GREEN AND ENVIRONMENT AUDIT

(2022 – 2023)

FOR

BIKALI COLLEGE
DHUPDHARA, KAMRUP, ASSAM-783123

Conducted By

ENVIRO-TESTING-SERVICES
NOONMATI, GUWAHATI-781020, ASSAM
MAY -2023

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01	*28-05-2023*	*Issued For* Bikali College Dhupdhara, Kamrup, Assam-783123		
No.	Date	Description	Checked	Approved
ETS, ENVIRO-TESTING-SERVICES Guwahati	**A Report on Green and Environment Audit**		*Job No. :ETS /BC /GEA/ 01 dated 28/05/2023* *Doc: GEA Report*	

ETS-GUWAHATI
ENVIRO-TESTING-SERVICES
Accredited by NABL, SPCB Assam, ISO 9001, ISO 45001, MSME
Bijoy Nagar, House No – 35, Noonmati, Guwahati -781020, Assam
Telephone : 91(0) 3612551788, 919435492765, Email : envirotesting2011@gmail.com

Ref: ETS/BC/GER/01/2023 **Date: 28th May 2023**

COMPLETION CERTIFICATE

This is a Green and Environment Audit report compiled on the basis of field survey and field investigation of various environmental components such as Land Use Land Cover, Micro meteorological Quality, Ambient Air Quality, Drinking Water Quality, Soil Quality, Noise Quality, Illumination Level, Carbon Footprint, Flora, Fauna along with environmental and Energy management practices.

The present work was carried out at the request of the Principal, Bikali College, Dhupdhara, Kamrup, Assam-783123 vide order number BC /Green & Environment Audit /Invitation/2022 Dated 20.02.2022. The findings of the study carried out during the period of March 2022 to April 2023 are presented in this report. All the Analysis of Environmental Quality Parameters is done at the laboratories of Enviro Testing Services, Noonmati, Guwahati. The Laboratory is duly recognised by NABL, State Pollution Control Board, Assam, ISO 9001 :2015; ISO 14001:2015 and MSME.

For Enviro Testing Services

ENVIRO TESTING SERVICES GUWAHATI, ASSAM

Date: 28.05.2023

(Dr. Hrishikesh Sarma)
Ex. Director, ETS, Guwahati

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ACKNOWLEDGEMENT

Green and Environment Audit Team thanks Dr. Monoj Gogoi*, Principal, Bikali College for assigning this important work of Green and Environment Audit. We appreciate the cooperation to us for completion of the study.*

We would like to convey our sincere thanks to Rakhee Naiding, Co-ordinator, IQAC and all the Heads of the various Departments of Bikali College for giving us necessary inputs to carry out this very vital exercise of Green and Environment Audit.

We would like to convey Our thanks to Dr. Bonti Bordoloi, Convener, Green Campus Committee for her constant co-operation and help during the study period.

Our special thanks go to Princi Gogoi, Co-ordinator, Vasundhara Nature Club for her cooperation and active participation in spearheading the green practices in the college campus.

We are also thankful to office staff and other members who were actively involved while collecting the data and conducting field survey

For Enviro Testing Services

(Dr. Hrishikesh Sarma)
Ex. Director, ETS, Guwahati

Date: 28.05.2023

Contents

1.0 Introduction of the Institute

1.1 Brief Introduction of the Institute

Bikali College, located in Dhupdhara, Assam, is a renowned institution of higher education with a history deeply rooted in the dreams and aspirations of 52 villages within the "Bikali Mouza" region. Established on April 14, 1982, this institution is a testament to the relentless efforts and missionary zeal of the local communities to provide their children with access to higher education. Over the years, Bikali College has evolved into a prominent educational hub, serving as a symbol of hope and opportunity for the youth of the region, equipping them with knowledge and empowering them to pursue their dreams.

Bikali College, currently affiliated with Gauhati University, offers a diverse range of academic programs. It provides bachelor's degree courses in Arts, Science, and Commerce, as well as postgraduate Master's degree programs in Assamese and Geography. In addition to these offerings, the college extends certificate courses in Higher Secondary education across all three streams under AHSEC (Assam Higher Secondary Education Council). The Arts stream of the college became a part of the Deficit Grants-in-Aid scheme of the government of Assam in 1992, eventually being provincialized in 2005. Furthermore, Bikali College achieved UGC recognition under sections 2(f) and 12(B), effective from the 10th Plan. Notably, the Commerce and Science streams were introduced as self-financing courses in the years 2005 and 2015, respectively, further diversifying the educational opportunities available at the institution.

Bikali College offers a comprehensive learning environment equipped with modern facilities to enhance students' educational experiences. The institution boasts ICT-enabled classrooms, a well-equipped computer laboratory, a central library with internet access, a digital library, and advanced seminar and conference halls, all of which contribute to a dynamic and interactive learning atmosphere. Furthermore, to foster students' hidden talents and promote co-curricular and extracurricular activities, the college provides indoor and outdoor sports facilities, gymnasium halls, literary and academic societies, as well as opportunities for participation in organizations such as NCC, NSS, Scouts & Guides. Beyond academics, the college's serene and environmentally conscious campus environment complements its commitment to holistic education.

1.2 Location:

Location	:	Rural, Tribal
Campus Area	:	15.99 acres
Built Up Area	:	33452 Sq. mtrs

1.3 Physical structure:

Total No of Departments	:	14
Auditorium	:	2
Hostel	:	3
Cafeteria	:	1
Gymnasium	:	1
Libraries	:	1

1.4. Student, Teachers and Employees strength:

Total No of Students	:	1490
Total No of Teachers	:	53
Total No. of Employees	:	6

2.0 Brief Outlines of Green Audit

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of organization. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere.

Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future.

As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more predominant. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, which is a self-governing organization of India that accredits the institution according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

3.0 Objective of Green Audit

(i) Landuse & Built-up Environment
(ii) Geographical Location with Campus Map
(iii) Present status of Micro meteorology, Ambient air, Noise, Soil quality , Water quality & Illumination Level
(iv) Floral and Faunal diversity
(v) Management Practices with respect to Water, Waste and Energy
(vi) Carbon footprint
(vii) Organizational Level Efforts

4.0 Methodology

Methodology includes

(i) Physical inspection of the campus
(ii) Collection of Primary & Secondary Data
(iii) Observation and review of the documentation
(iv) Data analysis

5.0 Objective wise Analysis

5.1 Landuse & Built-up Environment

The land use and land cover distribution of Bikali College's campus area has been meticulously examined through a comprehensive methodology. It encompasses area about 64709 sq. mts. and total built-up area is 33452 sq.mts. Each distinct feature within the campus are as follows

