
GREEN AUDIT REPORT

April 2022- March 2023



HABRAGHAT MAHAVIDYALAYA

VILL + P.O + P.S: KRISHNAI DIST: GOALPARA

STATE: ASSAM-783126



April -2023

Prepared by

Thunderbolt Energy Consultancy

Add. - 97/2 Nirmal Apt, Paud Road, Bhusari Colony, Kothurud Depot,

Pune – 411038, Maharashtra, India

Phone: +91 9098 580 420 Email: tecofficeinfo@gmail.com

Website- www.thunderboltenergy.in

Table of Contents

1. Disclaimer.....	4
2. Acknowledgement.....	5
3. Why Green Audit?.....	6
4. Green Audit Team.....	7
5. Executive Summary.....	8
5.1 Present Energy Consumption.....	9
5.2 Various Measures Adopted for Energy Conservation.....	9
5.3 Waste Management.....	9
5.4 Rain Water Harvesting.....	10
5.5 Notes & Assumptions.....	10
6. Abbreviations.....	10
7. Introduction.....	11
7.1 Objectives.....	12
7.2 Audit methodology.....	12
7.3 Benefits of Green Audit to Educational Institutions.....	13
7.4 About Thunderbolt Energy Consultancy.....	13
8. General Details of College.....	15
9. Study of Water Management System.....	22
9.1 Source of Water.....	22
9.2 Drinking water.....	22
9.3 Waste water management.....	23
9.4 Rooftop Rainwater Harvesting (RWH) – Potential assessment.....	24
10. Study of Energy Consumption.....	25
10.1 Energy Details.....	25
10.2 Energy Use.....	25
10.3 Consumer details.....	27
10.4 Carbon Footprint.....	30
11. Study of Waste Management.....	31
11.1 Source of Waste Generation.....	31
11.2 Waste Management Techniques.....	33
12. Study of E-Waste Management.....	34
13. Study of Green Practices.....	36
13.1 Green Gardens.....	36
13.2 Pedestrian Friendly Roads.....	39
13.3 Plastic Free Campus.....	40
13.4 Medicinal Plant Garden.....	41
14. Green Campus Site Photograph.....	44



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on

List of Table

Table 1 Details of the team members of Thunderbolt Energy Consultancy.....	7
Table 2 Details of Energy Consumption.....	9
Table 3 Details of College campus	15
Table 4 Details of College Building	16
Table 5 Details of College Building Build-up-Area and Campus Room	16
Table 6 Details of Campus Hostel, Quarter and Stadium.....	20
Table 7 Campus Water Tank Details	22
Table 8 Details of Energy consumption.....	27
Table 9 Summary of electricity bills of consumer 037010060160.....	27
Table 10 Key observations of consumer 037010060160.....	28
Table 11 Month wise Consumption of Energy & CO ₂ Emissions of consumer 037010060160..	30
Table 12 List of Plant Species (Tree & Weed).....	37
Table 13 List of Medicinal Plants in the Garden	42



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

List of Figure

Figure 1 Waste Water lawns, Plants and Gardening Purpose.....	23
Figure 2 Roof-Top Rain Water Collection	24
Figure 3 Roof-Top Solar System	26
Figure 4 Month wise Energy consumption of consumer 037010060160.....	28
Figure 5 Month wise electricity bill of consumer 037010060160.....	29
Figure 6 Month wise CO2 emissions of consumer 037010060160.....	31
Figure 7 Waste Garbage Collection Unit.....	32
Figure 8 Vermicomposting Unit	32
Figure 9 Waste Collection Dustbin.....	33
Figure 10 E-Waste Type	34
Figure 11 Green Campus	37
Figure 12 Pedestrian Friendly Roads.....	39
Figure 13 Swatchh Bharat Abhiyan.....	40
Figure 14 Medicinal Plant Garden	41
Figure 15 Ten Commandants of Sustainability	43



1. Disclaimer

This report was prepared for Habraghat Mahavidyalaya, This information herein is confidential and shall not be divulged to a third party without the prior written permission of Thunderbolt Energy Consultancy, its affiliates and subsidiaries, including Thunderbolt Energy Consultancy, and their respective officers, employees or agents, individually and collectively, referred to in this clause as “Thunderbolt Energy Consultancy”.

Thunderbolt Energy Consultancy, assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Thunderbolt Energy Consultancy, entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on       

2. Acknowledgement

We express our sincere gratitude to the authorities of Habraghat Mahavidyalaya for entrusting and offering the opportunity of Green Audit of their college premises.

- Dr. Mantu Kr. Das – Principal
- Mr. Jugal Kr. Deka - Co-Ordinator

We are also thankful to all field staff and agencies working with whom we interacted during the field studies for their wholehearted support in undertaking measurements and eagerness to assess the system / equipment performance. Also thankful to all concerned staff interacted during the conduct of this exercise for completing official documentations.

We hope that the recommendations stated in this report will be useful and worthy of discussions to take things forward to help implementation of green practices. While we have made every attempt to adhere to high quality standards, in both data collection and analysis through the report, we would welcome your suggestions so as to improve upon this report further.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on      

3. Why Green Audit?

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity, The Green Audit aims to analyze environmental practice within and outside the college campus, which will have an impact on the eco-friendly ambiance. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, once gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out green audit.

