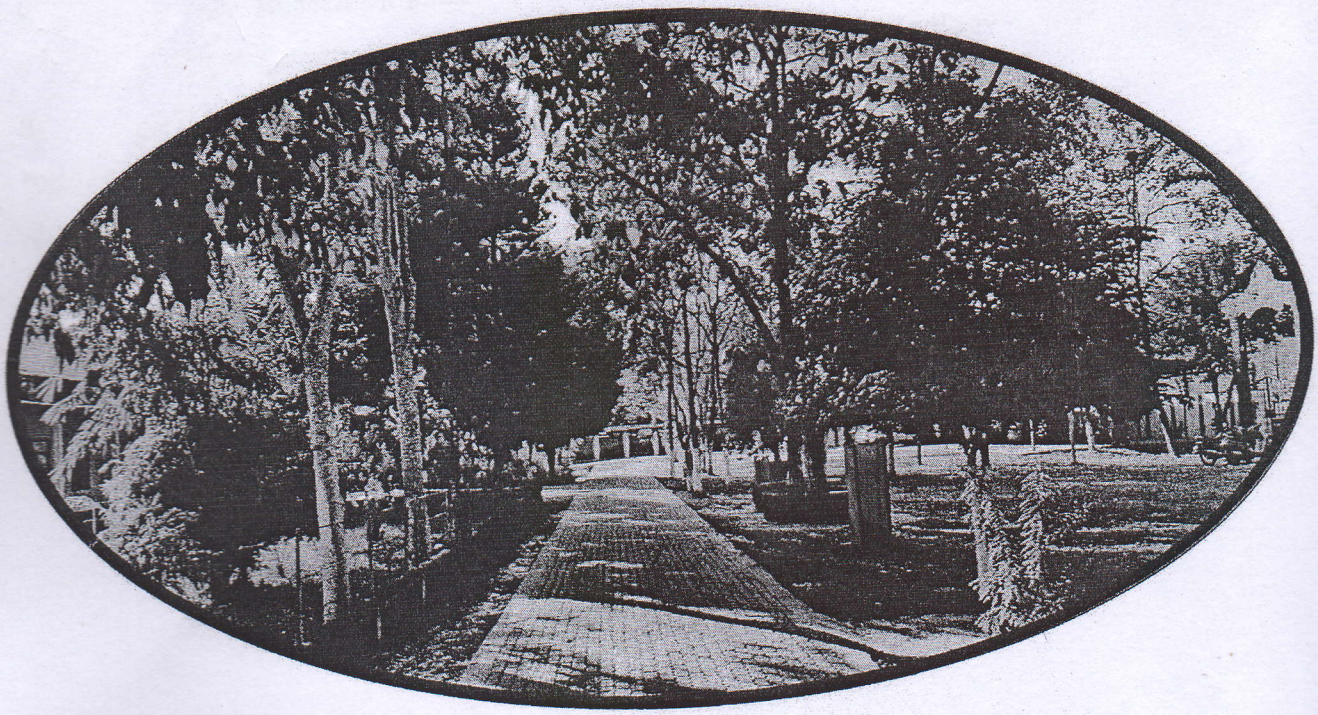
GREEN AUDIT REPORT
2019-20
Rangapara College

ESTD : 1979



Dr. Ranjan Kalita
Chairman, Green Audit Committee

Ms. Joon Moni Haloi
Co-Ordinator, Green Audit Committee

The Audit Team

Sl. No.	Name	Designation
1.	Dr. Ranjan Kalita	Principal, Rangapara College
2..	Dr. Ranendra Mohan Deka	Vice Principal, Rangapara College
3.	Sri Atul Sarmah	Coordinator, IQAC
4.	Ms. Joon Moni Haloi	Asst. Professor, Env. Science
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8.	Sri Subham Roy	Asst. Professor, Botany
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Preface

Green auditing is a means of assessing environmental performance in a particular area. It helps us to be sure whether we are performing in accordance with relevant rules and regulation, to get a direction on how to improve the environment. Now a day's educational institutions are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied to solve their environmental problems (waste recycling, energy saving, water reduction etc.). Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. It is an official examination of the effects that a college has on the environment. Here, we have conducted the Green audit to evaluate the actual scenario in the campus of Rangapara College.

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Acknowledgement

The green audit conducted by Rangapara College is an internal audit that aims towards looking after a healthy environment and its well being. Through nascent, the initiative is taken up to foster the concept of environmental sustainability. In performing the green audit, we would like to express our gratitude to the principal and all the members of the audit team for their sincere work, suggestion and recommendations. We would also like to express our sincere thanks to all the faculty members, office staffs and B.Com 3rd semester students who have conducted the survey, perform the plant census and identify the floral and faunal species. We would also like to thank co-Ordinator and all the members of the IQAC cell for their help during preparation of the report.

With regards

Green audit team

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CHAPTER: 1

1.1 INTRODUCTION

The term Environmental accounting was used for the first time in the year 1980 by Professor Peter Wood. Environmental accounting or green accounting is a new branch of accounting that aims at accounting for the environment and its well-being. Environmental accounting refers to modification of the System of National Accounts to incorporate the use or depilation of natural resources. It is a vital tool to assist the management of environmental and operational costs of the natural resources.

Green Audit can be defined as the systematic identification, quantification, recording, reporting, and analysis of components of environmental diversity. It aims to analyse environmental practices within and outside of the college campus, which will have an impact on the eco-friendly ambience.

Rapid studies of scientific and technological advancement, urbanization, industrial growth, agricultural techniques, degradation of forest areas at local, regional or global level has led to several environmental and ecological crises. At their conditions it becomes essential to adopt the system of the Green Campus for the institutes which will lead to sustainable development and at the same time to reduce a sizable amount of atmospheric CO_2 (Carbon-di-oxide) from the environment. Green audit is assigned to the **Criteria 7** of NAAC, (National Assessment and Accreditation Council) and it is mandatory to all the Higher Educational Institutions to submit an annual Green Audit Report. Moreover, it is a part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon footprint reduction measures.

1.1 OBJECTIVES

The main objective of the green audit is to promote the Environmental Management and Conservation in the college campus. The purpose of the audit is to identify, quantify describe, and prioritize framework of Environmental Sustainability in compliance with th applicable regulation, policies and standards.

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The main objectives of Green Audit are:

- To introduce and aware students to real concerns of environment and its sustainability.
- To understand the current practices of sustainability with regard to the use of water, energy, waste generation, purchase of goods, transportation etc.
- To secure the environment and to cut down the threats to human health by analysing the pattern and extent the use of resources in 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.

1.2 ABOUT THE COLLEGE

Established in the year 1979, Rangapara College was affiliated to Gauhati University in the year 1980. The college was brought under government deficit grant-in-aid system from 01/01/1987. The college was included under Section 2 (f) & 12 (B) of UGC Act, 1955 from 20/03/1996. In the year 2004, the college was accredited 'B+' grade by National Assessment and Accreditation Council (NAAC).In 2011, NAAC accredited the College with B grade in its second cycle of assessment and accreditation. Beginning its humble origin from Rangapara Town Hall on 16th August, 1979, it was shifted to the present sprawling campus of 40.33 acres (122 Bighas) amidst lush green tea gardens in 1983. Since its inception, the expansion of the college has been phenomenal. The faculty strength has increased manifold, there by producing more and more graduates in Arts and Commerce over the past few years. In 2020, Government of Assam has introduced the Science stream in the College upgrading the college to a full-fledged Institute of Higher Education with nine departments in Arts, one department of Commerce and five departments in Science stream including the diploma and certificate courses in Computer Science.

The Central College Library owns about 35,000 books with a significant number of periodicals, journals, e-books and e-journals. Besides, all the departments have their own Departmental Libraries with good number of books and journals. In terms of infrastructure, it is one of the remarkable institutions in the region equipped with Digital Class Room, Seminar Hall, Meeting Hall and Modern Library with digital facilities. Besides, the college is blessed with a Computer Centre, well-furnished separate Hostels for Boys & Girls, Canteen,

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Gymnasium Hall, Volleyball Court, Basketball Court, Indoor Sports Complex and Training Centre and a well-maintained Playground for Football, Cricket and Athletics.

Other than the academic activities Rangapara College encourages its students in the field of games and sports and cultural activities and competitions. The college has already organised the Inter College Football Tournament of Gauhati University and Inter College weight lifting and Power Lifting Competition of Gauhati University. A Few students have shown their proficiency in the field of sports by participating and winning awards in State, National and International Sports events. In the Cultural fields also, the students of the college have earned accolade by winning medals in Gauhati University Youth festivals.

The Green Zone and Wetland of the college covers one third of the college campus comprising an area of five acres of valuable grown-up trees. As the college is situated near the Nameri National Park, roaming of Wild Elephant is a common feature of the locality. Apart from organising awareness programmes on man-animal conflict among the local Communities, the college has created an Elephant Corridor for safe passage of wild elephants.