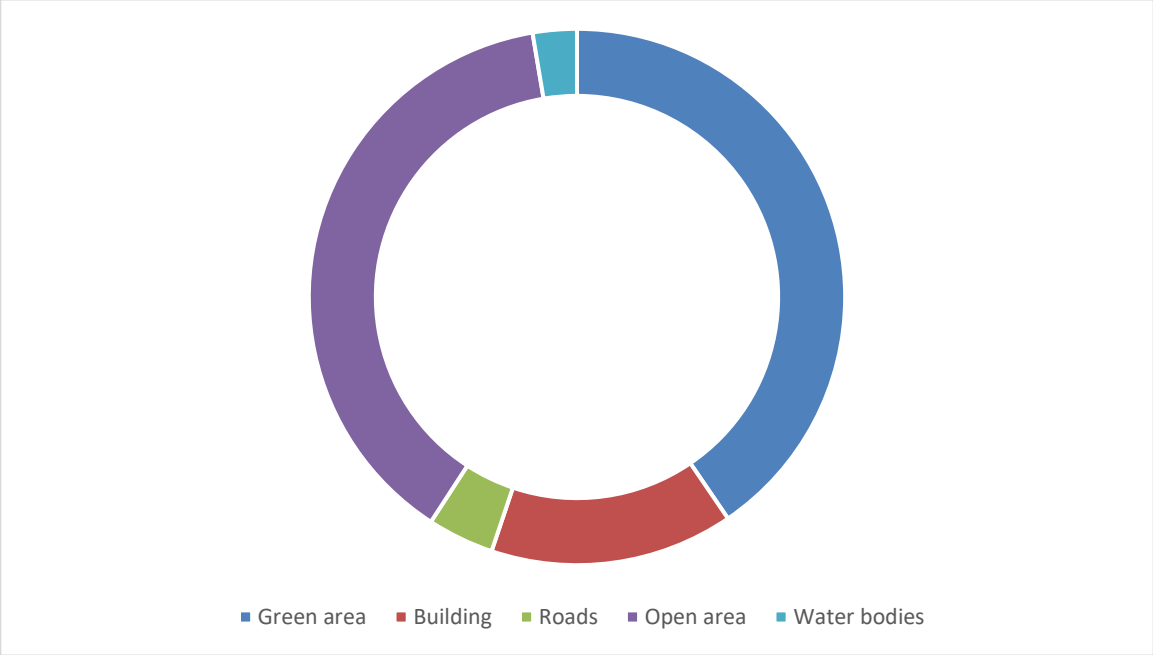
Green Area: This category, constituting 45% of the campus area, encompasses lush vegetation, including forest, nursery, and medicinal garden.

Building: Occupying 15% of the campus area, the built environment comprises academic structures, administrative buildings, an indoor stadium, a canteen, and student accommodations.

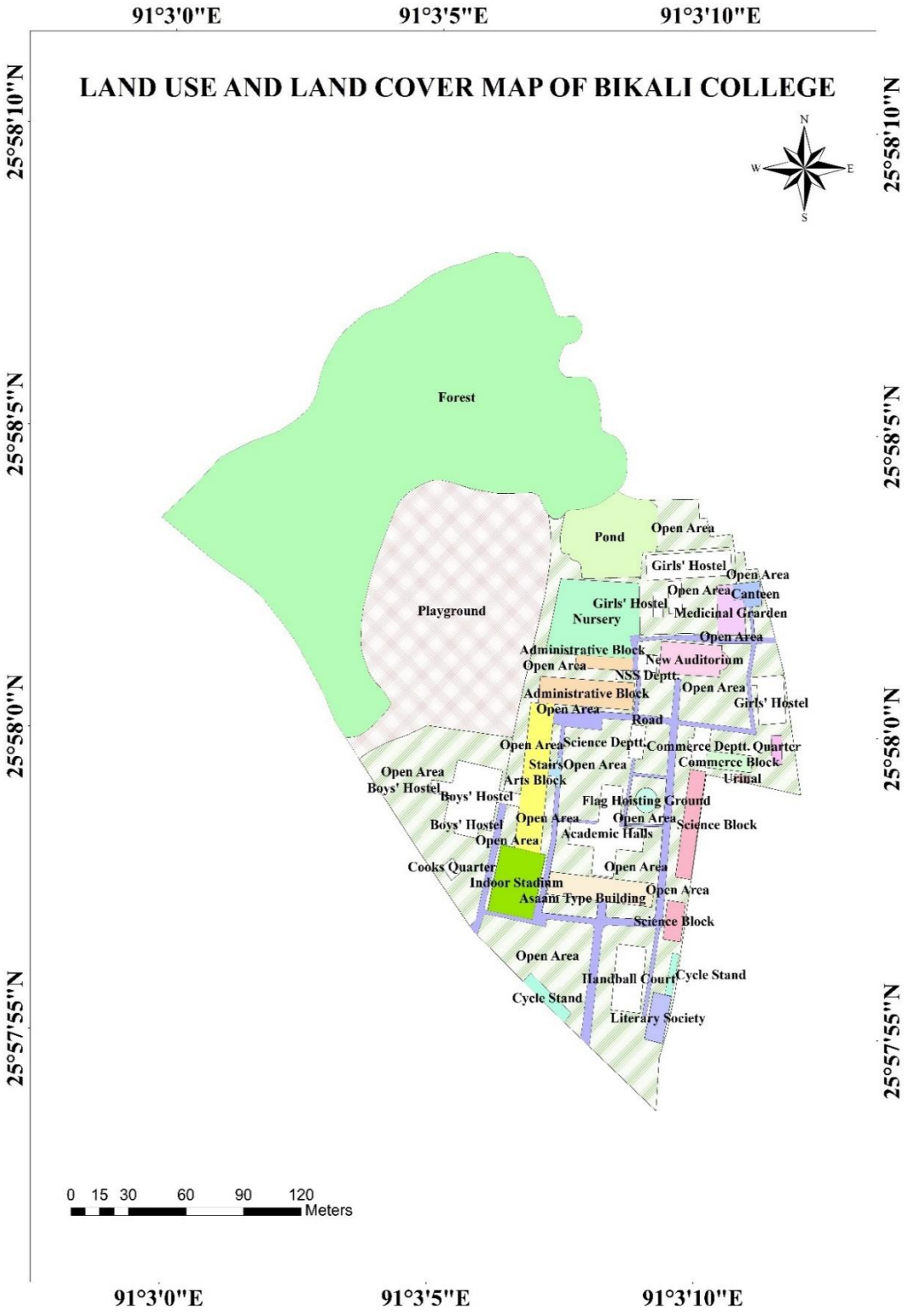
Roads: Comprising 4% of the campus area, comprising pathways and paved surfaces of college.

Open Area: Encompassing 33% of the campus, open spaces were delineated to include courtyards, playground, and undeveloped land.

Water Bodies: Constituting 3% of the campus area, water bodies such as ponds were carefully identified and measured.