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling resources carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

4. Green Audit Team

Table 1 Details of the team members of Thunderbolt Energy Consultancy

Name	Role	Field of expertise
Mr. Mahesh Khode	Project coordinator, ECM verification, Report verification	Graduate Electrical engineer, BEE Certified Energy Manager, ADIS Safety, Certified First Aider with experience in Energy Efficiency Assessment, Electrical distribution system, Industrial Safety, Green building, ECBC, EHS, OHSA, Environment policy, Firefighting system, Fire Extinguisher and Project Management.
Mr.Kaustubh Bhatwadekar	Energy Auditor and ECM verification	Graduate Mechanical engineer, M.Tech IIT Bombay, BEE Certified Energy Auditor, Experience In Industrial Energy, distribution system, Energy Efficiency Assessment, Green audit and Environment audit.
Mr. Prashant Yadev	Data tabulation and analysis & report preparation	Graduate in Electrical & Electronics Engineering, M.Tech with experience in field data collection, Data analysis, Green building and Environment assessment.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in | tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

5. 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 lead for sustainable development.

Habraghat Mahavidyalaya is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and revers the trends. 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: Physical inspection of the campus, observation and review of the documentation, interviewing key person 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. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student health and learning college operational costs and the environment. The criteria, methods and recommendation used in the audit were based on the identified risks.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

5.1 Present Energy Consumption

In the following Table, we present the details of Energy Consumption.

Table 2 Details of Energy Consumption

Sr no	Parameter	PRICIPAL HABRAGHAT COLLEGE	
		Energy consumed, (Units)	Bill Amount (Rs)
1	Maximum	1,882	24,920
2	Minimum	1,012	10,510
3	Average	1,360	13,854

5.2 Various Measures Adopted for Energy Conservation

1. Usage of LED lights at some indoor locations.
2. Usage of LED Lights for outdoor lighting.
3. Installation of Rooftop Rain Water Harvesting system.
4. Installation of Bio composting pit.
5. Usage of Energy Efficient LED.
6. Usage of Energy Efficient BEE STAR Rated equipment.

5.3 Waste Management

The College has already installed a Bio Composting Plant, wherein, the bio-degradable waste is composted & is used as fertilizer for the garden.

The internal communication is through emails and hence there is hardly any generation of e-Waste in the premises.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in | tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

5.4 Rain Water Harvesting

The College has installed the Rainwater harvesting project, to reduce dependency on ground water supply.

5.5 Notes & Assumptions

1. Daily working hours-03
2. Annual working days- 250
3. Rate of Electrical Green- Rs 6.45 /- per kWh.

6. Abbreviations

CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
V	:	Voltage
I	:	Current
kW	:	Kilo- Watt
kWh	:	kilo-Watt Hour
kVA	:	Active Power
AC	:	Air conditioner
PES	:	Progressive Education Society
Qty	:	Quantity
W	:	Watt
PF	:	Power Factor
M D	:	Maximum Demand
PC	:	Personal Computer
APDCL	:	Assam Power Distribution Company Ltd



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in ✉ tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

7. Introduction

Habraghat College, known as HABRAGHAT MAHAVIDYALAYA dedicated to the glorious memory of “Habraghat Pargana” a revenue village of the erstwhile Bijni Raj State , was formally inaugurated on the auspicious day of 29th August, 1979 with 61 Students in-Pre University Class under the aegis of a Sponsoring & Governing Body with a view to catering to the need of higher education of vast rural backward area bordering Meghalaya state centering round Krishnai predominantly inhabited by people belonging to S.C., ST, O.B.C., M.O.B.C. and minority communities of alarming socio-economic condition.

The college situated in 36 Dudhnoi S.T. Constituency and located in the vicinity of Krishnai just 1 K.M. South from the N.H.37 was affiliated to Gauhati University in 1983 and was placed under deficit system of Grants-in-Aid w.e.f. 01-02-1986. The college has got permanent affiliation and has been registered under 2 (f) & 12 (B) of UGC act 1956 w.e.f March, 2006.

The college has been offering Two Year Higher Secondary Course and Three year Under Graduate Course in the faculty of Arts with Major in Assamese, Arabic, English, Economics, Education, Political Science, History and Mathematics. But I have the pleasure to inform you that with a view to creating capacity building and job opportunities among the students we are going to introduce Certificate Course in Computer Applications from this academic session.

With the help and co-operation of all alike, it is therefore, earnestly hoped that the beloved Alma-Mater of ours would be ever flourishing in the days to come with all its dignity for the noble cause of higher education a process of human empowerment & enlightenment for achievement of a better and higher quality of life.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

7.1 Objectives

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:

- To introduce and aware students to real concerns of environment and its Sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use of the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requiring high cost.
- To bring out a status report on environmental compliance.

7.2 Audit methodology

In order to perform green audit, the methodology included different tools such as Physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summaries the present status of environment management in the campus:

- Water management
- Energy Conservation
- Waste management
- E-Waste management
- Green area management



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

7.3 Benefits of Green Audit to Educational Institutions

There are many advantages of green audit to an Educational Institute:

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays good image of institution through its clean and green campus.
- Sustainable use of natural resource in the campus.
- It will help to build positive impression for through green initiatives in the college campus.

7.4 About Thunderbolt Energy Consultancy

We are pleased to introduce ourselves as **Thunderbolt Energy Consultancy**. We are a team of young Energy professionals, working to help Businesses and facilities become Energy efficient and promote green and clean Energy.

Our highly competent team of Certified Energy Managers, Energy Auditors, Safety Auditors, Analyst, Engineers and Experts having experience in variety of sectors and we are one of the leading engineering services and solutions providing company.