Student Diversity is one of the most encouraging aspects of the college. More than 50% of the students are from backward classes (OBC). 30% of the students are Scheduled Tribes (ST), 7% are Scheduled Cast (SC) and 13% belongs to the General category. 80% of the students belong to the economically backward classes. As the college is situated in a rural and backward area, the numbers of students from other states of the country are comparatively less. Yet a handful of students in the college are from the states like Bihar and Arunachal Pradesh. The female student percentage of the college is 42%.

The vision statements of the college read as- **"Rangapara College stands firm to reach excellence by generating fruitful social, economic, cultural and human resources through promotion of quality education and thus to mould the society for a better world"**. Keeping in mind the vision statement, the college is striving to provide higher education to the students of the entire region which is socio-economically backward. The college is trying to explore the cultural multiplicity of the remote area dominated by the Tea-Tribes, Bodos and other backward classes of people by creating an environment of participation and co-operation. The college has extended great contribution to the social harmony among the ST, SC, OBC communities, especially the Tea tribes and Bodo communities.

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Apart from teaching and learning, the teachers are engaged in different activities like Seminars, Workshops and other Research activities. The college has organised a number of UGC and ICSSR funded Regional and National level Seminars and Workshops. More than ten UGC funded MRP has been conducted by the teachers of the College in the last ten years. Students are also engaged in preparing Research Projects under the guidance of the teachers. The College has published a few books with ISBN number. Faculties have also published their book chapters and research papers in National and International level publications. The principal of the college is a Research guide of Gauhati University. One of the faculty members is the General Secretary of a national level Sahitya Sabha (a literary forum for writers) and a member of the state level committee for implementation of the NEP, 2020.

The college teaches its students the values of Indian philosophy, good citizenship which encourage them to become a responsible Indian citizen, thus making the college a unique place of higher education. The anti-tobacco movement launched by the college NSS Unit gave the institution a distinct mark. The effort put by our students was rewarded with "Gold Medal" by the Assam Cancer Care Foundation. The college is free from the evils of tobacco; plastic and the students maintain a healthy lifestyle. The main challenge before the college family is to make the students employed through which the economic condition of the area may be developed. Besides the Government and Private jobs, a large number of passed out students are engaged in different economic activities especially in the field of self employment. With the above-mentioned activities, the college is trying to fulfil its vision of moulding the students to develop quality human resources so that it can contribute to the overall development of the state as well as the nation and thus leading the society from the front for a better world.

VISION AND MISSION

- **VISION**

Rangapara College stands firm to reach excellence by generating fruitful social, economic, cultural and human resources through promotion of quality education and thus to mould the society for a better world.

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- **MISSION**

- To transform lives and serve the society by promoting participation of rural students in higher education.
- To create environment for holistic development and growth of our students and teachers.
- To promote academic excellence.
- To develop intellectual, expressive, and social skills.
- To strive for excellence in Teaching, Learning and Research sector.
- Enhance the commitment of faculties, staffs and students to the centrality of diversity, social justice and democratic citizenship.

1.3 NEED OF GREEN AUDIT

Green Auditing is the process of identifying and determining whether institution practices are eco-friendly and sustainable or not. Traditionally human beings are good and efficient users of natural resources. But over the period of time, excess use of resources like energy, water, chemicals have become habitual for everyone especially in common areas. Now, it is necessary to check weather our processes are consuming more than required resources, weather we are handling waste carefully or not. Green audit regulates all such practices and gives an efficient way of natural resources utilization. Green audit provides an approach for it and increases overall consciousness among the people working in institution towards environment.

1.4 LAND FORM CHARACTERISTICS OF THE CAMPUS

Rangapara College (26°48′N - 92°72′ E) is located in the Rangapara area of Sonitpur district, Assam, India. The college is surrounded by greenery constituted by Phoolbari and Adabari tea estates. The average elevation of the area is 206 m. The natural terrain of the surface topography allow to drain out the excess water masses easily from the campus and keep the campus clean and dry even after continuous and heavy downpour during the monsoon season. Red soil is mostly predominant in the area.

1.5 CLIMATIC CHARACTERISTICS

The campus area is a part of tropical monsoon climatic region, and hence enjoys hot and wet summer and cool and dry winter. The quotidian range of temperature recording during the summer month ranges from 25^0 C to 32^0C and 13^0 C to 24^0 C in winter

months. The average amount of annual rainfall receives in the area is estimated at 203.5 cm. The region receives highest rainfall during the month of May, June and July.

Table 1: Temperature and rainfall data of Rangapara, 2019

Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov
Avg. Temp. (°C)	17	19	22	25	26	28	28	28	28	25	21
Min. Temp. (°C)	11	14	17	20	23	25	25	25	25	22	17
Max. Temp. (°C)	24	26	29	30	31	32	32	32	32	31	28
Precipitation	25.03	61.6	65.8	179.1	422.3	613.7	1297.3	556.4	542.5	79.4	26

Table 2: Temperature and rainfall data of Rangapara, 2020

Months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	D
Avg. Temp. (°C)	19	22	27	30	29	29	28	30	28	28	23	2
Min. Temp. (°C)	14	16	19	22	23	24	25	26	25	23	17	
Max. Temp. (°C)	23	26	31	34	33	32	31	33	31	31	27	
Precipitation	60.1	82.3	37.4	139.4	479	1125	1337.4	836.8	583.6	164.9	34.1	

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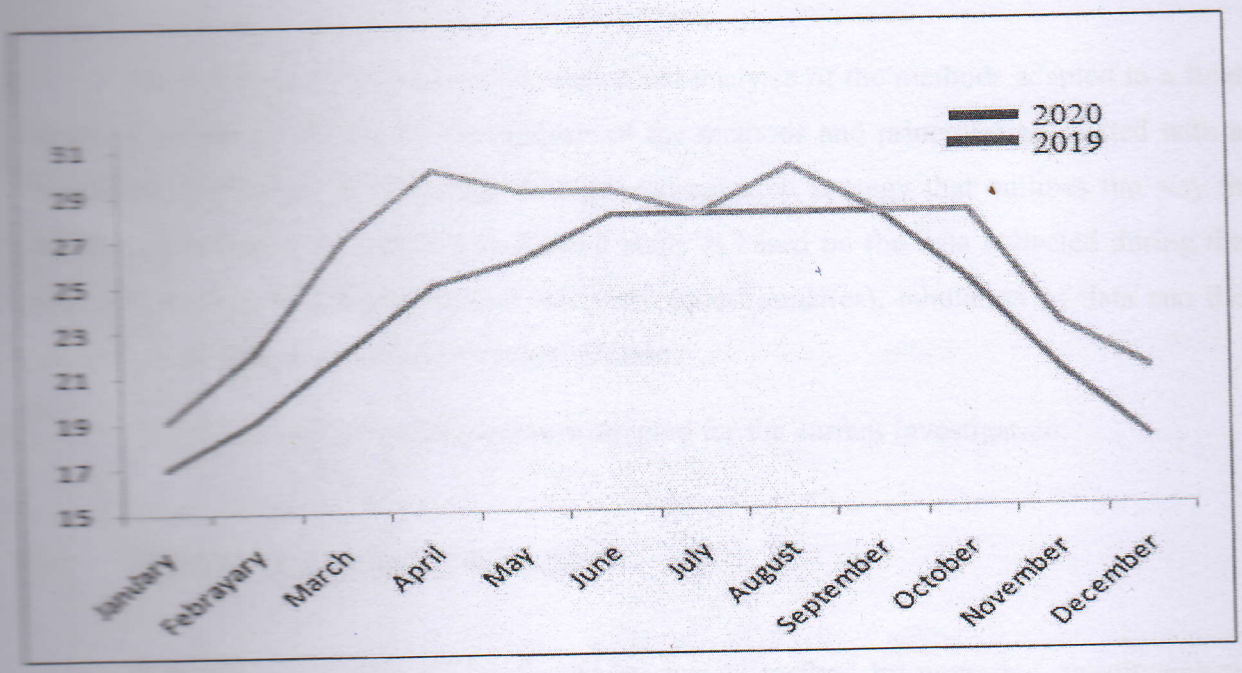