Different land use classes at Bikali College



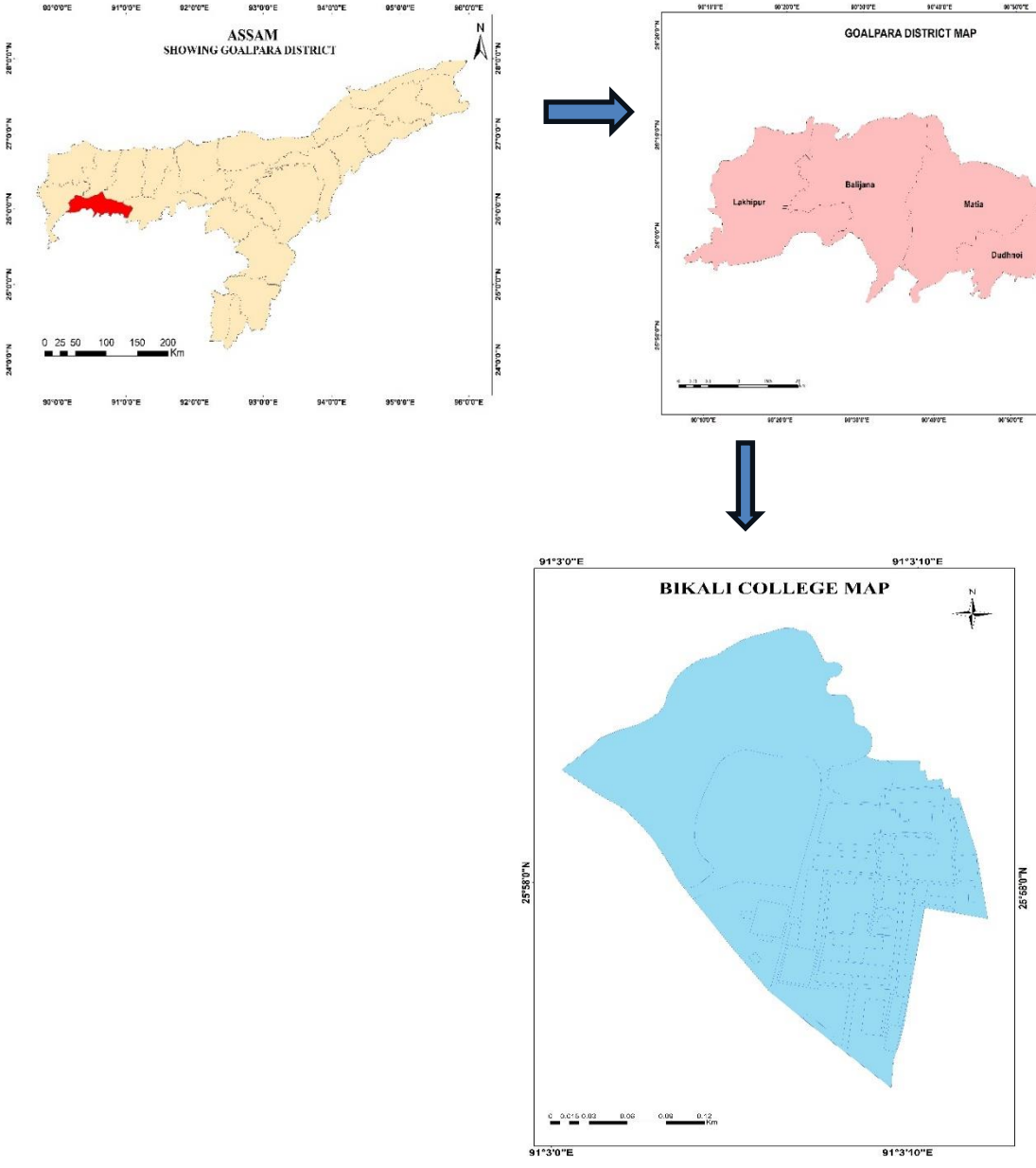
Land Use and Land Cover of Bikali College

5.2 Geographical Location with Campus Map

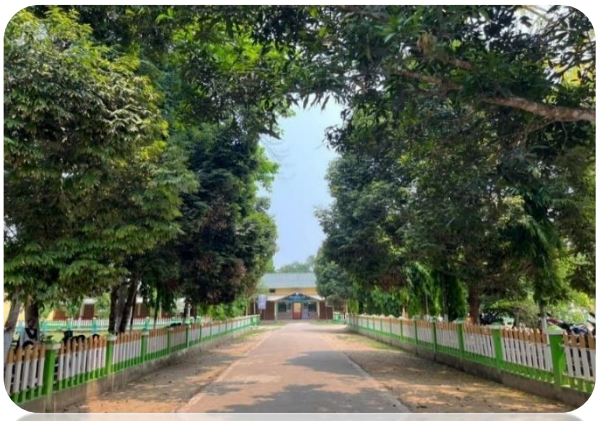
Bikali College is situated at Dhupdhara, Assam-783123 with geo-position

Latitude 25.966822^0 N

Longitude 91052253 E



Locational Map of Bikali College



Glimpses of Bikali College

5.3 Present status of Micrometeorology, Ambient air, Water quality and Soil Quality

5.3.1 Micrometeorology Status

Monitoring Station	Date	GPS Coordinate
Micrometeorology	25.03.2023	N 25.964852º E 91.052722º

Table 1 : **Micrometeorological Study at Bikali College**

S/N	Parameters	Unit	Metrological Data	
1	Temperature	^{0}C	Min	16
			Max	32
2	Relative Humidity	%	10.30am	71
			16.30pm	78
3	Wind Speed	Km/hr	10.30am	3.6
			16.30pm	9.8
4	Wind Direction	-	10.30am	SE
			16.30pm	SSW

5.3.2 Ambient Air Quality

The average results obtained in the month of March 2023 at Bikali College are presented in Tables 2. All the results meet the National Ambient Air Quality (NAAC) standards.

Monitoring Station	**Date**	**GPS Coordinate**
Ambient Air Quality	25.03.2023	N 25.964852º E 91.052722º

Table 2: Ambient Air Quality at Bikali College

AMBIENT AIR QUALITY						
Duration (24 Hour)			Average			
S/N	Parameters	Unit	Concentration	Limit	Weather Condition*	Test Method
1	Particulate Matter (PM10)	µg/m^3	68.4	100	Clear	IS5182(23)
2	Particulate Matter (PM2.5)	µg/m^3	44.1	60		CPCB Guideline
3	Sulphur Dioxide (SO_2)	µg/m^3	7.4	80		IS5182(2)
4	Nitrogen Dioxide(NO_2)	µg/m^3	8.1	80		IS5182(vi)
5	Ammonia (NH_3)	µg/m^3	3.8	400		Indophenol Blue Method
6	Hydrocarbon (HC)	mg/m^3	0.31	-		CPCB Guideline
7	Carbon Monoxide (CO)**	mg/m^3	0.21	04		CPCB Guideline

** Carbon Monoxide (CO) Limit is One Hour Average

5.3.3 Noise Quality study

In the present study, the noise level measurements were recorded using a precision sound level meter (Envirotech SLM100) with a measuring range between 0-150 dB. The instrument is calibrated before the measurements are recorded. The microphone was placed at 1.0 m from the facades of house, away from any reflecting surface and 1.2 m above the ground. In each location, adequate number of samples was taken at 10-minute intervals. The noise levels were recorded during day time and meteorological conditions: no wind no rain. The Noise Level Monitored (Table 3) and analyzed is found to be within the CPCB Prescribed Limit

Table 3: Noise Quality at Bikali College

S/N	Locations	**GPS Co-ordinate**		Daytime SPL(dB) [6 am to 10 pm]		CPCB Limit SPL(dB)
				Leq	Range	
1	College Main Gate	N 25.966822^{o}	E 91.052436^{o}	65.2	62.1-74.3	75
2	Near ADM Block	N 25.966865^{o}	E 91.052465^{o}	61.2	59.2-68.3	
3	General Library	N 25.966824^{o}	E 91.052236^{o}	56.7	39.3-58.1	
4	Computer Lab	N 25.966824^{o}	E 91.052236^{o}	58.2	46.2-52.8	
5	Class Room BA	N 25.966861^{o}	E 91.052436^{o}	61.1	49.5-68.2	
6	Class Room No-1	N 25.960937^{o}	E 91.049785^{o}	58.7	42.3-58.5	
7	Class Room No- 4	N 25.966774^{o}	E 91.052161^{o}	62.2	59.2-72.3	
8	Near College Canteen	N 25.966822^{o}	E 91.052253^{o}	58.6	46.6-64.3	

5.3.4 Drinking Water Quality

Drinking Water and Pond Water samples were collected from various locations of Bikali College and the sampling locations are as follows

Sr.No.	Sampling Locations of Drinking Water Facility	GPS Co-ordinate	
1	Inside college drinking water facility (DW1)	N 25.966865°	E 91.052465°
2	Girls Hostel drinking water facility (DW2)	N 25.966822°	E 91.052436°

Results of analysis of the most relevant water quality parameters are given in Tables 4. The test method for all the parameters along with tolerance limit as suggested by IS-10500 is presented in Table 3. All the parameters with respect to drinking water quality are found to be within the tolerance limit as suggested by IS: 10500.