Our company was established in 2020 pioneering in quality and customer satisfaction. We have been a beacon of performance for the last 4 years and our vision is to deliver everlasting performance through our services.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

🌐 www.thunderboltenergy.in ✉ tecofficeinfo@gmail.com

☎ +91-9098 580 420 *Follow us on* 



We are providing services in various areas like

- Energy Audit, Electrical Audit, Electrical Survey
- Green Audit & Environmental Audit for all Entities
- Safety Audit, Electrical safety audit, Safety survey
- Industrial Maintenance Services
- Project Management Consultancy
- Third-Party Audit

Get Ready for Consultancy

Register Address- 97/2 Nirmal Apartment, Paud Road, Bhusari Colony, Kothrud Depot, Pune-411038.

Branch Office- Plot No. 70, Shrihari Nagar, Behind BPCL Pump, Manewada Square Nagpur- 440027.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

🌐 www.thunderboltenergy.in ✉ tecofficeinfo@gmail.com

☎ +91-9098 580 420 *Follow us on*

8. General Details of College

Table 3 Details of College campus

Particulars	:	Details
College name	:	Habraghat Mahavidyalaya, Krishnai
Date of Establishment	:	29-08-1979
Address	:	Vill- Ashudubi, P.O. & P.S.- Krishnai, Dist- Goalpara (Assam) PIN-783126
Contact details	:	Phone No.: Principal: +91 94350 24669 IQAC Coordinator: +91 98545 51300 , Email-habraghatcollege@gmail.com
Scope of audit	:	Green Audit for college
Number of staffs	:	Teaching – Male: 17, Female: 4 Total- 21 Non-Teaching - Male: 8 Female: 2. Total - 10
Number of students	:	Total: 450, Male: 171, Female: 279. (Academic Year 2022-23)
Courses offered	:	<p style="text-align: center;">UG-BA</p> <ul style="list-style-type: none"> • TDC/FYUGP(Arts) General/Regular in Arabic, MIL- Assamese, Elective Assamese Economics, Education, English, History, Mathematics, Political Science • TDC/FYUGP(Arts) Major/Honours in Political Science and Assamese • TDC/FYUGP(Arts) Major/Honours in Education and Economics • TDC/FYUGP(Arts) Major/Honours in History • TDC/FYUGP(Arts) Major/Honours in English • TDC/FYUGP(Arts) Major/Honours in Arabic
College affiliated to	:	Affiliated to Gauhati University

Table 4 Details of College Building

Sr. No.	Details
1	Total campus area: 151757.1 sqm (Approximately 37.5 Acres)
2	Building: 7245.32 square meters.
3	Number of Class Rooms: 17 Nos
4	Number of Laboratories: 3 Nos
5	Number of Computers: 88 (72 Desktop and 16 Laptops)
6	Water filters with aqua guard: 04 Nos
7	Aqua guard for staff: 01 Nos
8	Water coolers: 02 Nos
9	Number of Fire Extinguishers: 15 Nos
10	Classrooms with sufficient cross ventilation and light-17 Nos
11	Number of Air Conditioner's: 02 Nos
12	LCD: 01 Nos
13	Smart Board: 03 Nos

Table 5 Details of College Building Build-up-Area and Campus Room

Block-A				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
1	A-28 Gym Centre	61	30	1830
2	A-29 Gym Store-1	30	12	360
3	A-30 Gym Store-2	22	12	264
4	Gym Corridor	8	12	96
5	Gym Toilet	10	5	50
6	A-27 Dept. of Arabic	12	17	204
7	A-26 Dept. of English	12	17	204
8	A-25 Dept. of History	12	17	204
9	A-24 Class Room	12	17	204
10	A-23 Store Room	12	17	204
11	A-21 Vice Principal's Room	20	17	340
12	A-20 NSS & IDOL	18	17	306
13	A-19 Conference Room	30	17	510
14	A-18 Computer Lab	24	17	408



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in ✉ tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

Block-A				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
15	A-17 Dept. of Political Science	20	17	340
16	A-16 Class Room	12	17	204
17	A-15 Caree Councillng Office	12	17	204
18	A-14 Girls' Common Room	30	17	510
19	Corridor-1	5	17	85
20	Corridor-2	5	17	85
21	Toilet NSS & IDOL Office	10	10	100
22	Toilet (Vice-Principal)	10	10	100
23	Toilet Conference Room	10	10	100
24	Veranda (East Side)	239	7	1673
25	A-1 Class Room	68	30	2040
26	A-2 Class Room	53	30	1590
27	A-3 KKHSOU Office	13	25	325
28	A-4 Class Room	16	25	400
29	A-5 Class Room	16	25	400
30	A-6 Class Room	16	25	400
31	A-7 Class Room	48	25	1200
32	A-8 Exam Controll Room	36	25	900
33	A-9 Office G.B. Branch	28	25	700
34	A-10 Class Room	40	25	1000
35	A-11 Class Room	21	25	525
36	A-12 Class Room	30	25	750
37	A-13 Language Lab	31	25	775
38	Corridor	7	25	175
39	Veranda [West Side (Front)]	293	8	2344
40	Veranda [West Side (Back)]	293	7	2051
Total Built Up Area of Block-A		1,645	738	24,160

Block-B				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
	Ground Floor			
1	Stair Case (Ground Floor)	11	26	286
2	B-1 Dept. of Economics	15	26	390
3	B-2 Class Room	34	26	884
4	B-3 Class Room	39	26	1014
5	Portico	18	20	360
6	Veranda (Front)	105	7	735
7	Veranda (Back)	105	7	735
First Floor				
8	Stair Case (First Floor Floor)	11	26	286
9	B-4 Principal's Office	29	26	754
10	B-5 Account Branch	14	26	364
11	B-6 Seminar Hall	47	26	1222
12	B-7 IQAC Office	18	20	360
13	Toilet-1	7	5	35
14	Toilet-2	7	5	35
15	Coridor	6	26	156
16	Veranda (Front)	105	7	735
17	Veranda (Back)	105	7	735
Total Built Up Area of Block-B		676	312	9,086