Figure 1: Variation in temperature of Rangapara in 2019 and 2020

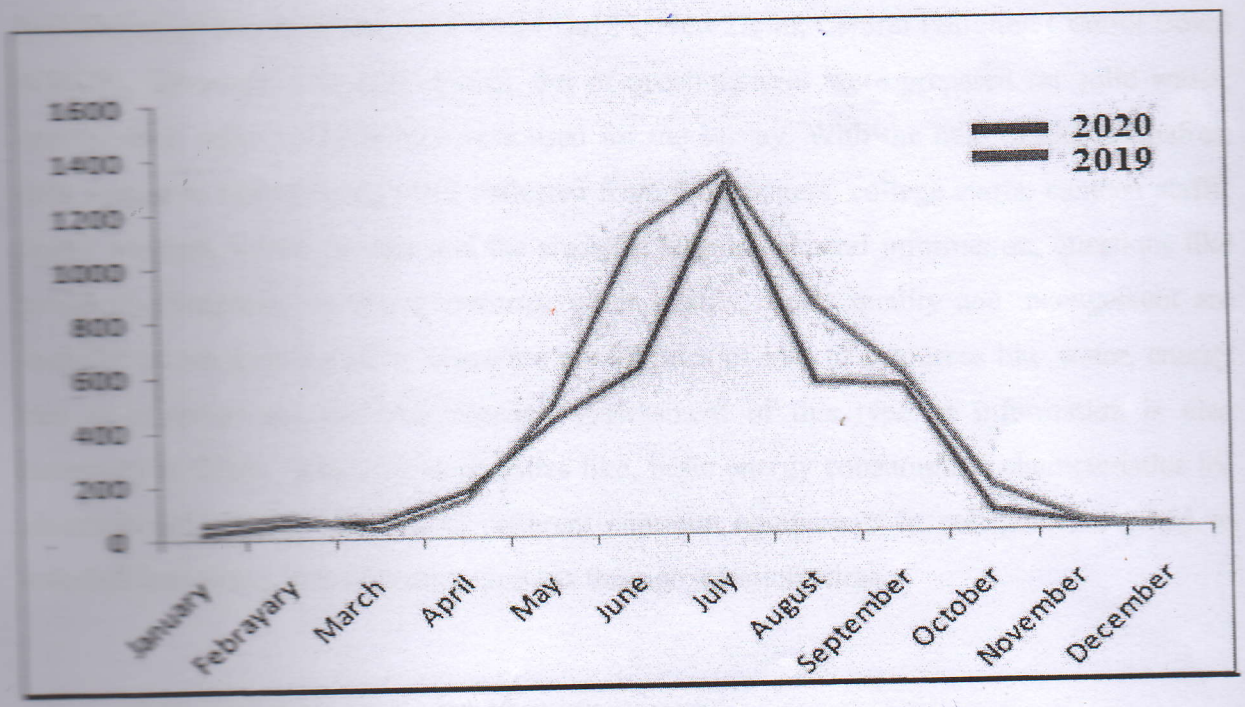

Figure 2: Variation in rainfall of Rangapara in 2019 and 2020

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CHAPTER-2: METHODOLOGY

Methodology is the systematic, theoretical analysis of the methods adapted to a field study. It comprises the theoretical analysis of the methods and principles associated with a branch of knowledge. Methodology is a general research strategy that qutlines the way in which research is to be undertaken. Present study is based on the data collected during the site visit, individual observation and interview (questionnaires), tabulation of data and the analysis, with interpretation and recommendation.

The following methodologies were adopted for the current investigation:

2.1 SURVEY BY QUESTIONNAIRE

Data for green audit was collected by survey method by preparing questionnaires. Questionnaires for green audit are based on the guidelines, rules, acts and formats prepared by Ministry of Environment and Forest (MoEF), New Delhi, Central Pollution Control Board (CPCB), Government of India (GOI). Set of questionnaires were prepared for solid waste, energy, fuel, water, e-waste etc. were used for the survey. With the help of questionnaires, data related to Green Audit were collected from the teachers, college staffs, canteen staffs, hostel wardens, hostel borders and the students. Besides general information, questions like power consumption, water requirement, water quality, waste quality and management are included in the questionnaire. There are possibilities of loss of resources like water, energy due to improper use and maintenance. Assessment of this type of information is also necessary in Green Audit. Some statistics like, basic energy consumption characteristics for electrical equipment, wattages of different common equipments in college were asked to stakeholders during data collection process through questionnaires.

2.2 SITE INSPECTION AND MONITORING

The college campus has 10.7 hectare (106,744 sq.mt) areas of land and the total built up comprising of various sections like the administrative buildings, class rooms, gardens, student facilitating centres, boys and girls hostels, warden and staff quarters, indoor stadium, auditorium, library, canteen, playground, ponds etc. All these amenities have different kinds

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of infrastructure as per their requirement. All these buildings and parts of the campus were checked and verified in their present condition by the members of Green Audit. The census of floral and faunal diversity in the campus was carried out by the students of B.Com 3rd semester (2019 batch) under the guidance of the teachers after their regular college timings. For the study, college campus was divided into four sections.

2.3 SITE MONITORING

Committee members visited the four sampling sites of the college campus periodically to collect and verified the information of energy consumption, e-waste, solid waste, noise level, use of water resources etc. Later Dr. Palashmoni Saikia, Associate Professor; Dept. of Chemistry; Darrang College, Tezpur, Assam has tested and confirmed the water quality data of Rangapara College.

2.4 ANALYSIS AND REPORTING:

Data collected during the survey finally tabulated and analysed. For better understanding of the results and to avoid complications, average and percentage of the data were calculated by using Microsoft Excel. Graphical representations of these results were made to give a quick idea of the present green status of the college.

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CHAPTER-3: GREEN AUDIT ANALYSIS

3.1 THE CONCEPT OF LAND USE

Land use involves the management and modification of natural environment or wilderness into built environment such as settlement and semi natural habitats. Land use refers as "the total of arrangements, activities, and inputs that people undertake in a certain land cover type". Land use planning and mapping are the two most important methods for efficient use of land resources in particular area or locality. The tools like GPS, GIS, remote sensing etc. are helpful to prepare land use map most scientifically.

3.1.1 METHODOLOGY ADOPTED

Coordinates to prepare the map were collected from different sites using a GPS machine. Google Earth Professional and Arc GIS software were used to prepare the map of the campus.

3.1.2 DATA ANALYSIS

Analysing the land use pattern, it was found that about 13395.0675 sq. metre area is under built up category and about 10,800 square metre areas has been used for football playground and 420 square metre area used for basketball court. Inside the campus link roads is about 1420 square metre and the drainage system is about 314.0128 square metres respectively.

The remaining 80394.9197 square metres area is open space available in the campus. The percentage share of the open space and built up area are estimated at 75.32% and 12.55% respectively.

3.1.3 FINDINGS

The campus of Rangapara College is extended over an area of 10.7 hectares of land. This land area resource has been used efficiently for building class rooms, various departments, students' facility centres, playground, plantation purpose, flower gardening etc. About 314.0128 m long drainage system drained out the excess water from the campus. Vertical structures are mostly preferred for efficient use of the land resource.

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Table- 2: Shows the category wise land use data of the Rangapara college campus, 2019

Sl. No	Land use category	Area in square Metre	Category wise Percentage
1	Built up Area	9184.8875	8.604%
2	Roads	1420	1.33%
3	Play Ground (Football and Basketball)	11,220	10.51%
4	Drains	314.0128	0.294%
5	Ponds (3 Nos.)	4210.18	3.944%
6.	Open space	80394.9197	75.31%
Total Area		110954	100%

Land use Pattern in Rangapara College, 2019

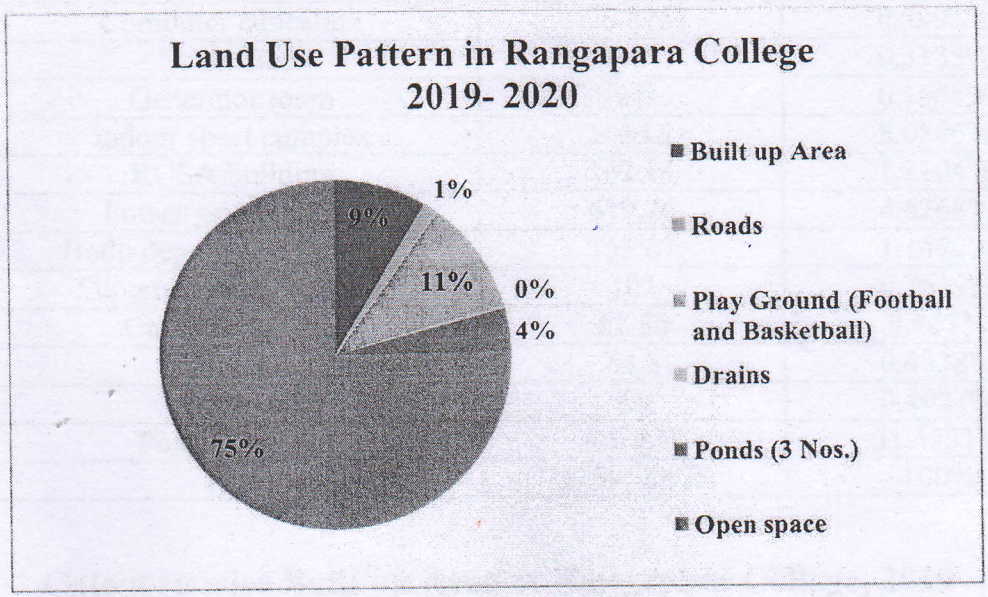

Figure: Representation of the land use in Rangapara College by Pie Diagram

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Table-3: Category wise data on built up area of Rangapara College, 2019-20