Table 4: Various Test Methods of Water Quality Monitoring at Bikali College

S/N	Parameters	Test Methods	IS-10500
1	Odour	APHA 20th Edition, 2150 B	Unobjectionable
2	Temperature (^{0}C)	Thermometry Method	50
3	Turbidity (NTU)	APHA 20th Edition, 2130B	5
4	pH	APHA 20th Edition, 4500-	6.5 – 8.5
5	Conductance (mS/cm)	APHA 20th Edition, 2510B	-
6	Total Dissolved Solid (mg/L)	APHA 20th Edition, 2540 B	500
7	Total Suspended Solid (mg/L)	APHA 20th Edition, 2540 B	-
8	Chloride (mg/L)	APHA 20th Edition, 4500-	250
9	Residual Chlorine (mg/L)	APHA 20th Edition, 4500-	0.2
10	Sulphates as SO_4 (mg/L))	APHA 20th Edition, 4500-	250
11	Nitrate (mg/L)	APHA 20th Edition, 4500-	45
12	Fluoride (mg/L)	APHA 20th Edition, 4500-F^-	1
13	Calcium (mg/L)	APHA 20th Edition, 3500 B	75
14	Magnesium (mg/L)	APHA 20th Edition, 3500 B	-
15	Iron (mg/L)	APHA 20th Edition, 3111 B	0.3
16	Manganese	APHA 20th Edition, 3111 B	0.1
17	Zinc	APHA 20th Edition, 3111 B	5
18	Arsenic	APHA 20th Edition, 3112 B	0.01
19	Total Coliform (MPN/100 mL)	APHA 20th Edition, 3111 B	0
20	Faecal Coliform (MPN/100 mL)	APHA 20th Edition, 9221 E	0

Table 5 : Results of Water Quality Monitoring at Bikali College

S/N	Parameters	Unit	DW1	DW2
1	Odour	--	NS	NS
2	Temperature (^{0}C)	^{0}C	27	27
3	Turbidity (NTU)	NTU	0.3	0.4
4	pH	-	7.1	7.2
5	Conductance (mS/cm)	mS/cm	0.48	0.73
6	Total Dissolved Solid (mg/L)	mg/L	69.0	74.0
7	Total Suspended Solid (mg/L)	mg/L	24.0	54.0
8	Chloride (mg/L)	mg/L	21.1	22.3
9	Residual Chlorine (mg/L)	mg/L	<0.01	<0.01
10	Sulphates as SO_4 (mg/L))	mg/L	9.6	16.2
11	Nitrate (mg/L)	mg/L	7.6	8.1
12	Fluoride (mg/L)	mg/L	0.23	0.18
13	Calcium (mg/L)	mg/L	24.1	22.4
14	Magnesium (mg/L)	mg/L	26.2	24.2
15	Iron (mg/L)	mg/L	0.18	0.21
16	Manganese	mg/L	0.002	0.003
17	Zinc	mg/L	0.02	0.04
18	Arsenic	mg/L	<0.001	<0.001
19	Total Coliform (MPN/100 mL)	mg/L	03	03
20	Faecal Coliform (MPN/100 mL)	mg /L	Nil	Nil

5.3.5 Quality of Soil in the Study Area

Soil sample collected locations of the study area is as follows.

Sr.No.	Sampling Locations	GPS Co-ordinate	
1	Inside the College Campus	N 25.966822°	E 91.052253°

It was analyzed for the most relevant physical and chemical parameters. It may be noted from the results of analysis that many of the soil samples have slightly acidic pH . The presence of N, P, K and organic matter content is considerable for all the locations.

Table 6: Results of Soil Quality Monitoring at Bikali College

S/N	Parameters	[S1]
1	PH (1: 2)	6.8
2	Conductance (ms)	0.43
3	Sand (%)	83.7
	Silt (%)	1.7
	Clay (%)	14.6
4	Water Holding Capacity (%)	46.2
5	Bulk Density (gcm^{-3})	1.6
6	Cation Exchange capacity (meq/kg)	0.36
7	Nitrogen (%)	0.08
8	Potassium (mg/kg)	18.2
9	Sodium (mg/kg)	23.1
10	Calcium (g/kg)	19.8
11	Magnesium (mg/kg)	36.2
12	Phosphorous (mg/kg)	16.8
13	Organic matter (%)	1.17
14	Sodium Absorption Ratio (SAR)	1.8
15	Zinc (mg/kg)	16.1
16	Copper (mg/kg)	4.8

5.3.6 Illumination Study

Adequate, well-balanced levels of illumination are essential in establishing safe and productive working conditions. Good lighting plays an important role in safeguarding health at work by enabling employees to perform their work comfortably and efficiently. Accordingly, there should be an appropriate level of the light falling on the surface on which workers are working. Excessive contrast, strong glare and light flickering in their fields of vision are also inappropriate.

To ensure good lighting the person responsible for a workplace should arrange for a suitable assessment on the lighting levels in the workplace. Good lighting can decrease errors by 30-60 % as well as decrease eye-strain and the headaches, nausea, and neck pain which often accompany eyestrain.

The Lux Levels were measured during day time in the college campus as well as in the office buildings. In this present study the Installed load Efficacy Ratio (IIER) are calculated as per BEE Lighting Code.

1	**A**	**B**	**C**	**D**
2		**Equation**	**Value**	**Unit**
3	Time of Measurement		Day time	
4	Room Identification			
5	Number Of lamps			
6	Length of the room			m
7	Width of the room			m
8	Floor Area	A=Length*Width		m^2
9	Height of the lamp from the Plane of measurement			m
10	Room index	(L*W)/Hm*(L+W)		
11	Average room illuminance	(Max+Min.lux)/2*Correction factor		lux
12	Measured/estimated circuit power			W
13	Installed lighting Efficacy	(Avg.illum*Floor area)/Circuit watts		lm/W
14	Target lighting efficacy			lm/W
15	Installed lighting Efficacy ratio (ILER)	Installed lighting efficacy/Target lighting efficacy		

Installed lighting Efficacy ratio (ILER)	**Assessment**
0.75 or above	Satisfactory to good
0.51 to 0.74	Review suggested
0.5 or less	Urgent action required

Table 7: Results of Installed lighting Efficacy ratio (ILER) at B P Chaliha College

S/N	Location	GPS Co-ordinate		ILER	Assessment
1	ADM Block	N 25.966865º	E 91.052465º	2.74	Satisfactory
2	General Library	N 25.966824º	E 91.052236º	3.16	Satisfactory
3	Computer Lab	N 25.966824º	E 91.052236º	2.28	Satisfactory
4	Class Room BA	N 25.966861º	E 91.052436º	2.76	Satisfactory
5	Class Room No-1	N 25.960937º	E 91.049785º	2.36	Satisfactory
6	Class Room No- 4	N 25.966774º	E 91.052161º	2.27	Satisfactory
7	Practical Room	N 25.966822º	E 91.052253º	2.18	Satisfactory
8	College Canteen	N 25.966822º	E 91.052253º	2.38	Satisfactory