Block-C				
Sl. No	Name of the	Length in Feet	Breath in Feet	Total Built up Area in SQF
	Ground Floor			
1	C-1 Class Room	40	21	840
2	C-2 Class Room	40	21	840
3	C-3 Dept. of Assamese	14	21	294
4	Stair Case	14	21	294
5	C-4 Dept. of Education	14	21	294
6	C-5 Class Room	27	21	567
7	C-6 Education Lab	27	21	567
8	Toilet Block	14	29	406
9	Veranda	174	8	1392
First Floor				
10	Toilet Block	14	29	406
11	C-7 Central Library	67	29	1943
12	C-8 Librarian's Chamber	14	15	210
13	Corridor	14	5	70
14	Stair Case	14	21	294
15	C-9 Teachers' Reading Room	27	21	567
16	C-10 E-Resource Section	26	21	546
17	C-11 Class Room	40	21	840
Total Built Up Area of Block-C		580	346	10,370

Other Areas				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
1	Boys Common Room	30	16	480
2	Toilet for Boys' Common Room	10	10	100
3	Girls Common Room	30	17	510
4	Toilet for Girls' Common Room	10	10	100
5	HMVSU Office	31	16	496
6	HMVSU Office Back Veranda	15	8	120
7	Office of Alumni Association	29	12	348
8	Veranda of Alumni Association	29	7	203
9	Generator Room	12	12	144
10	Veranda of Generator Room	12	7	84
11	Canteen	27	22	594
12	Choukidar's Quarter	26	19	494
13	Health Care Centre	30	30	900
14	Boys Toilet Block	33	10	330
15	Cycle & Bike Stand	145	16	2320
16	Car Shed	60	19	1140
17	Portico	26	16	416
Total Built Up Area		555	247	8,779

Table 6 Details of Campus Hostel, Quarter and Stadium

Boys Hostel				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
1	Main Building	140	44	6,160
2	Kitchen	18	15	270
3	Front Veranda	15	5	75
Total Built Up Area		173	64	6,505
Details of Room in Boys Hostel				
1	Bed Room (4-Seater)	15		
2	Dining Room	1		
3	Kitchen	1		
4	Common Room	1		
5	Bath Room	2 Set		

Girls Hostel				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
1	Girls' Hostel Building	110	91	10,010
Details of Rooms (Girls Hostel)				
2	Room (11+16)	27		
3	Kitchen	1		
4	Quarter	1		
5	Waiting Room	1		
6	G-IV Quarter	1		
7	Wash Room	4 Sets		

Teacher Common Room				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
1	Teacher Common Room	50	39	1,950

Basket Ball Court				
Sl. No	Name of the	Length in Feet	Breath in Fee	Total Built up Area in SQF
1	Basket Ball Court	108	66	7,128

9. Study of Water Management System

9.1 Source of Water

The study observed College campus uses water from tube well ground water system. Water is used for drinking, Toilets and gardening purpose. The Waste water from the RO water purifier is used for gardening purpose. During the survey no loss of water is observed. The consumption of water of college is around 3,500 liters per day and all tanks are cleaned once in a month by proper use of chemicals.

Details of water tank in the College:

Table 7 Campus Water Tank Details

Sr No	Area	No. of Tanks	Capacity (L)	Total (L)
1	College Building	9	1,000	9,000
2	College Building	1	500	500
	Total	10	1,500	9,500

9.2 Drinking water

Drinking water quality is tasted weekly and water filters are cleaned.

9.3 Waste water management

Number of washrooms: 11 toilets are there in the premises for Male, Female & differently abled persons. For 28 Nos Males Urinal (1 for differently abled persons) and 35 Nos Females Urinal (1 for differently abled persons). Waste water and human excreta is properly treated, the treated water is then used for lawns, plants and gardening purpose.



Figure 1 Waste Water lawns, Plants and Gardening Purpose

In campus small, medium or large-scale reuse and recycle of water system is necessary. Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's use for such usage are regularly serviced. Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment. Garden should be watered by using drink/ sprinkler irrigation system to minimize water use.

9.4 Rooftop Rainwater Harvesting (RWH) – Potential assessment

Roof-top rain water harvesting techniques are most simple, but neglected in the water harvesting programs. It requires two basic elements: - a catchment's a broad surface to catch the rain and method or device for storing the captured rain. Rooftop rainwater harvesting is one of the optimistic and economically viable methods of rainwater harvesting. Rooftop rainwater is allowed to percolate in the ground and become helpful to increase ground water recharging groundwater aquifers. Habraghat Mahavidyalaya have huge potential to trap the rainwater and enable for groundwater recharge through bore-well recharge.

The College has already installed Rooftop Rain Water Harvesting project in some building, wherein the rain water falling on the terrace is collected and through pipes it is fed to underground Water Storage tank.



Figure 2 Roof-Top Rain Water Collection

10. Study of Energy Consumption

10.1 Energy Details

The electricity supply for Habraghat Mahavidyalaya is provided by Assam Power Distribution Company Limited. The Energy consumed by Habraghat Mahavidyalaya falls under LT Category.

The Energy efficiency assessment was conducted for the load connected to the mains supply of college building and office.

10.2 Energy Use

This indicator addresses energy consumption, energy source, energy monitoring, lighting, appliance, 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.