Sl. No	Category of land use (Built up area)	Area in square Metre	%of built up area under different category
1	Administrative building	1623.3625	12.119%
2	Library building	355.5	2.654%
3	Canteen	141.75	1.0582%
4	Parking	439.6	3.2818%
5	Auditorium	435.1	3.2482%
6	Girls hostel	2,061	15.386%
7	Boys hostel	762.04	5.689%
8	Alumni association	73.92	0.5518%
9	Student union building	131.61	0.9825%
10	Commerce building	713	5.3229%
11	Computer education	70.875	0.5291%
12	Sohid Bedi	42	0.3135%
13	Generator room	21	0.1568%
14	Indoor sport complex	1083.2	8.0866%
15	RUSA building	162.14	1.2104%
16	Power grid building	619.76	4.6268%
17	Bodo department building	153.67	1.1472%
18	Superintendent building	102	0.7615%
19	Chokidar quarter	62.56	0.467%
20	Toilet	64.8	0.4838%
21	Water tank	66	0.4927%
22.	Ponds (3 Nos.)	4210.18	31.4331%
	Total	13395.0675	100%

Category wise Built up Area of Rangapara College, 2019

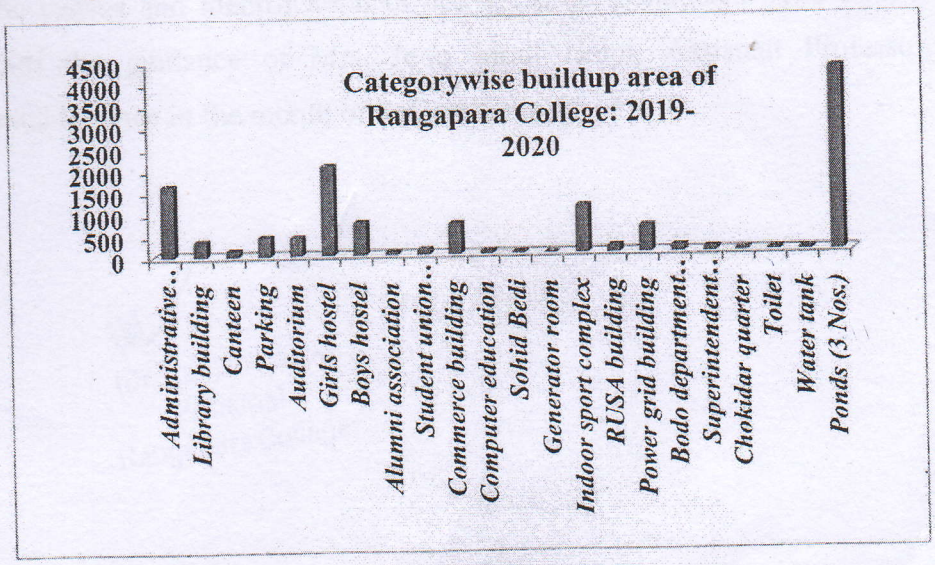

Figure: Histogram of category wise build up area of Rangapara College

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3.2 FLORAL DIVERSITY IN THE CAMPUS

Plants are considered as critical resources as they support life on earth in various ways. They release oxygen (O_2) into the atmosphere while absorb Carbon dioxide (CO_2) and provide habitat and food for wildlife and human. They also regulate the water cycle on the earth. The study of plants and their function could be considered as most complex interactions. Plants are also important in the regulation of global climate change. Trees control the atmospheric temperature. Light emitted from Sun contributes to the warming of the atmospheric temperature. Plants present on the earth's surface absorb the solar radiation and it also reduces the amount of heat produced and reflected into the surrounding environment.

The College campus is located on the west part of the Tezpur city of Assam, India. The coordinate of the College is 26°49′23.4″ N to 92°43′39.5″E. The College campus is very rich in its floral diversity. Diversity of plants enhanced the beauty of the campus. In our College campus most of the plants are old and planted in the north east side of the college boundary. Plants are planted through various plantation programmes with the help of the students, staffs and the various guests who have visited the campus. The canopy of the trees changes with the season. In spring, the seasonally planted flowers make the campus very eye catchy. The front part of the campus is having different fruit trees that bring some of the wild animals such as monkey, squirrel etc.to the campus.

A recent study has revealed the rich diversity of plant species which includes 40 species of trees, 23 species of shrubs, 14 species of herbs, and 3 species of climbers in the College campus. The census and identification of the floras are conducted by B.Com 3rd semester students with the guidance of Mrs. Joon Moni Haloi, Assistant Professor, Dept. of Environmental Science in the month of September 2019.

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Table-4: List of plant species (trees, shrubs and herbs) found in Rangapara college campus

Trees

No	Family	English Name	Local Name (Assamese)	Scientific Name
1.	Anacardiaceae	Mango	Aam	*Mangifera indica*
2.	Moraceae	Jack fruit	Kothal	*Artocarpusheterophyllus*
3.		Ficus	Aahot	*Ficus religiosa*
4.		Cluster fig	Joggodumur	*Ficus racemosa*
5.		Fig	Anjeer	*Ficus carica*
6.	Phyllanthaceae	Indian gooseberry	Amlokhi	*Phyllanthus emblica*
7.	Sapotaceae	Spanish cherry	Bokul	*Mimusops elengi*
8.	Myrtaceae	Guava	Madhurium	*Psidium guajava*
9.		Java plum	Jamun	*Syzygium cumini*
10.		Eucalyptus	Eucalyptus	*Eucalyptus globulus*
11.	Fabaceae	Golden Shower	Shonaru	*Cassia fistula*
12.		Royal Poinciana	Krishnachura	*Delonix regia*
13.		Pongam Oil tree	Pongam Oil	*Millettia pinnata*
14.		Black Locust	Black Locust	*Robinia pseudoacacia*
15.	Annonaceae	Deodar cedar	Debadaru	*Polyalthia longifolia*
16.	Meliaceae	Neem	Neem	*Azadirachta indica*
			Metha Neem	*Melia azedarach*
17.	Oleaceae	Olive	Jolfai	*Olea europaea*
18.	Combretaceae	Arjuna	Arjun	*Terminalia arjuna*
19.		Indian almond	Shilikha	*Terminalia chebula*
20.	Araucariaceae	Hoop pine	Pine	*Araucaria cunninghamii*
21.	Oxalidaceae	Star fruit	Rohdoi	*Averrhoa carambola*
22.	Lythraceae	Azar	Azar	*Lagerstroemia speciosa*
23.	Rutaceae	Wood apple	Bel	*Limonia acidissima*
24.	Dipterocarpaceae	Saal tree	Saal	*Shorea robusta*
25.	Cycadaceae	Sago plum	Cycas	*Cycas revoluta*
26.	Lamiaceae	Teak	Segun	*Tectona grandis*
27.	Rubiaceae	Bur flower Tree	Kodom	*Adina cordifolia*
28.		Butten Bush	Honey bells	*Cephalanthus occidentalis*
29.	Santalaceae	Sandal	Chandan	*Santalum album*
30.	Apocynaceae	Black Board tree	Devils' tree	*Alstonias cholaris*
31.	Bignoniaceae	Cigar tree	Indian Bean tree	*Catalpa bignonioides*
32.	Magnoliaceae	Golden Champa	Titachapa	*Magnolia champaca*
33.	Verbenaceae	Coomb teak	Gomari	*Gmelinaar borea*
34.	Sinaroubaceae	Tree of Heaven	Borpaat	*Ailanthus altissima*
35.	Sapindaceae	Lichi	Lisu	*Litchi chinensis*
36.	Caricaceae	Papaya	Omita	*Carica papaya*
37.	Paulowniaceae	Sapphire dragon tree	Dragon tree	*Paulownia kawakamii*

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38.	Clusiaceae	Garcinia cowa	Kudam Puli	*Garcinia gummi gutta*
39.	Cannabaceae	Chinese hack berry	Chinese hack berry	*Celtissinensis*

Shrubs

Sl.	Family	English Name	Local Name	Scientific Name
1	Fabaceae	White orchid	Kanchan	*Bauhinia acuminata*
2	Apocynaceae	Yellow olinder	Korobiphool	*Cascabela thevetia*
3		Pink periwinkle	Pink nayantara	*Catharanthus roseus*
4	Rutaceae	Curry tree	Narasingha	*Murraya koenigii*
5		Orange	Komola	*Citrus sinensis*
6	Oleaceae	Night blooming jasmine	Sewali	*Nyctanthes arbour tristis*
7		Winter jasmine	Khorikajai	*Jasminum multiflorum*
8	Malvaceae	China rose	Joba	*Hibiscus rosasinensis*
9		Wax mallow	Wax mallow	*Malvaviscus arboreus*
10	Rubiaceae	Crepe jasmine	Tagor	*Gardenia jasminoides*
11	Asteraceae	Gerberia	Gerberia	*Gerbera jamesonii*
12	Rosaceae	Rose	Gulap	*Rosa damascena*
13		Peach	Nora bogori	*Prunu spersica*
14	Rhamnaceae	Jujube	Bogore	*Ziziphus jujuba*
15		Henena	Jetuka	*Nesiota elliptica*
16	Arecaceae	Areca palm	Mumaitamul	*Dypsis lutescens*
17	Euphorbiaceae	Milk hedge plant	Hiju	*Euphorbia neriifolia*
18	Bibnoniaceae	Tecoma	Tecoma	*Tecoma stans*
19	Verbenaceae	Golden dew drop	HejGos	*Duranta erecta*
20		West Indian lantana	Lantana	*Lantana camara*
21	Asparagaceae	Caribbean agave	Caribbean agave	*Agave angustifolia*
22	Urticaceae	Lipangkalabaw	Lipa tree	*Dendrocnide meyeniana*
23	Melastomataceae	Indian rhododendron	Rhododendron	*Melastoma malabathricum*