Ambient Air Monitoring at Bikali College

Noise Monitoring at College Premises

Illumination Study at different locations of Bikali College

5.4 Floral and Faunal diversity

5.4.1 Floral Biodiversity

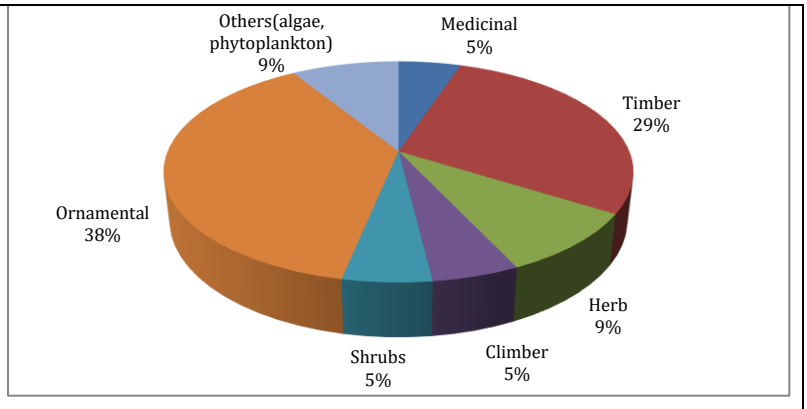
The survey was conducted in the month of February and March 2023 following the Quadrat sampling procedure. The college campus is very rich from biodiversity point of view. Different economically important plants like timber yielding plants, medicinal plants, ornamental plants etc. are found in college campus. In the study area the vegetation is a complex of plant communities with considerable diversities. Since the plants showed normal and very good growth, there appears to be no adverse environmental factors prevailing in the area.

Plants of all types, in general, showed healthy and luxuriant growth in terrestrial, aquatic and aerial habitats in the study areas. Leaf diseases (leaf spot and shot-holes) on the aerial parts of the plants were very infrequently observed and did not show any adverse effect on the growth of the plants.

In this present study, different types of flora along with the total of species of the respective flora identified in the college campus are as follows.

Different types of flora	Total Number of Individual species
Medicinal	133
Timber	747
Fruits	88
Herb	236
Climber	132
Shrubs	134
Ornamental	984
Others(algae, phytoplankton)	230

Various % of floral composition at Bikali College campus



List of Plants at Bikali College Campus are presented in Table 7 - 13

Table 7 : List of Timbers at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Shorea robusta	Sal	20	Vulnerable
2	Tectona grandis	Segun	4	Endangered
3	Magnolia champaca	Titachopa	6	Endangered
4	Neolamarckia cadamba	Kadam	2	Least concern
5	Ficus benghalensis	Bot gos	3	Least concern
6	Dalbergia sissoo	Sisu	5	Vulnerable
7	Grevillea	Silver oak	1	Endangered
8	Gmelina arborea	Gomari	3	Least concern
9	Pelthophorum pterocarpus	Copper pod	3	Critically endangered
10	Delonix species	Gulmohor	5	endemic
11	Artocarpus Hetrophyllus	Kothal	2	Least concern
12	Ficus Relegiosa	Aahat	3	Least concern
13	Schima wallichi	Makri sal	690	Rare

Table 8: List of Medicinal Plants at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Terminalia chebula	Xilikha	3	Least concern
2	Azadirachta indica	Neem	18	Least concern
3	Aquilaria malaccensis	Agarwood	4	Endangered
4	Oroxylum indicum	Dingdinga	2	Endangered
5	Terminalia arjuna	arjun	3	Endemic
6	Ptercarpus santalinus	Ronga sondon	2	Vulnerable
7	Nyctanthes arbor tristis L	Sewali phul	3	Endemic
8	Aloevera	Aloevera	30	Vulnerable
9	Catharanthus roseus	Nayantora	18	Endemic
10	Murrya koenigii	Narasingha	5	Endangered
11	Paederia foetida L.	Bhedailota	33	Vulnerable
12	Swertia chirayita	Chirota tita	12	Critically endangered

Table 9 : List of Shrubs at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Moris spp.	Mulbery	5	Rare
2	Solanum indicum L.	Tit bhekuri	10	Least concern
3	Habiuscus rosa sinensis	Jobaful	25	Least concern
4	Catheranthus roseus	Nayantora	20	Vulnerable
5	Curpessus macrocarpa	goldcrest	50	rare
6	Raulfia sarpentina	Sarpagandha	10	Vulnerable
7	Nerium oleander	korobi	2	Vulnerable
8	Mussaenda erthyrophylla	Ashanti blood	12	Vulnerable

Table 10 : List of Herbs at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Chenopodium album L.	Bhatua/Jilmil	30	Rare
2	Centella asiatica	Bor manimuni	20	endemic
3	Amaranthus virdis L.	Khutura sak	20	Least concern
4	Hydrocotyle sibthorpioides	Xaru manimuni	22	Least concern
5	Houttuynia cordata	Masundari	4	Rare
6	Leucas plukenetii	Doron xak	50	Least concern
7	Mentha virdis L	Pudina	10	Vulnerable
8	Oxalis corniculata	Tengesi	30	Vulnerable
9	Zoysia japonica	Duboribon	50	Least concern

Table 11: List of Climbers at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Tinospora cordifolia	Giloi	50	Rare
2	Piper betle L.	Pan	3	Least concern
3	Cuscata	Amarbel	20	Least concern
4	Cucurbita pepo	Ronga lau	5	Least concern
5	Mikania micrantha	Assamlota	50	Vulnerable
6	Hiptage benghalensis	Madhobilota	2	Endangered
7	Clitoria ternatea	Aparajita	2	Endangered

Table 12: List of Ornamental Plants at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Monoon longifolium	Debadaru	220	Least concern
2	Delonix Regia	Krishnachura	6	Vulnerable
3	Caesalpinia pulcherrima	Radhachura	3	Vulnerable
4	Mesua ferrea L.	Nahar	9	Least concern
5	Cassia Fistula	Sonaru	2	endangered
6	Mimusops elengi L.	Bokul	4	Least concern
7	Acacia auriculiformis	Acacia	1	Least concern
8	Polyalthia longifolia	Heujiya Champa	1	Threaten
9	Senna siamea	Sia Sonaru	7	rare
10	Millettia pinnata	Korsowa	50	Least concern
11	Thuja	Morpangkhi	19	endangered
12	Garden Corton	Corton	195	threaten
13	Morutious hemp	Furcarea	3	Data deficit
14	Syzygium gratum	Syzygium	123	Vulnerable
15	Duranta Erecta	Bogan kait	6	endangered
16	Bougainvillea	Kagaj phul	10	Vulnerable
17	Aralia spp.	Green araliya	243	rare
18	Euphorbia tithgmaloides	Euphorbia	9	Threaten
19	Tabernabmontana divaricata	kasanda	36	Vulnerable
20	Hibuscus rosa sinensis	China Rose	11	Vulnerable
21	Cycads	cycas	7	rare
22	Epipremnum aureum	money plant	1	Least concern
23	orchid	kopou	1	endangered
24	Cascabela thevetia	Luckynut	1	endangered
25	Magnolia champaca	Gulmohor	1	Crictically endangered
26	Pinus roxburgii	Pine	10	Threaten
27	Solenostemon scutellarioides	-	5	Least concern