Mainly Energy is used on this facility for the following purposes:

- 1) Lighting's load
- 2) Fan load
- 3) Water pump
- 4) Office equipment

The entire campus including common facility center are equipped with LED lamps and LED tube lights, except at few locations. Beside this, photovoltaic cells are also installed in the campus as an alternative renewable source of energy. Computers are set to automatic power saving mode when not in use.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

In campus premises electricity should be shut down when not in use and during leaving office and class rooms. Support renewable and carbon-neutral electricity options on energy purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon neutral sources. It is preferable to purchase electricity from a company that invest in new source of renewable and carbon-neutral electricity. Installation of LED lamps instead of CFL or load lams and replacing the old tube lights with the new LED tubes. 5 star rated ACs, Fans and CFLs should be used in the campus area. Cleaning of tube lights and bulbs to be done periodically to remove dust over it.

It is suggested to install solar PV System to reduce dependency on APDCL power supply.



Figure 3 Roof-Top Solar System

10.3 Consumer details

Table 8 Details of Energy consumption

Name of Consumer	Tariff Category	Consumer Account No.
PRICIPALHABRAGHAT COLLEGE	LT VB GENERAL PURPOSE Supply	037010060160

Consumer Name- PRICIPALHABRAGHAT COLLEGE

Consumer Number- 037010060160

In this chapter, electricity bills are studied for the analysis of electrical Energy consumption.

Table 9 Summary of electricity bills of consumer 037010060160

Sr. No	Month	Energy (kWh)	Bill Amount (Rs)
1	Apr-22	1,360	11,809
2	May-22	1,172	11,174
3	Jun-22	1,484	24,920
4	Jul-22	1,397	13,123
5	Aug-22	1,882	16,776
6	Sep-22	1,670	16,034
7	Oct-22	1,558	15,379
8	Nov-22	1,240	12,380
9	Dec-22	1,210	12,189
10	Jan-23	1,012	10,510
11	Feb-23	1,074	11,066
12	Mar-23	1,262	10,889
	Total	16,321	1,66,249

Key observations of electricity bill are as follows,



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in | tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 



Table 10 Key observations of consumer 037010060160

Sr no	Parameter	Energy consumed, (Units)	Bill Amount (Rs)
1	Maximum	1,882	24,920
2	Minimum	1,012	10,510
3	Average	1,360	13,854

Variation in Energy consumption is as follows,

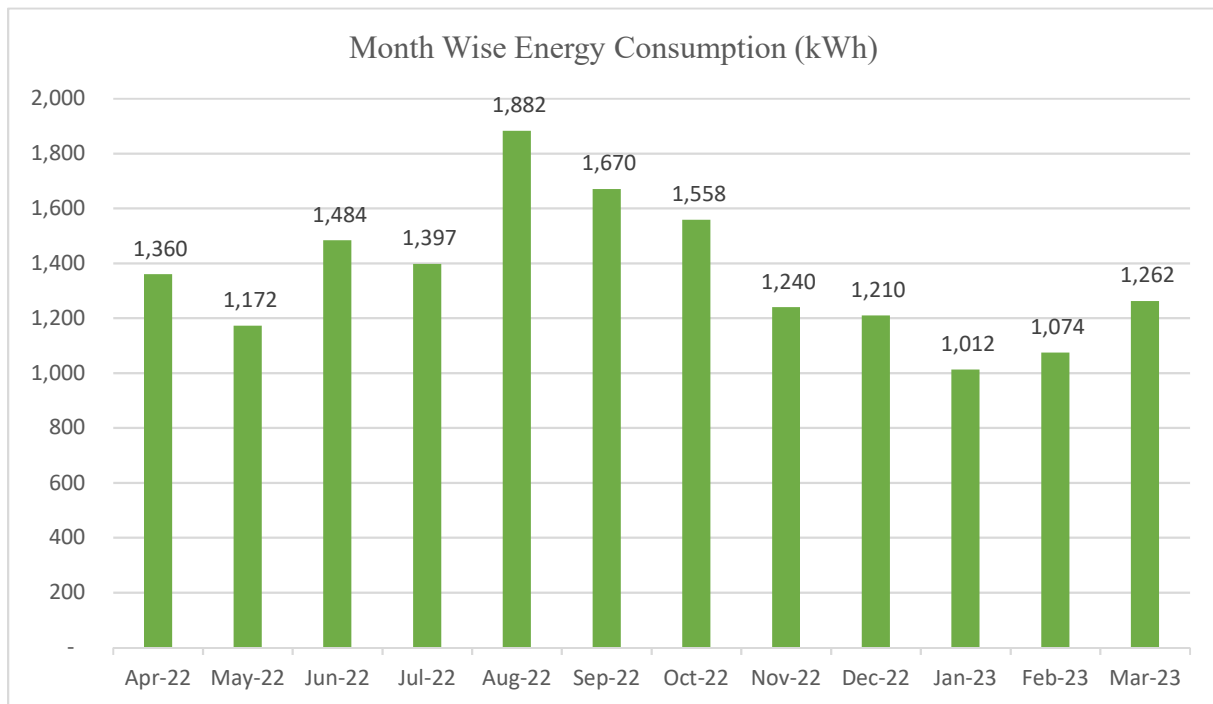


Figure 4 Month wise Energy consumption of consumer 037010060160



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in | tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on