Climbers

Sl.	Family	English Name	Local Name	Scientific Name
1	Rubiaceae	Starviolet	Bhadai Lota	*Hedyotiss candens*
2	Araceae	Money Plants	Money Plants	*Epipremnum aureum*
3	Asteraceae	Bitter Vine	Japani Lota	*Mikaniami crantha*

Herbs

No.	Family	English Name	Local Name	Scientific Name
1	Apiaceae	Indian pennywart	Manimuni	*Centella asiatica*
2	Amaranthaceae	White goose foot	Jilmil	*Chenopodium*

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				album
3	Plantaginaceae	Brahmi	Brahmi	*Bacopa monnieri*
4	Saururaceae	Fishmint	Masandri	*Houttuynia cordata*
5	Lamiaceae	Durun	Durun	*Leucas aspera*
6	Asphodelaceae	Aloe vera	Sal kuwari	*Aloe vera*
7	Araceae	Elephant ear	Kala kachu	*Colocasia esculenta*
8		Dumb cane	Dumb cane	*Dieffenbachia seguine*
9	Fabaceae	Touch me not	Lajukilota	*Mimosa pudica*
10	Asteraceae	Wild cosmos	Ulam raja	*Cosmos caudatus*
11	Marantaceae	Medallion calanthea	Medallion	*Calathea veitchiana*
12	Agavaceae	Ti plant	Ti plant	*Cordyline fruticosa*
13	Musaceae	Banana	Kol	*Musa acuminata*
14	Crassulaceae	Miracle leaf	Duportenga	*Bryophyllum pinnatum*

3.3 FAUNAL DIVERSITY

Rangapara College is located in the northern bank of the river Brahmaputra at the junction of Himalayan and Indo-Burma biodiversity hotspot region. The area is falls under the Sub-tropical climatic region and heavy rainfall occurs during the summer season i.e. from the month of May to August with a mean average temperature of 25^0 C to 32^0C. Such type of climatic condition is favourable for distribution of wide variety of flora and fauna. Being a part of the region, the College campus is also very rich in biodiversity. The campus also has an elephant corridor. For elephant corridor, College authorities decided to skip few land area of the campus for the movement of such animals. Also a small stream passes through the College campus. It enhances our college campus and gives shelter for some aquatic animals and also to some birds like egrets, kingfisher etc. are come for searching for their food in the dry season.

A recent study on faunal variety of the campus is listed below. The identification of the floral species are conducted by Dr. Gitartha Kaushik, Assistant Professor, Dept. of Zoology, Rangapara College.

Diversity of Insects:

Sl.	Family	English Name	Local Name	Scientific Name
1.	**Tettigoniidae**	Bush Cricket	Foring	*Tettigonia viridissima*
2.	Lycosoidea	Araneomorph spider	Mokora	Unidentified
3.	Cleridae	Beetle	Guborua	*Trichodes apiaries*
4.	Thaumetopoeidae	Caterpillars	Bisa	*Thaumetopoea processione*

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5.	Nymphalidae	Butterfly	Pokhila	*Hypolimnas bolina*
6.	Hesperiidae	Butterfly	Pokhila	*Pelopidas mathias*
7.	Nymphalidae	Butterfly	Pokhila	*Junonia atlites*
8.	Erebidae	Moth	Pook	*Syntomoides syntomoides*
9.	Acrididae	Grasshopper	Foring	*Chorthippus brunneus*
10.	Pentatomoidea	Shield bug	Pook	*Unknown*
11.	Nymphalidae	Butterfly	Pokhila	*Junonia almana*
12.	Papilionidae	Butterfly	Pokhila	*Papilio demodocus*
13.	Geometridae	Butterfly	Pokhila	*Dysphania militaris*
14.	Libellulidae	Slender skimmer	Jiya	*Orthetrum sabina*
15.	Apidae	Honey Bee	Mou	*Apis indica*
16.	Vespidae	Paper wasp	Borol	*Polistes olivaceus*

Diversity of Mollusca:

Sl.	Family	English Name	Local Name	Scientific Name
1.	Achatinidae	African giant snail	Hamuk	*Achatina fulica*

Diversity of Amphibians:

Sl.	Family	English Name	Local Name	Scientific Name
1.	Microhylidae	Balloon frog	Bhekuli	*Kaloula assamensis*
2.		Frog	Pat Beng	*Polypedates teraiensis*
3.		Frog	Chuk Bhekuli	*Duttaphrynus melanostictus*

Diversity of Reptiles:

Sl.	Family	English Name	Local Name	Scientific Name
1.	Colubridae	Checkered keelback	Dhora saap	*Fowlea piscator*
2.		Buff Striped keelback	Bamuni Dhora	*Amphiesma stolatum*
3.	Elapidae	Cobra	Chokori Feti	*Naja kaouthia*
4.		Cobra	Goom Feti	*Ptyas korros*
5.	Colubridae	Common Bronzeback	Karshola	*Dendrelaphis proarchus*
6.	Typhlopidae	Blind snake	Khonti Xaap	*Indotyphlops braminus*

Diversity of Annelida:

Sl.	Family	English Name	Local Name	Scientific Name
1.	Hirudinidae	Leach	Jook	*Hirudinaria manillensis*
2.	Lumbricidae	Earth worm	Kesu	*Lumbricus terrestris*

Diversity of Avian Fauna

Sl.	Family	English Name	Local Name	Scientific Name
1.	Sturnidae	Common myna	Hakila	*Acridotheres tristis*
2.	Columbidae	Common Dove	Kopou	*Streptopelia orientalis*

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3.	Corvidae	Common Raven	Kauri	*Corvus corax*
4.	Ardeidae	Egret	Bogoli	*Ardea alba*
5.	Upupidae	Crown bird	Gubor Khusora	*Upupa epops*
6.	Alcedinidae	Kingfisher	Maasruka	***Alcedo atthis***
7.	Passeridae	House sparrow	Ghorsirika	*Passer domesticus*
8.	Motacillidae	White wagtail	Balimahi	*Motacilla alba*
9.	Psittaculidae	Indian parakeet	Bhatou	*Psittacula krameri*
10.	Muscicapidae	Magpie Robin	Robin Sorai	*Copsychus saularis*

Diversity of Mammals

Sl.	Family	English Name	Local Name	Scientific Name
1.	Elephantidae	Elephant	Hati	*Elephas maximus indicus*
2.	Cercopithecidae	Indian rhesus macaque	Bandor	*Macaca mulatta*
3.	Herpestidae	Indian Mongoose	Neol	*Herpestes edwardsi*
4.	Canidae	Jackal	Shiyal	*Canis aureus indicus*

Diversity of Ichthyofauna

Sl.	Family	English Name	Local Name	Scientific Name
1.	Cyprinidae	Common Carp	Common carp	*Cyperinus carpio*
2.	Synbranchidae	Eel	Kuchia	*Monopterus cuchia*
3.	Cyprinidae	Barb	Puthi	*Puntisus chola*
4.	Clariidae	Walking Catfish	Magur	*Clarias batrachus*
5.	Channidae	Snakehead	Sengeli	*Channa marulius*
6.	Osphronemidae	Dward gourami	Kholihona	*Trichogaster lalius*
7.	Osphronemidae	Gourami	Kholihona	*Trichogaster fasciata*
8.	Cobitidae	Loach	Botia	*Lepidocephalus guntea*
9.	Anabantidae	Climbing Perch	Kawoi	*Anabas testudineus*
10.	Cyprinidae	Mola carplet	Mua	*Amblypharyngodon mola*
11.	Cyprinidae	Slender Rasbora	Donikona	*Rasbora daniconius*
12.	Cyprinidae	Barb	Puthi	*Systomus sarana*
13.	Bagridae	Catfish	Shingora	*Mystus vittatus*

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3.4 ELECTRIC POWER CONSUMPTION

3.4.1. Analysis Electric Power Consumption

The electric power consumption data is as shown below. The data is collected over the period of one year, starting with September, 2019 till September, 2020. Over this period of a year, the consumption shows oscillatory behavior as depicted by the graphs. Both seasonal variation as well as the outburst of COVID-19 is seen to affect the consumption.

Table: Electric power consumption data

Sl. No.	Month	Unit Consumed
1.	September, 2019	7155
2.	October, 2019	4875
3.	November, 2019	4899
4.	December, 2019	3705
5.	January, 2020	2862
6.	February, 2020	3084
7.	March, 2020	3194.82
8.	April, 2020	2178.18
9.	May, 2020	2574
10.	June, 2020	4809
11.	July, 2020	5070
12.	August, 2020	2877
13.	September, 2020	5286

The graphical representation of the electricity consumption units is shown below.