Table 13: List of Fruit Plants at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Mangiifera indica	Aam	3	Least concern
2	Phyllanthus emblica L. (Euphorbiaceae)	Amlokhi	3	Vulnerable
3	Zizyphus jujuba	Bagori	3	Least concern
4	Cocos nucifera	Narikol	15	Least concern
5	Psidium guajava	Guava	7	threaten
6	Malus pumila	Apple	5	Threaten
7	Citrus limon	Lemon	25	Vulnerable
8	Manilkara zapota	Siku	4	Threaten
9	Flacourtia jangomas	Ponial	2	Vulnerable
10	Elaeocarpus floribundus	Jolphai	4	Crictically endangered
11	Carica papaya L	Amita	2	Least concern
12	Syzygium samarangense	Water apple	10	endangered
13	Averrhoa carambola L	Kordoi	5	Least concern

Table 14: List of others Plants (algae, phytoplankton) at Bikali College

Sl No.	Scientific Name	Local Name	No.s of individual Species	Ecological Status
1	Nitella flexilis	Xelai	40	Endangered
2	Volvox spp.	volvox	40	Least concern
3	Chara spp.	chara	50	Least concern
4	Bryophyta	moss	100	Vulnerable

Psidium guajava

Delonix regia

Schima wallichii

Nerium oleander

Cassia nodosa

Monoon longifolium

Few Photographs of Floral Diversity at Bikali College

5.4.2 Faunal Biodiversity

In view of the need to determine the faunal characteristics of the study areas within the constraints of time, a checklist survey method was followed. Checklist surveys are employed primarily to confirm the presence of species, and sometimes the number of individuals of species in a surveyed area.

Either invertebrates or vertebrates, the variety of animals enriched the region with its ecological significance and balancing the ecosystem. Bikali College campus has variety of faunal species including different kinds of amphibia, birds, reptiles and few mammals.

The survey was conducted during February – March 2023. A large number of different species were recorded in the Bikali College Campus. The faunal biodiversity recorded in the college campus is presented in the Table 12.

Table 15 : Faunal biodiversity recorded in the college campus

Ecological Status	**No.s of individual Species**
Critically endangered	4
Data deficit	1
Endemic	5
Rare	9
Threaten	7
Endangered	15
Least concern	30
Vulnerable	22
Total	93

Egret (College Playground)

Fluvous Breasted

Passer domesticus

Columbidae

Acridotheres tristis

Argiope florida

Few Photographs of Faunal Diversity at Bikali College

Table 16: List of Birds (Aves) species recorded within College Campus

SL No.	Species Name	Common Name	IUCN Status (V-3.1)
1.	*Ardea alba*	Greater Egret	LC
2.	*Dendrocopos macei*	Fulvous-breasted woodpecker	LC
3.	*Passer Domesticus*	House Sparrow	LC
4.	*Acridotheres tristis*	Common Myna	LC
5.	*Coppersmith barbet*	Barbet bird	LC
6.	*Athene brama*	Spotted owlet	LC
7.	*Alcedo atthis*	Common kingfisher	LC
8.	*Eudynamys scolopaceus*	Asian Koel	LC
9.	*Dicrurus macrocercus*	Black Drongo	LC
10.	*Columba livia*	Pigeon	LC
11.	*Anas platyrhynchos*	Mallard Duck	LC
12.	*Halcyon smyrnensis*	white-breasted kingfisher	LC
13.	*Motacilla alba*	white wagtail	LC

Table 17. List of Insects species recorded within College Campus

SL No.	Species Name	Common Name	IUCN Status (V-3.1)
1.	*Agriocnemis lacteola*	Milky midget	LC
2.	*Junonia almana*	Peacock pansy	LC
3.	*Melanitis leda*	common evening brown	----
4.	*Apis dorsata*	Honey bee	LC
5.	*Argiope florida*	Florida garden spider	LC
6.	*Junonia Atlites*	Grey Pansy	LC
7.	*Oecophylla smaragadina*	Asian weaver ant	LC
8.	*Papilio polytes*	common Mormon	LC
9.	*Pyrops candelaria*	Litchi bug	LC
10.	*Potamarcha congener*	Dragon fly swampwatcher	LC
11.	*Culicidae*	Mosquito	LC
12.	*Periplaneta americana*	American cockroach	LC
13.	*Musca domestica*	Housefly	LC
14.	*Coccinellidae*	Lady bug	LC
15.	*Chilopoda.*	House Centipede	-----

Table 18: List of Ornamental Fish species available in Aquarium House and Aquariculture centre, Bikali college.

SL No.	Species Name	Common Name	IUCN Status
1.	*Cyprinus rubrofuscus*	Milky carp	LC
2.	*Puntigrus tetrazona*	Tiger barb	LC
3.	*Pterophyllum*	Angel Fish	LC
4.	*Betta splendens*	Betta fish	LC
5.	*Trichogaster fasciata*	Dwarf Gourami	LC
6.	*Colourful Neon Glowing Fish*	----------	----------
7.	*Mystus Tengera*	Tengra fish	LC
8.	*Monopterus cuchia*	Cuchia	LC
9.	*Botia derio*	Boita fish (queen loach)	LC
10.	*Puntius ticto*	Twospot barb	LC
11.	*Xenentodon cancila*	Garfish	LC
12	*Ctenops nobilis*	Gourami	LC
13.	Oranda	Gold fish	LC
14.	Shubunkin	Gold fish breed	--------
15.	Butterfly fish	---------	--------

Table 19: List of Reptiles and Amphibians recorded within College Campus

SL No.	Species Name	Common Name	IUCN Status (V-3.1)
1.	*Argyrophis diardii*	Diard's blind snake	LC
2.	*Amphiesma stolatum*	Buff striped keelback snake	LC
3.	*Naja naja*	Indian cobra	LC
4.	*Ptyas mucosa*	Oriental rat snake	LC
5.	*Enhydris enhydris*	Rainbow water snake	LC
6.	*Duttaphrynus melanostictus*	Asian common toad	LC
7.	*Chamaeleonidae*	Chameleon	LC
8.	*Hyla*	---------	LC