Monthly variation in electricity bill is as follows,

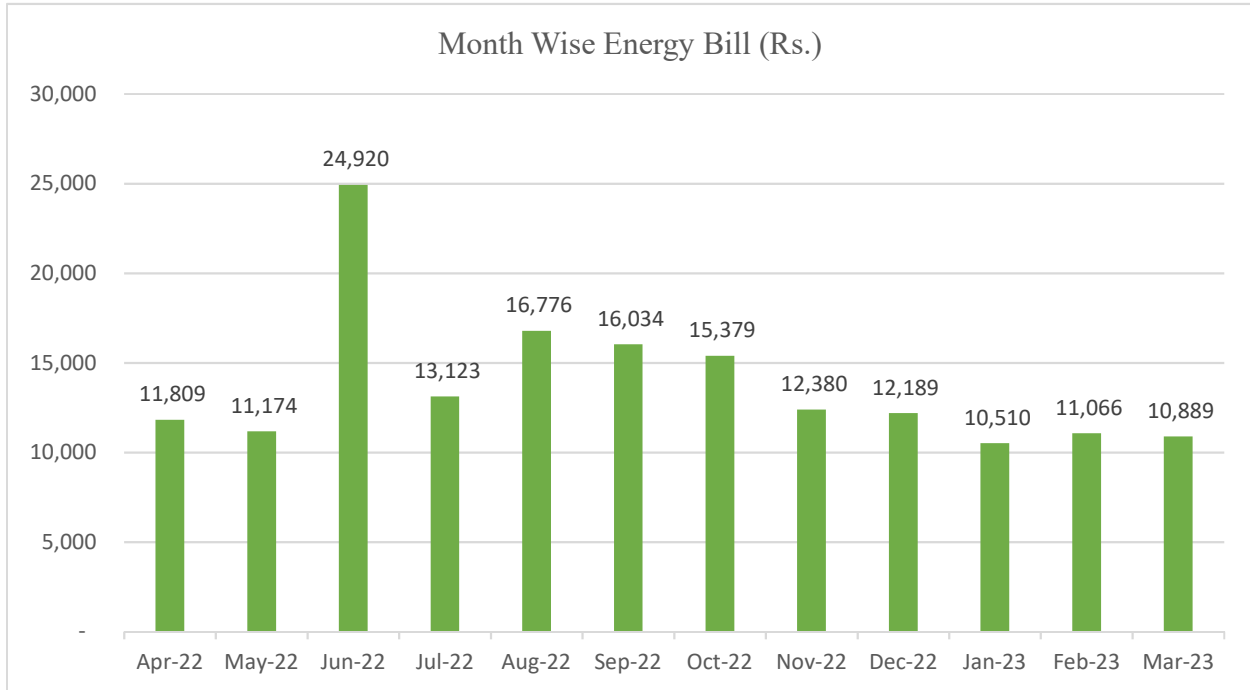


Figure 5 Month wise electricity bill of consumer 037010060160



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on

10.4 Carbon Footprint

1. A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions (CO₂ emissions), emitted due to various activities. In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the College for performing its day-to-day activities.
2. **Basis for computation of CO₂ Emissions:**

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO₂** into atmosphere. Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day-to-Day operations. We herewith furnish the details of various forms of Energy consumption as under

Consumer Name- PRICIPAL HABRAGHAT COLLEGE

Consumer Number- 037010060160

Table 11 Month wise Consumption of Energy & CO₂ Emissions of consumer 037010060160

Sr No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-22	1,360	1.16
2	May-22	1,172	1.00
3	Jun-22	1,484	1.26
4	Jul-22	1,397	1.19
5	Aug-22	1,882	1.60
6	Sep-22	1,670	1.42
7	Oct-22	1,558	1.32
8	Nov-22	1,240	1.05
9	Dec-22	1,210	1.03
10	Jan-23	1,012	0.86
11	Feb-23	1,074	0.91
12	Mar-23	1,262	1.07
	Total	16,321	13.06



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in ✉ tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

In the following Chart we present the CO₂ emissions due to usage of Electrical Energy.

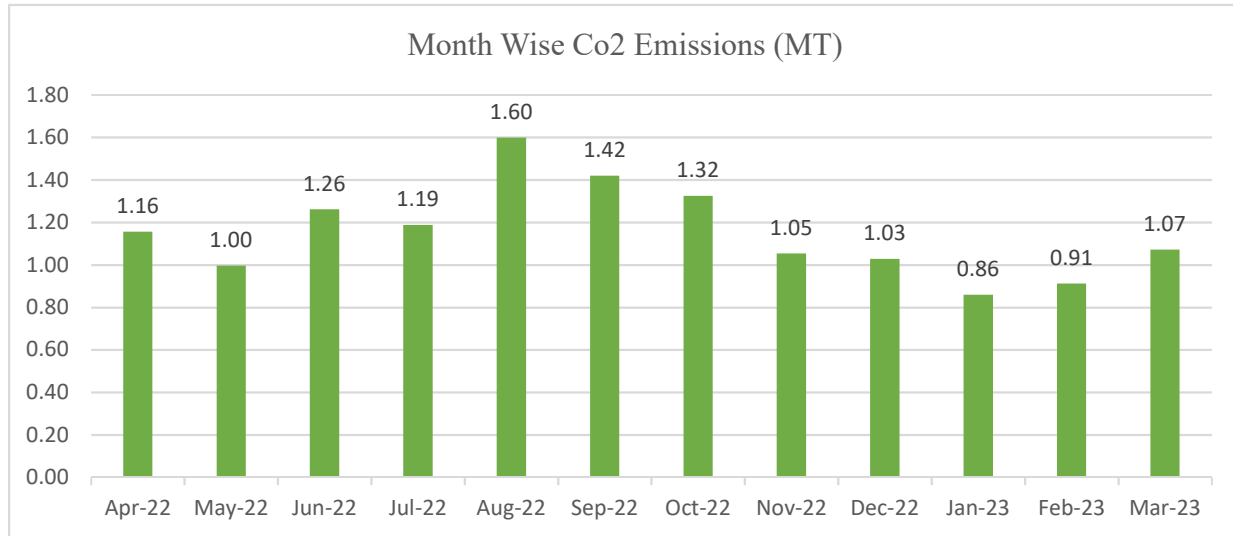


Figure 6 Month wise CO₂ emissions of consumer 037010060160

11. Study of Waste Management

Campus area waste production and disposal wastage like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling, Furthermore, solid waste often includes wasted material resources that could otherwise be challenged into better service through recycling, repair and reuse. 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 practices of solid waste generated in the campus.