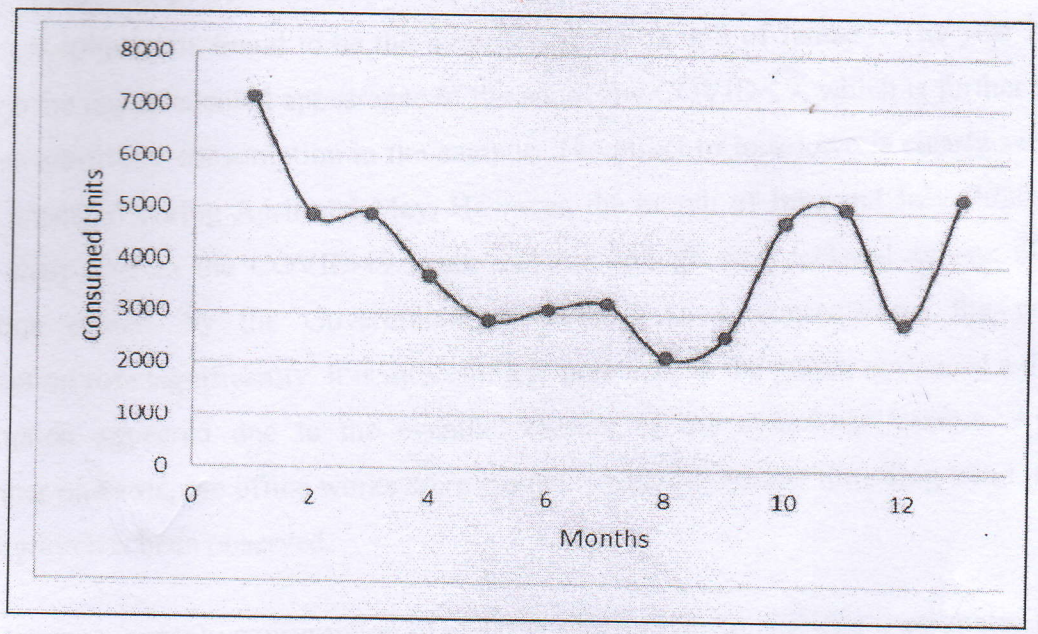

Figure (a): Graphical representation of the electric power consumption

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Representation of the same data through Histogram:

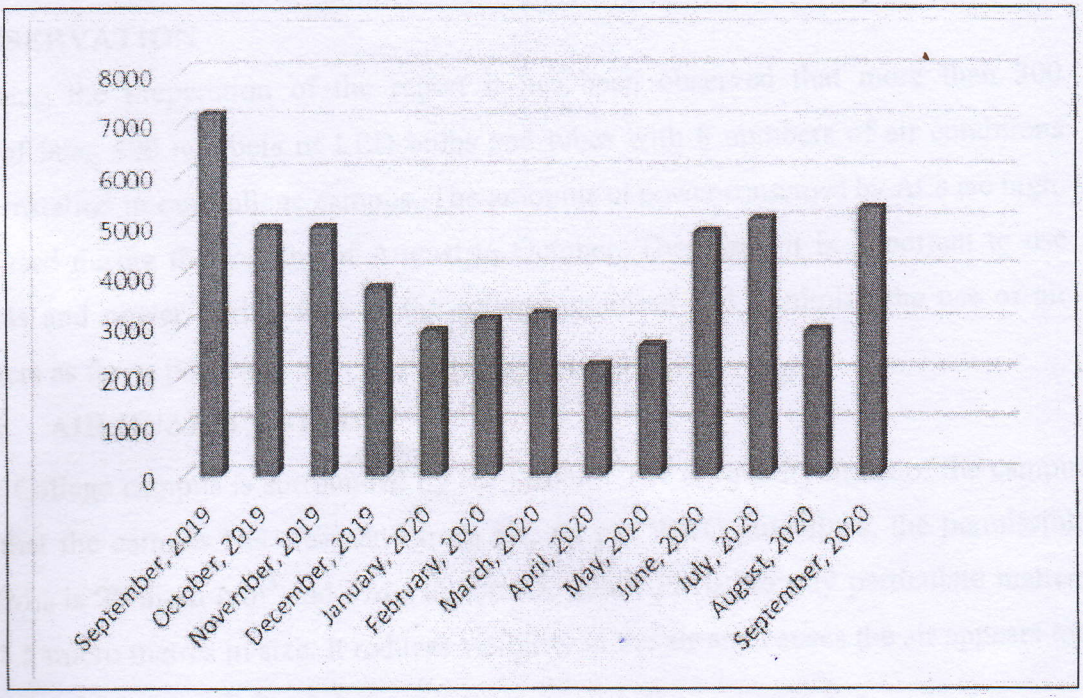

Figure (b): Histogram representation of electric power consumption.

The graphs show the wide scale variation of electric power consumption in the college premises over the cycle of a year. In the first part of the graph, the winter appearance is seen to reduce the power consumption heavily (consumed units reduced from 7155 to 2862). Consumption is found to be the minimum in the month of January. The year 2020 has faced the unprecedented appearance of the pandemic COVID-19, which is further seen to reduce electricity consumption in the campus. The effect of lockdown is clearly seen in the dip appeared during April and May. However, the month of June and July, 2020, has seen a sharp rise in the COVID-19 cases and the college was declared as one of the quarantine centers by the Government of Assam. As a consequence, the power consumption rose significantly. It is interesting to note that, in the month of August a dip in consumption appeared due to the eventual closure of the quarantine centers. Again, September onwards, the office works were gradually regularized and the rising trend in the consumption has been observed.

Average monthly consumption of electricity at Rangapara College is estimated to be 4043.76 units. The rate of consumption however varies with seasons. It is observed that the rate of consumption is lower in the winter months as compared to the summer. During the

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months of May, June, July, August, and September; the rate of consumption is a bit on the higher side. The average shoots up to 4123.2 units per month as compared to 3637.5 units in the winter season (Nov- Feb).

3.4.2: OBSERVATION

During the preparation of the report it has been observed that more than 300 numbers of fans, 400 numbers of LED bulbs and tubes with 8 numbers of air conditions (AC) are installed in our college campus. The amounts of power consumed by ACs are high. ACs are used during the months of August to October. Therefore, it is important to use solar lights and power saving fans in the college premises and minimize the use of air conditioners as far as possible.

3.5 AIR QUALITY STUDY

The College campus is surrounded by tea gardens. The air quality index of the campus indicates that the campus has clean and fresh air. As per WHO guidelines, the permissible limit of PM_{10} is 20micro g/m^3 and PM_{25} is 10micro g/m^3. PM_{25} are tiny particulate matters less than 2.5 micro metres in size. It reduces visibility in the air and causes the air appears too hazy when levels are elevated.

Table-6: Air quality index of Rangapara college campus

Constituents	Air quality (AQI), 2019	Air quality (AQI), 2020
NO_2	16 micro g/m^3	3 micro g/m^3
O_3	19 micro g/m^3	5 micro g/m^3
$PM_{2.5}$	30.0 micro g/m^3	7 micro g/m^3
SO_2	11 micro g/m^3	0 micro g/m^3
PM_{10}	31.8 micro g/m^3	20 micro g/m^3
CO	134micro g/m^3	1 micro g/m^3
Humidity	81.0%	75.0%
Barometric Pressure	1018.0 hPa	1019.0 hPa
Wind Speed	4.16 m/s	3.8 m/s
Wind Direction	83.0 degree	80.0 degree
Temperature	28^0C	24^0C

(Source: Pollution Control Board, Assam)

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3.5.1 OBSERVATION

In the College campus the concentration of particulate matter (dust) with the annual mean PM_{10} was found 31.8 micro g/m^3 and annual mean PM_{25} was 30 micro g/m^3. According to WHO guideline of air quality index the concentration of particulate matter are much below the recommendation levels. Thus, the campus maybe considered as free from pollution and safe for the contenders. Lichens are well known as sensitive indicators of air pollution, particularly for SO_2. On this recent study we have found enormous amount of lichens on the plants surface.

It was found that during 2020, due to the COVID Pandemic and the global lockdown, air quality comprising the various constituents' decreases rapidly showing very low amount of pollutants in the atmosphere in the Rangapara area.

3.6 WATER QUALITY ANALYSIS

Water quality testing is important because it identifies contaminants and prevents water borne diseases. Essentially, water quality testing makes sure that water is safe and meets local and international water standards. This type of testing can be completed by using water sampling techniques and using technology to estimate the amount and levels of chemicals. To analysis the water quality of our college campus, the samples have been collected from a bourn, well and administrative building. A series of experiment have been carried out at a department of Chemistry; Darrang College under the supervision of Dr. Palashmoni Saikia, Associate Prof., Department of chemistry, Darrang College, Tezpur. The water samples have been collected on 26th September 2019. Also we tested heavy metals of water samples collected from the same station and experiments are carried out at NERIWALM, Tezpur under the supervision of Mr. Ritu Thakuria. This water samples have been collected on 1st October 2019.

Table on the water quality of Rangapara College is provided in the next page.