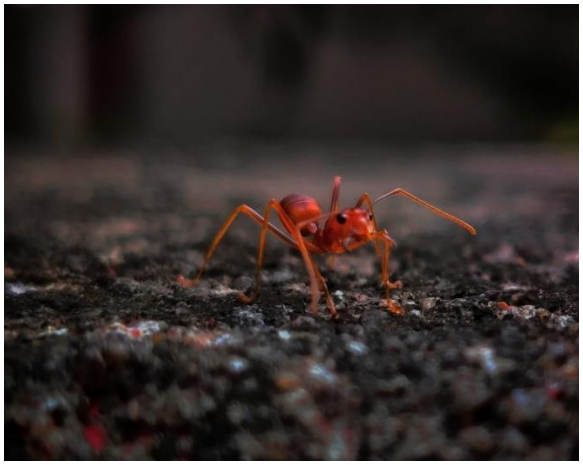
Squirrel

Pyrrharctia Isabella

Diptera

Psilopogon

Formicidae



Oecophylla smaragdina

Few Photographs of Faunal Diversity at Bikali College

Anser

Diptera

Heteropoda Venatoria

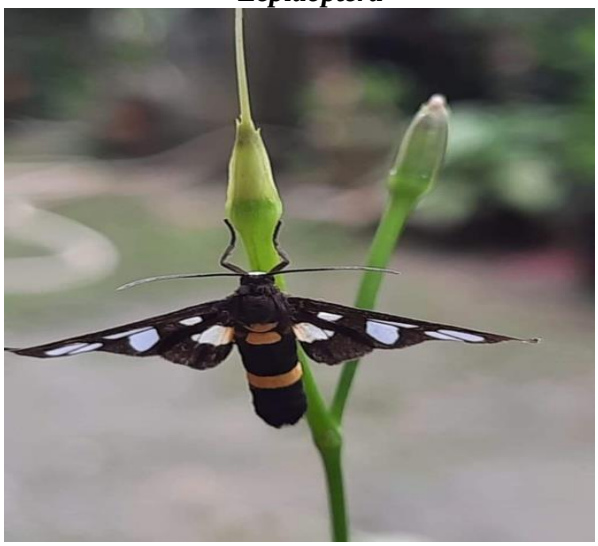
Psilopogon asiaticus

Dryocopus pileatus

Apis dorsata fabricus

Lepidoptera

Lepidoptera



Lepidoptera

Lepidoptera

Few Photographs of Faunal Diversity at Bikali College

Some of the few species found in the Bikali College Aquarium House

Dwarf gourami

Betta fish

Milky carp and Tiger barb fishes

Mystus tengera

A pair of Angel fish

A flock of beautiful Neon glowing fishes

Few Photographs of Faunal Diversity at Bikali College

5.5 Management Practices with respect to Water, Energy and Waste

5.5.1 Water Management Practices

- Water storage capacity =18700 liters
- Water tank cleaning = Twice a year
- Daily consumption of water =15000 liters

Water storage capacity

S/N	*Location*	*Number of storage*	*Capacity*
1	Academic Block	2	2000
2	New Girls Hostel	3	2000
3	Old Girls Hostel	1	2000
4	Old Girls Hostel	1	1000
5	Boy's Hostel	1	2000
6	Boy's Hostel	1	1000
7	Science Block	1	1000
8	College Canteen	1	1000
9	Commerce Block	1	700
10	Rain Water Harvesting Unit	1	2000

Observations

(i) No leaking taps, pipes, valves were identified in the college premise.

(ii) There are no any push button taps

(iii) The college has set-up at present setup two rain water harvesting unit having 1000 Lt. capacity on the Academic building. The stored water is mainly used in gardening and many other purposes. College planning to setup more unit in the college campus.

(iv) The college has optimized its irrigation system at night or early morning hours to minimize evaporation for gardening.

(v) Water escaping from overflows either inside or outside building was not identified during onsite audit.

(vi) College uses pond water for various agricultural activities

5.5.2 Energy Management Practices

- Electric Load = 34 KW
- Electric Bill paid for the period of 2022 -23 (Bill Attached) =Rs. 267136.00
- **Electrical fittings in various buildings of Bikali College**

Major Working Area	Luminaries used	Wattage
Class Room	LED Bulb/LED Tube	9W/20W
Library	LED Bulb/LED Tube	9W/20W
Office	LED Bulb/LED Tube	9W/20W
Conference hall	LED Bulb/LED Tube	9W/20W
IQAC	LED Bulb/LED Tube	9W/20W
Hostel	LED Bulb/LED Tube	9W/20W

Renewable Energy Facility at College

Observations:

i) College has 20 kVA Diesel Generator set for uninterrupted power supply in case of supply failure from APDCL.

ii) There is minimum or practically negligible use of lights during day time as the building structure has possibility of daylight usage

iii) The lighting arrangements are well balanced with arrangements to switch ON and OFF

iv) The policy of college is switch off the lights and other electrical equipment when they are not in use.

v) Cleanliness is well maintained. In- house light fittings are cleaned time to time.

vi) Lights are negligibly operated during day time. The lights are operated manually. There is no any sensor-based lighting system

vii) The college is utilising natural lighting as first preference

viii) Computers, printers, photocopiers and other equipment are switched off at the end of the day.

ix) The all the electrical equipment is well operated. The overall electrification system is regularly monitored by a duly qualified electrician.

x) Regarding the use of renewable energy college has installed solar panels system and few solar street lights

xi) College Management is evaluating the feasibility of introduction of the solar PV generation.

5.5.3 Waste Management Practices

Waste can be solid as well as liquid. Solid waste can be further divided into

(i) Biodegradable- Like food waste, waste from toilets etc.

(ii) Non-biodegradable-Like Plastics, tins, glassware etc.

Along with these, there are some hazardous wastes generated from laboratories, and E-waste (Computers, electric and electronic parts). Besides this, liquid waste is also there. The institute has over 2600 stakeholders which includes students, teaching staff and non-teaching staffs, thus a huge amount of waste is generated on a daily basis.

Sl/No.	Source	Type of waste	Approximate amount of waste generated per day
1.	Classroom, staff room, Library	Paper, pen, wrappers, plastic bottles etc	Biodegradable waste = 4.5 kg Non-biodegradable waste = 3.5 kg. Liquid waste= 2.5 kL E waste per annum = 15 kg
2.	Laboratories	Chemicals, glassware, waste water and solvents	
3.	Toilets	Sanitary napkins, waste water etc.	
4.	Canteen	Disposable plates, leftover food and water, wrappers, plastic bottles etc.	
5.	Office and computer centre	Papers, wrappers, plastics, paper pins, E-waste etc.	

Waste management practices adopted by the College

1. Solid waste generated in the campus
    - dry and wet waste are collected in dustbins with two chambers which are placed in the library, teachers' common room, canteen, lecture hall, near classroom etc.
    - Segregation of solid waste into dry and wet waste in different bins.
    - Waste disposal tanks are installed in different places
    - Specific waste management plans are adopted to manage solid waste in the campus.
    - E-waste includes malfunctioning computer monitors, printers, scanners, calculators, keyboards, mouse, cables, circuit boards, bulbs etc. generated from campus is subjected to handover E-waste authorised agency
2. Toilet waste
    - Soak pits are available in toilets
    - Toilet waste is connected to large tanks. These tanks are cleaned periodically.
3. Other waste
    - Sanitary napkins are subjected to burn in the incinerator.
    - Leaf litters are used for vermicomposting.
    - Waste like broken bulbs, tubes etc. which cannot be repaired are dumped temporarily at the dumping bin and later on disposed of to the authorised agency.

Vermi Compost unit and handmade dustbin at Bikali College

6.0 Carbon footprint due to Transport System

Emission of CO_2 through transport system – both public and private – is very high in India as India is credited with the third rank in carbon emission in this regard. It is estimated that in India, 9% of the total carbon is emitted by the transport system.

In Bikali College during survey, it was observed that on an average, there are 10 numbers of four wheelers are used by faculty while 200 number of two wheelers are used by students and staff. Further student uses bicycles 400 numbers. Most of the students as well as staff uses public transportation as well as walk. It is appropriate to calculate the petrol consumption separately for four wheelers and two wheelers.

The fuel consumption by vehicles is determined by the type of vehicle, year of manufacturing, maintenance status, traffic system of the particular area, etc. High-end and medium-range bikes consume different quantities of petrol.

Conversion table to calculate carbon emission by vehicles per litre is very complicated in view of the local variables to be taken for calculation. Instead, a simple but universally accepted calculation calendar for various types of fuels and their CO_2 conversion rate was adopted.