11.1 Source of Waste Generation

Waste generation from tree droppings and lawn management is a major solid waste generated in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and plastic waste.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on 

The waste generated by newspapers 50 kg/year, Magazine 10 kg/year and of cartons is 15 kg/year, very less plastic waste 0.5 kg/year is generated by the department, office, garden etc. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing.



Figure 7 Waste Garbage Collection Unit



Figure 8 Vermicomposting Unit

11.2 Waste Management Techniques

- Reduce the absolute amount of waste that is produced from college staff offices.
- Make full use of all recycling facilities provided by city Municipality and private supplier.
- Try to recycling of glass, cans, white, colored and brown paper, plastic bottles, batteries, print cartridges, carbon board and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste with responsibility for clearly allocated.
- Important and confidential papers after their validity to be sent for pulping.
- Single sided used papers reused for writing and printing in all departments.
- Both side printing papers reused as per requirements.



Figure 9 Waste Collection Dustbin

12. Study of E-Waste Management

E-Waste can be described as consumer and business electronic equipment's 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.

E-waste is any electrical or electronic equipment that's been discarded. This includes working and broken items that are thrown in the garbage or donated to a charity reseller like Goodwill. Often, if the item goes unsold in the store, it will be thrown away. E-waste is particularly dangerous due to toxic chemicals that naturally leach from the metals inside when buried.



Figure 10 E-Waste Type



According to the World Health Organization (WHO), health risks may result from direct contact with toxic materials that leach from e-waste. These include minerals such as lead, cadmium, chromium, brominated flame retardants, or polychlorinated biphenyls (PCBs). Danger can come from inhalation of the toxic fumes, as well as from the accumulation of chemicals in soil, water, and food.

This puts not just people in danger but land and sea animals as well. In developing countries, the risks are exceptionally high because some developed countries send their e-waste there. Studies have shown this global e-waste has detrimental effects on the people that work with the e-waste but also the people that live around it.

Because of this, a proper recycling process needs to be put in place to protect us and future generations.

It is observed that E-Waste generated in the campus is very less in quantity, Administration conducts the awareness programs regarding E-Waste Management with that help of various departments. The E-waste and defective item from computer laboratory is being stored properly. The institution has decided to contact approved W-waste management and disposal facility in order to dispose E-waste in scientific manner.

It is recommendation to institution that recycle or safely dispose of white goods, computers and electrical appliances. Use reusable resources and containers and avoid unnecessary packaging where possible. Always purchase recycled resource where there are both suitable and available.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

🌐 www.thunderboltenergy.in ✉ tecofficeinfo@gmail.com

☎ +91-9098 580 420 *Follow us on*

13. Study of Green Practices

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental policy is enacted, enforced and reviewed using various environmental awareness programs.

It is observed that campus is located in the vicinity of many trees to maintain the bio-diversity. Various tree plantation programs are being organized at college campus. This program helps in encouraging eco- friendly environment which provides pure oxygen within the institute and awareness amount villagers. The plantation program includes various type of indigenous species of ornamental and medicinal wild plant species.

13.1 Green Gardens

Students of related subjects are actively involved in gardening, maintenance, etc. of gardens within the campus. Further, they find the garden an apt place for discussions, combined studies, practical's, aesthetic purposes, spending leisure time, etc. Students are learning garden techniques by working in the garden with the help of teachers concerned. Garden makes ample space and scope for them to conduct practical. for students of Botany and Environmental studies. They also find this as a good opportunity to observe and learn about birds and butterflies. Students from department of Zoology learn about insects and their role in pollination by observing the same in the botanical garden. Preparation of vermi-compost and training on the same for those who are interested are conducted in the garden. There are enough resources (species of flora and fauna) available in different gardens and these resources are being utilized by the Botany and Zoology students for project works.



Thunderbolt Energy Consultancy

ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO/IEC 17020:2012

www.thunderboltenergy.in tecofficeinfo@gmail.com

+91-9098 580 420 Follow us on



Figure 11 Green Campus

Table 12 List of Plant Species (Tree & Weed)

List of Plants			
Sr. No.	Scientific Name	Local Name	Family
1	<i>Acacia auriculiformis</i>	Earleaf Acacia	Fabaceae
2	<i>Cassia fistula</i>	Golden Shower Tree	Fabaceae (Leguminosae)
3	<i>Sterculia villosa</i>	Kodom	Malvaceae
4	<i>Phoenix dactylifera</i>	Khezur	Arecaceae (Palm family)
5	<i>Eucalyptus globulus</i>	Eucalyptus	Myrtaceae
6	<i>Melia azedarach</i>	Ghora Neem	Meliaceae
7	<i>Sapindus mukorossi</i>	Sotiana (Soapnut)	Sapindaceae