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Table-7: Water quality report of Rangapara College**

No	Parameter/WHO Permissible level	Observation value			Methodology
		Sample 1	Sample 2	Sample 3	
1	Colour	Clear	Clear	Light Brown	
2	P^H 6.5-6.8	5.73	5.67	6.49	P^H
3	Turbidity	0.37	0.39	0.59	Turbidity meter
4	Salinity	0.35 ppt	0.35 ppt	0.47 ppt	Salinity meter
5	Conductance/0.4mScm^{-1}	0.59mScm^{-1}	0.59mScm^{-1}	0.68mScm^{-1}	Conductivity meter
6	Fe /0.30 ppm	0.48 ppm	0.47 ppm	0.59 ppm	Spectroscopy
7	Na /200 ppm	194 ppm	195 ppm	176 ppm	Flame photometer
8	K /12 ppm	6.74 ppm	6.52 ppm	5.98 ppm	Flame photometer
9	Mg /30 ppm	23.35 ppm	23.87 ppm	21.06 ppm	Titrimetric
10	Ca /75 ppm	65.76 ppm	64.09 ppm	74.98 ppm	Titrimetric
11	F^- / 1.5 ppm	BDL	BDL	BDL	Ion meter
12	Cl^- / 250 ppm	132.22 ppm	130.89 ppm	156.07 ppm	Titrimetric
13	NO_3^- / 50 ppm	26.08 ppm	27.76 ppm	52.13 ppm	Titrimetric
14	SO_4^- /250 ppm	198.34 ppm	176.23 ppm	202.82 ppm	Titrimetric
15	PO_4^{3-} / 5 ppm	BDL	BDL	BDL	Spectroscopy
16	F /1 ppm	0.0354 ppm	0.104 PPM	0.0511 PPM	AAS
17	As / ppm	BDL	BDL	BDL	AAS
18	Pb / ppm	BDL	BDL	BDL	AAS
19	Cd / ppm	BDL	BDL	BDL	AAS
20	Ni / ppm	BDL	BDL	BDL	AAS
21	BOD(Biological Oxygen Demand) / 5 ppm	0.5	-	0.3	Water Analyser

Sample-1: Collected from seasonal small stream in the campus.

Sample-2: Collected from Administrative building.

Sample-3: Collected from campus well.

Note: BDL- Below Detection Limit.

** Heavy metal tests are carried out at NERIWALM, Tezpur and a series of water experiments carried out by Department of Chemistry, Darrang College; Tezpur.

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3.6.1 OBSERVATION

The college centrally stores water in an overhead concrete water reservoir of around 20,000 litres. The average daily consumption of water is around 30,000 litres. A traditional iron filter is attached to the central water reservoir. There are 141 water tapes out of which 6 tapes are damaged. The College maintained good drinking water facilities for students and faculties. Four (4) UV/RO filters are installed for drinking water though one was not found in working condition.

3.7 NOISE LEVEL STUDY IN THE RANGAPARA COLLEGE CAMPUS:

Noise is a term that used to describe for unwanted or excessive sound that can have deleterious effects on human health and environmental quality. Noise is measured in logarithmic units called decibels (dB). According to WHO; 45 dB is safe noise level for a city. For international standards a noise level up to 65 dB is considered as tolerable.

Now a day's noise pollution is a significant problem. Noise pollution in educational environment disturbs during study session and it produces problems to the teaching learning process and negatively affects the performance of both students and teachers. In this audit, an attempt has been made to study the level of noise pollution in the campus of our College. Generally the noise level should be in the range of 40 dB to 50 dB in and around an educational institution.

3.7.1 MATERIALS AND METHODS

To measure the noise level is around Rangapara College campus noise measuring app. **Noise Tube** (version: 2.9.3) was used.

3.7.2 DATA COLLECTION

The data has been collected from 10 different points inside the campus with the help of Android mobile Vivo S1 using noise tube app. Version 2.9.3. Data collection centres are administrative building, commerce building, boys' common room, girls' commons, teachers' common room, girls' hostel, boys' hostel, canteen, library, main gate. At these points, measurement has been taken for duration of 60 seconds during the period 10 AM to 3 PM and screenshot of the measurements of noise level were taken in the device.

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3.7.3 OBSERVATION

The results of the experiments are tabulated in the table 8. From the data it was found that the noise level in the College campus varies from one building to another. Maximum level of noise was recorded at boys' common room where average noise level was 75.

Table-8: Noise level measurement at Rangapara College

Sl. No	Place of experiment	Duration in seconds	Minimum(dB)	Maximum(dB)	Average(dB)
1	Administrative building	60	55	65	60
2	Commerce building	60	40	82	76
3	Boys' common room	60	43	85	75
4	Girls' common room	60	46	80	66
5	Teachers' common room	60	56	65	60
6	Boys' hostel	60	34	80	66
7	Girls' hostel	60	35	81	66
8	Canteen	60	67	74	70
9	Library	60	43	53	47
10	Main gate	60	63	74	68

3.8 SOLID WASTE AND SEWAGE MANAGEMENT AT RANGAPARA COLLEGE

The term waste is complicated to define. According to the Basel Convention on the control of Tran's **boundary Movement of Hazardous Waste and their Disposal of 1989**, Act 2(1), "Wastes are substances or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law".

Solid wastes are any abandoned or discarded materials. Wastes can be solid, liquid, semi-solid or containerized gaseous material resulting from industrial, commercial, mining activities, agricultural operations and from community activities.

Rangapara College is a small sized College with in an enrolment of 2000+ students. Every day, a minimum amount of wastes of different types has been derived in the College campus due to different ongoing activities of the stake holders. These wastes are mainly divided into two categories – **Biodegradable** and **Non-biodegradable**, on the basis of their characteristics such as structures, texture, weight, composition etc. Biodegradable waste

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mainly composed of dry leaves, grasses, papers etc. While non-biodegradable waste includes concrete derbies, stones, sand, plastics materials, polythene bags etc.

This recent study reveals that on an average maximum 50 kg of waste generated in the College campus. Wastes are collected in the dust bins placed 6 points in the campus. The biodegradable wastes mostly dry leaves and grasses have been finally deposited at the compost pit to **prepare compost** which has been later used in flower garden. On the other hand non-biodegradable wastes like plastic water bottles (one use) are send for recycling. Due to regular sweeping of waste, the campus is free from any waste related environmental problems.

To release the sewage that drains out from the canteen, girls' hostel, warden quarter, boys' hostel, staff quarters are finally stored in a soak pit tank. All the washrooms are connected with the safety tank and soak pit in the campus.

3.8.1 OBSERVATION

Solid waste management system in the College campus is well maintained. The vegetation waste have been deposited in the compost plant to produce compost for flower garden by College cleaner of the College. As far as the sewage management is concerned, the audit team has recommended improving present system with scientific treatment of water and also suggest to do **rain water harvesting** to use for gardening.

3.9 E-WASTE

Generation of E-waste is found in every College. In academic Colleges, there are several equipment and instruments running in administrative as well as in various departments used for educational activities. Computers, printers, scanners, Xerox machines are mostly used for administrative as well as academic works like teaching, learning and evaluation. In College we deal with electric materials, equipment's, measuring instruments, different electric circuits wires, microprocessors, PCBs , electronic components (like resistors, diodes, transistors etc.) damaged instruments, hardware's and peripherals of computer system, lighting equipment's (like bulbs, tubes) fans all these include in E-wastes. More use of such types of materials generates E-waste when these instrument or equipment's become damaged.

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3.9.1 OBSERVATION

Collected data shows that, major sources of E-waste are generated in administrative section as different electronic instruments; computer, printer etc. are used. E-waste is treated and disposed in proper manner. Other departments generates negligible amount of E-waste.

Table-9: E-waste handle, treated and disposed at different sections of college

Sl. No	Section	E-waste handled (kg)	E-waste treated and disposed (kg)
1	Administrative building	11.10 kg	11.10 kg
2	Computer centre	5.2 kg	5.2 kg
3	Old building	5.5 kg	5.5 kg
4	New building	5 kg	5 kg
5	Exterior	Nil	Nil
	Total	26.80 kg	26.80 kg

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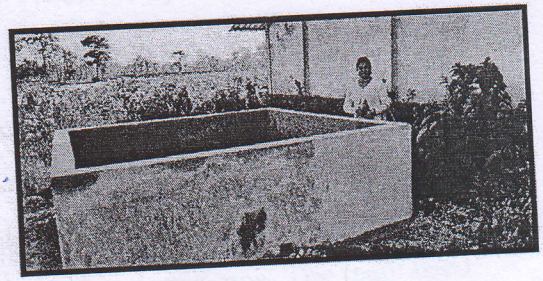
CHAPTER-4: PHOTO EVIDENCE OF SOME GREEN PRACTICES

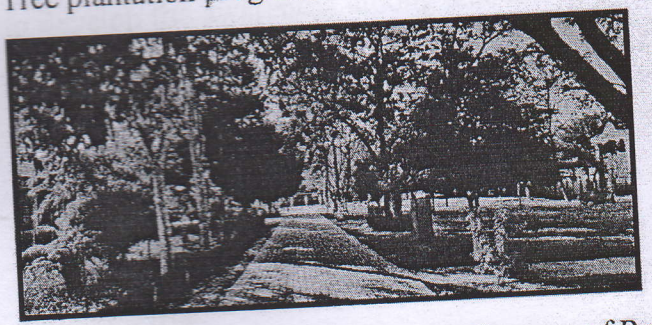
Observed World Earth Day 22nd April

Plantation Programme by NSS

Tree plantation programme by the new faculties



Waste disposal site of the college



Green Campus of Rangapara College

Pond constructed for preservation of water and fishes

Cleanliness drive by the students

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CHAPTER-5: CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

In year 2020, all the indicators of Green Audit were studied and information were collected and analysed following conclusion, recommendations and remedies by the experts. "Green Auditing" is the process of identifying and determining whether institutions' practices are eco-friendly and sustainable or not. This is the first attempt to conduct green audit in our college campus. After the process of green auditing, the audit team has given the following conclusion, recommendations and a management plan for sustainable management of the campus which can be adopted as a "Green Policy" of the college for future to keep the environment of the college eco-friendly.

