Indian Pennywort	<i>Centella asiatica</i>	A blessing for skin care and used to treat stomach and urinary tract infections due to its antibacterial characteristics.
Aparajita	Asian pigeonwings	<i>Clitoria ternatea</i>	It is popularly used as a memory booster and brain tonic. It is useful in cold, cough, headaches, helps in getting good sleep, relieves anxiety, depression.
Durun	Thumbai	<i>Leucas aspera</i>	This medicinal herb cures cough, cold, fever, headache, stomachache, dysentery, sinusitis, toothache, ulcers, rashes, ringworm, boils, asthma.
Kola Kosu	Taro leaves	<i>Colocasia esculenta</i>	Taro, an excellent source of dietary fiber is rich in several important micronutrients such as Vitamin C, Vitamin A, Folate, calcium, as well as disease fighting antioxidants.

Contd.



Musondori	Fish Mint	Houttuynia cordata	Heart leaves used as a herbal medicine to cure stomach related problems. It is good for diuresis and detoxification.
Dubori Bon	Bahama grass	Cynodondactylon	It is effective in menstrual problems, at curing acidity, stomach ulcers, colitis and stomach infections. It is helpful in controlling blood sugar levels and reduces fatigue.
Brahmi Saak	Bacopa monnieri	Bacopa monnieri	It is an incredible rejuvenating herb for improving cognitive function.
Sewali fool	Night flowering Jasmine Tree	Nyctanthesarbor-tristis	The plant has antioxidant, anti-inflammatory and anti-bacterial properties. It is used to cure sciatica, arthritis, dry cough, sinus, intestinal worms, fever, anxiety, pain and swelling.
Amlokhi	Indian gooseberry	Emblica officinalis Gaertn	Indian gooseberry also has multiple medicinal uses. It helps to treat gout, respiratory problems, migraine, diarrhoea, skin problems etc. It also helps in growth of hair.
Xilikha	Black Myrobalan	Terminalia chebula	Popularly known as king of medicines, it is recommended for reducing inflammation, stomach ailments and dental diseases.
Matikothal	Pineapple	Ananas comosus	It has anti-inflammatory, pain-relieving properties and helps in curing sinusitis, joint pains and other injuries like sprain or burn.
Tengesitenga	Indian sorrel	Oxalis cornicallata	Indian Sorrel is a traditional remedy for treating a wide range of gastrointestinal disorders like indigestion, constipation, flatulence, esophagitis, heartburn, diarrhea, ulcer and stomach pain.

## **IX: OBSERVATIONS AND RECOMMENDATIONS**

The Eco Club of the college and the survey team after visiting the green practices sites and spots, and verifying the facts and information gathered from the stakeholders have placed their observations and recommendations before the college authorities for taking up due importance, necessary implementation and action.

- (i) All efforts must be made to maintain the green cover of the college campus.
- (ii) Water resources should be used at optimum level. Water leakage and wastage must be stopped. Efforts should be made so that water pollution does not take place.
- (iii) Use of plastics should be strictly prohibited in the campus. The wastes, especially the non-biodegradable wastes generation should be reduced as far as possible.
- (iv) Rainwater harvesting unit needs be strengthened with provision of more capacity of conservation.
- (v) The wastes disposal and delivery system needs to be upgraded and efficient.
- (vi) The college should gradually move towards use and utilization of non-conventional energy, i.e solar energy by making provision for setting-up solar panels.
- (vii) Awareness initiatives to keep the campus clean and green should be regularly held among the stakeholders.
- (viii) Green auditing should always be regarded as a continuous process involving all the stakeholders.

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