List of Plants			
Sr. No.	Scientific Name	Local Name	Family
8	<i>Mangifera indica</i>	Mango, (Aam)	Anacardiaceae
9	<i>Albizia procera</i>	Koroi	Fabaceae
10	<i>Parkia timoriana</i>	Xonaru	Fabaceae
11	<i>Grevillea robusta</i>	Silky Oak	Proteaceae
12	<i>Cassia siamea</i>	Kassod Tree	Fabaceae (Leguminosae)
13	<i>Tectona grandis</i>	Segun/Teak	Lamiaceae
14	<i>Macaranga denticulata</i>	Macaranga	Euphorbiaceae
15	<i>Artocarpus heterophyllus</i>	Kothal	Moraceae
16	<i>Areca catechu</i>	Tamol	Arecaceae
17	<i>Gmelina arborea</i>	Gomari	Lamiaceae
18	<i>Millettia pinnata</i>	Pongam/Karanja	Fabaceae
19	<i>Tamarindus indica</i>	Tamarind	Fabaceae
20	<i>Litsea monopetala</i>	Maida Lakdi/ Kutkura	Lauraceae
21	<i>Lannea coromandelica</i>	Jia	Anacardiaceae
22	<i>Macaranga denticulata</i>	Omora	Euphorbiaceae
23	<i>Flacourtia jangomas</i>	Poniol	Salicaceae
24	<i>Ziziphus mauritiana</i>	Bogori	Rhamnaceae
25	<i>Tectona grandis</i>	Segun	Lamiaceae
26	<i>Sterculia villosa</i>	Paham	Malvaceae
27	<i>Moringa oleifera</i>	Sahjana/Drum Stick	Moringaceae
28	<i>Pterocarpus indicus</i>	Debodaru	Fabaceae

13.2 Pedestrian Friendly Roads

The Institute has well defined pedestrian foot paths as to facilitate the easy movement of the students within the campus.



Figure 12 Pedestrian Friendly Roads

13.3 Plastic Free Campus

The Institute is an active participant in the Government of India's most prestigious project of SWATCHH BHART ABHIYAN. The Institute has displayed boards in the Campus, to make the campus plastic free.

Various measures adopted for this purpose are as follows

- Installation of Separate waste bins for dry waste & wet waste
- Usage of paper tea cups in the Institute canteen
- Display of boards in the campus for Plastic Free campus



Figure 13 Swatchh Bharat Abhiyan

13.4 Medicinal Plant Garden

The diversity of medicinal plants in any place, especially in an academic campus is indicative the emphasis that the institute given towards traditional knowledge. This would be a platform for awareness, learning, and source for local usage. College is maintaining a medicinal plant garden that consists of a good wealth of plant species. The present status of flora that have medicinal importance is representative of regional and local floristic diversity. Plant species in the medicinal plant garden were found maintained on the campus.

<p><i>Jatropha gossypifolia</i> Linn</p>	<p><i>Azadirachta indica</i></p>
<p><i>Erythrina stricta</i> Roxb</p>	<p><i>Ipomoea nil</i></p>

Figure 14 Medicinal Plant Garden

The college has following medicinal plants within the campus

Table 13 List of Medicinal Plants in the Garden

Sr. No.	Scientific Name	Local Name	Family
1	<i>Citrus limon</i>	Nemu/Lemon	Rutaceae
2	<i>Azadirachta indica</i>	Neem	Meliaceae
3	<i>Phoenix dactylifera</i>	Khezur	Arecaceae (Palm family)
4	<i>Cocos nucifera</i>	Narikal	Arecaceae (Palm family)
5	<i>Mimusops elengi</i>	Bakul	Sapotaceae
6	<i>Phyllanthus emblica</i>	Aamlokhi	Phyllanthaceae
7	<i>Terminalia chebula</i>	Silikha	Combretaceae
8	<i>Psidium guajava</i>	Madhuri Aam	Myrtaceae
9	<i>Mangifera indica</i>	Aam	Anacardiaceae
10	<i>Elaeocarpus floribundus</i>	Omora	Elaeocarpaceae
11	<i>Averrhoa carambola</i>	Kordai	Oxalidaceae
12	<i>Carica papaya</i>	Amita	Caricaceae
13	<i>Moringa oleifera</i>	Sajina	Moringaceae
14	<i>Hibiscus rosa-sinensis</i>	Jaba Ful	Malvaceae
15	<i>Ipomoea nil</i>	Nayantara	Convolvulaceae
16	<i>Mentha piperita</i>	Pudina	Lamiaceae
17	<i>Zingiber officinale</i>	Aada	Zingiberaceae
18	<i>Curcuma longa</i>	Haladhi	Zingiberaceae
19	<i>Acacia concinna</i>	Vedailata	Mimosaceae
20	<i>Coriandrum sativum</i>	Manimuni	Apiaceae

Sr. No.	Scientific Name	Local Name	Family
21	<i>Aloe vera</i>	Aloe vera	Asphodelaceae
22	<i>Dioscorea bulbifera</i>	Pategaja	Dioscoreaceae
23	<i>Garcinia pedunculata</i>	Oou Tenga/Elephant Apple	Clusiaceae
24	<i>Garcinia hombroniana</i>	Tengesi Tenga	Clusiaceae
25	<i>Hibiscus sabdariffa</i>	Narasingha	Malvaceae

It is recommendations to review periodically the list of trees planted in the garden, allot numbers to the tree and keep records. Assign scientific name to trees. Promote environmental awareness as a part of course work in various curricular area, independent research projects and community service. Create awareness of environmental sustainability and take actions to ensure environmental sustainability. Establish a college environmental committee that will hold responsibility for that enactment, enforcement and review of the environmental policy. The Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this policy. Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings. Green library should be established. Indoor plantation to inculcate interest in students, bonsai can plant in corridor to bond a relation with nature. Celebrate every year 5th June as “Environment day” and plant tree on this day to make the campus Greener.



Figure 15 Ten Commandants of Sustainability

14. Green Campus Site Photograph