The total area of Rangapara College is 10.7 hectares (106,744 sq.mt.) which is enough for 2000 enrolment.

During the audit the team has observed that the consumption of electricity is about 117.55kw unit/day. The team noticed that power consuming fans,7 numbers of air condition, and electrical cooking devices are use in the college. The class rooms are well ventilated therefore, during the day time it is not necessary to use light in the classrooms. The team tried to develop the awareness among students to conserve energy by switching off the light and fans after the class.

As the air quality of the campus is of main concern, it was found to be fresh and clean. The concentration of particulates is lower than the WHO recommended level. The audit team noticed enormous amount of lichens on plants. It indicates the campus as almost pollution free.

Noise pollution is regarded as a significant problem now-a-days. Noise pollution in educational environment disturbs during study session and it produces multi problems to the teaching learning process and negatively affects the performance of both students and teachers. To measure the noise level in an around the college campus, noise measuring app Noise Tube (version: 2.9.3) was used. With the help of Noise Tube app from 10 different points data has been collected in the college campus and analysed.

Solid waste management study is one of the important parameter to perform green audit. Every day a minimum amount of waste has been generated in the college campus and

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these wastes is divided into two categories- biodegradable and non-biodegradable. Biodegradable waste mainly contains with vegetative waste materials. On the other hand, non-biodegradable waste includes plastic materials, polythene bags, thermocol plates etc.

After field verification the team have suggested some valuable recommendation for further improvement of solid waste management system in the college.

5.2 RECOMMENDATION

The green audit team has suggested the following points on various parameters related to the audit to develop a sustainable eco-friendly environment in the campus.

* The committee has recommended to aware the students about saving water. They also suggested giving the responsibility of monitoring the overflows of water tank to a non-teaching staff in the concerned section.

* The committee has suggested to save electricity by proper maintenance of the wiring and electrical equipment. The committee also suggested using the most energy efficient and environmentally light appliances such as energy saving LED bulbs, LED tubes etc.

* The committee suggested installing the solar power to light up the roads, exterior site of the campus.

* The committee suggested separating the biodegradable and non biodegradable waste from gardens, lawns in the campus. They also suggested not to burn the waste materials inside these areas. By following the recommendation, biodegradable wastes were sent for composting and recycling or proper disposal.

* Regarding E-waste, the team suggested not to sale the waste materials to the vendors but to store in a separate room for eco-friendly disposal.

* To keep the air quality fresh and safe the team recommend plantation especially Neem (*Azadirachta indica*) trees in the campus.

* The audit team has recommended periodic plantation and care to make the environment more green and fresh. At present there are about 386 numbers of trees in the campus with large varieties of shrubs and herbs.

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* As the College campus is very rich in the faunal diversity, so to maintain clean, green and peaceful environment; the team appeal everyone to avoid noise and keep the environment clam and quite.

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CHAPTER-6: ENVIRONMENT MANAGEMENT PLAN

After monitoring, visiting, making interaction studying the present situation of different areas of waste generation, energy consumption its' utilization, methods adopted for waste disposal and current green practices followed in college campus, we have prepared and recommended an Environmental Management Plan for Rangapara College campus. This plan will reveal the strengths, weaknesses and suggested remedies for green and clean campus.

6.1 E-WASTE

Strength	Weakness	Suggestions
1. E-waste generation of this college is (low) of schedule III and it is generated 26.80 kg in this year, is appears to be in very less quality.	1. Institute have some e-waste like bulbs, circuit boards, computers, UPS etc. 2. The non-working computer spare parts and other non-working electrical equipment are dumped in different places is observed. 3. Buy back policy at the time of purchase is not in force. 4. Carbon emission is printer's carbon copy of bills, filling of cartridge inside the office and in different areas is observed.	1.Adopt a buy back policy at the time of purchase if available. 2. The cartridge of laser printers should be refilled outside the college campus or in closed room. 3. Conduct the awareness programmes regarding e-waste management. 4. All the e-waste generated per year with in campus will be stored separately and disposed of through authorized vendors.

6.2 SOLID WASTE

6.2.1 PLASTIC

Strengths	Weakness	Suggestion
1. Small amount of carry bags are collected.	1. At some places hard and carry bags, plastics is burned at campus. 2. Some time plastic are thrown in general waste.	1. Segregation of waste at the source. 2. All type plastic waste send for recycle. 3. Declare the college campus as "Plastic Free".

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6.2.2 BIODEGRADABLE WASTE

Strengths	Weakness	Suggestion
1. Clean campus. 2. Classrooms are clean. 3. Total number of trees are 386. 4. Every year plantation done by students. 5. NSS students gave their devoted efforts for cleaning the college campus as well as classrooms. 6. Dustbins are placed in corridors at different places. 7. Periodically cutting and cleaning of gardens and lawns. 8. Composting is carried on campus site.	1. Biodegradable waste in campus and small paper waste is burned on site at different places. 2. All collected biodegradable waste is not composted properly. 3. Classroom waste (plastic piece, paper waste, soft plastic, carry bags etc.) is thrown at site and burned. 4. Garden waste, waste of big trees (pieces of wood, grass, leave etc.) and grass on the ground is burned near the plantation is seen.	1. Sufficient big waste bins are placed where essential (in classroom, near office etc.) and monitored periodically. 2. Do not throw waste food from canteen on site.

6.2.3 PAPER

Strengths	Weakness	Suggestion
1. Very less amount of small papers is observed in classroom waste. 2. For notice social media like whatapps are used frequently. 3. All the teaching and non-teaching staff is techno-savvy using computers, laptops, mobiles etc. 4. Use E banking on the time of admission.	1. Large amount of paper stationary was required for office work. 2. Major printed stationer was required internal evaluation work, internal memos, notices internal assessments etc. 3. Number of set of copies is required for official record. 4. Major consumption of paper is observed at time of admission and examination. 5. Paper waste from office and classroom is burned near the parking and near the office. 6. At different places paper waste is burned.	1. Avoid use of carbon paper in bill section of office. 2. For internal notice and memos use sms, intercom, mobile network and advanced techniques of ICT. 3. Switch towards the paper office work. 4. Send all type of the paper waste for recycle or for proper destroy.

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6.3 WATER UTILIZATION

Strengths	Weakness	Suggestion
1. In campus very much availability of water, campus is self-sufficient in water. 2. The R/O and UV water filtration is functioning and which supplies filter water for drinking purpose. 3. Scope for rain water harvesting. 4. Less number of leakages are observed while verification of data drills are conducted. 5. Campus is self-sufficient in water for irrigating the lawn, gardens etc. by these two bores.	1. The major use of water is in administrative office and at exterior section. 2. Leakages are less but observed at bathroom, toilets and exterior. 3. For trees and gardens traditional watering is used. 4. No proper attention toward rain water harvesting. 5. Water in larger quantity is used.	1. Inspection of infrastructure and plumbing survey of water supply line is necessary. 2. Install the water guard at overhead water tank or pressure valves / sensor valves to make control on overflow of tanks. 3. Install roof top rain water harvesting.

6.4 ELECTRICITY

Strengths	Weakness	Suggestion
1. Adequate ventilation and natural light is present in classroom as well as in other section. 2. LED bulbs/tubes are used in all section of the campus. 3. Use of LCD, LED monitors in every section. 4. Central water tank is taller location, hence watering to trees not required electricity for pumping of water. 5. In all section classrooms are spacious, airy and windows on face to face walls. 6. College campus has plenty wind and sunlight.	1. Monitor the meter reading of consumption and electricity bill. 2. More electricity is used for water fetching purpose. 3. Use of electricity is more in some areas like administrative building etc. 4. Unnecessary use of lights fans at some places is seen when no one is using. 5. Requirement of electricity for computer laboratory is large.	1. Increase use of low power consuming fans. 2. Avoid use of light, fan when adequate natural light is present. 3. Create awareness about electricity saving with internal memos. 4. Use renewable energy resources like solar energy panels, wind mills etc. 5. Monitor and control the overflows of water tank or use off sensors.

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RANGAPARA COLLEGE Estd.-1979 Dt..... SONITPUR, ASSAM

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