6.1 Emissions of CO_2 by transport system at Bikali College

It is estimated that the average mileage covered by two-wheeler vehicle	10 km per day
Total working days as per GU Academic Callender	200 days
The total mileage covered by the 200 number of two wheelers per year	400000 km
The average mileage covered by four wheelers is also the same	55 km per day
The total mileage covered by 10 four wheelers per year	110000 km
The total mileage covered by two and four wheelers per year	(400000+ 110000) = 510 000 km
The standard fuel consumption for two wheelers is taken	35 km / 1L of Fuel
The standard fuel consumption for Four wheelers is taken	15 km / 1L of Fuel
The total quantity of petrol consumed by 200 number Two Wheelers	11429 L
The total quantity of fuel consumed by 40 number four wheelers per year	7333 L
The total fuel consumption per year (Two+ Four) Wheelers	18762 L
Combustion of 1 litre of diesel/petrol leads to the emission of CO_2	2.68 kg
The total quantity of CO_2 emitted by 18762 litres of fuel per year	**50282 kg**

6.2 Flora and Carbon Footprint Reduction

Carbon Absorption Capacity of Flora at Bikali College

The carbon footprint calculation is based on the following standard accepted assumptions

Total CO_2 absorption Capacity of Flora

Type of Tree	Total No. of Tree	Amount of CO_2 absorption/ tree (kg)	Total CO_2 absorption (kg)
Full Grown	1952	6.8	13274
Semi Grown	732	3.4	2489
Total amount of carbon absorption by Flora			15763

Oxygen Emission Capacity of Flora at Bikali College

Type of Tree	Total No. of Tree	Amount of O_2 Emission / tree (kg)	Total O_2 Emission (kg)
Full Grown	1952	117.6	229555
Semi Grown	732	58.8	43042
Total amount of Oxygen Emission by Flora			272597

SUMMARY OF CARBON FOOTPRINT AT BIKALI COLLEGE			
Carbon Footprint (Tonnes)		**Reduction of Carbon Footprint by Flora (Tonnes)**	
Total Carbon Footprint	**Carbon Footprint per person**	**Total Carbon Sequestration Capacity**	**Total Oxygen Emission Capacity**
50.3	**0.0323**	**15.8**	**272.6**

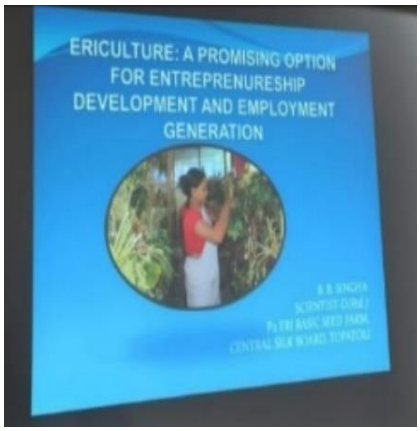
7.0. Organizational effort

S/N	Items	Responses
Organizational effort		
1	Is the college having campus green team?	Yes. Copy Attached
2	Have you established an environmental mission/vision for your campus	Yes. College has established Environment to make the students and teachers aware about the environmental issues and challenges. The college has organized several programmes addressing environmental awareness among students and community as well (e.g. World Wetland Day, 2nd February; World Environment Day, 5th June; World Wild-life Conservation Day, 4th December; World Soil Day 5th December).
3	College initiates any tree plantation programme	Yes. programme organized within and outside the college campus particularly on College Foundation Day and World Environment Day (5th June)
4	How may numbers of existing of tree, shrubs and herbs species	Tree- 1952, Shrubs- 134 Herbs- 236
5	How may numbers of existing full-grown tree, semi grown trees	Full Grown - 1952 Semi Grown – 732
6	Is there any lawn in the college campus? If yes what is area	Yes
7	Is the college encouraging sustainable behaviour via: Education campaigns? Such as Posters, placards, Messages, incentives? Contests? awards?	Yes, College organized various programme encouraging sustainable behaviour such as World Environment day (5th June), World Wetlands day (2nd February), National Science day (28th February), International Yoga Day (21st June), World AIDS Day(1st December), No Tobacoo Day (31st May), Ekta Divas (31st October) ; Wildlife Conservation Day (4th December); World Soil Day (5th December) and many more.

8	Is the college staff modelling sustainable behaviour for students, peers, and community?	Yes, College has been initiated various community development work in terms of education, health & hygiene, cleanliness, environmental education etc. in the near by villages.
9	Is the college having solar, wind, or other forms of renewable energy?	Yes
10	What are the good practices pertaining to Transport?	Encourage the use of public transport, Bicycle and awareness about the generation of carbon footprint.
11	What is the average number of vehicle movements in terms of two & Four wheelers	Two Wheelers: 200 -220 Four Wheelers: 10 – 15
12	Has the college initiated to reduce its carbon footprint	Yes, College has taken several initiatives to reduce total carbon footprint amount within the college campus.
13	Has the college adopted any specific measures to reduce pollution	To motivate students, social service competitions are being held on special occasion such as college week, environment day, Science Day, Azadi ka Amrit Mahotsav etc., where they are awarded for their active participation.
14	Environmental Policy of the College	❖ Commitment to environmental conservation and sustainability. ❖ Integration of environmental best practices into all aspects of college operations. ❖ Promotion of environmental awareness and education among the college community. ❖ Compliance with environmental legislation and regulations.

Activities such as Cleanliness drive, plantation, Awareness, health camp etc at college campus

S/N	Various activities carried out at Bikali College during 2022 – 2023		
1	Medical Camp (Free Cardio Checkup)	24/2/2022	NCC and Extension Cell
2	World Water Day Celebration	22/3/3022	Geography
3	Swarnim Bharat Suraksha Bike Rally and Road Safety Awareness Programme	17/5/2022	BCD and Brahmakumari
4	World Environment Day	5/6/2022	Nature Club
5	World Yoga Day	21/6/2022	NCC and Yoga Club
6	Green Diwali Awareness	22/10/2022	Geography
7	Quiz Club Meeting	22/10/2022	Scientia Club
8	Inaugural Ceremony and Commencement of Aquariculture Certificate Course	28/10/2022	Zoology
9	Educational trip to Pobitora wildlife sanctuary from Department of Zoology	1/12/2022	Zoology
10	Online Faculty Meeting	14/1/2023	
11	Silpi Divas and Road Awareness Programme by DTO and DC, SP	17/1/2023	BCD
12	Sericulture Workshop	9-13/3/2023	Zoology
13	Nature Club Programme	26/3/2023	Nature Club



Workshop on Muga culture


ধুপধৰাৰ বিকালী মহাবিদ্যালয়ত
বিশ্ব পশু দিৱসৰ সজাগতা সভা

Various activities at college campus

8.0 Recommendations

Water Management

(i) The college Management needs to consider the low - flow faucets, as the replacement for the existing conventional taps.

(ii) The toilet and wash room should be equipped with push button

(iii) Sprinkler and drip irrigation should use for gardening

(iv) The college should install rain water harvesting unit more in an organized way

(v) More advanced water purification treatment facilities may be installed within the campus in order to ensure safe drinking water.

Energy Management

- The public lights within the campus may be run with solar panels and the replacement of existing lights should be done with LED lamps.
- Energy auditing should be done with the help of Energy Management Centre (EMC)

Waste Management

- Specific waste management plans should be adopted to manage solid waste in the campus, use of plastic carry bags, plastic glass/ cups/plates and flex boards should be banned inside the College to create a plastic free zone.
- For managing organic wastes more organised vermicompost plant may be installed in the campus
- There should be a proper system for the management of hazardous wastes.
- ETP and STP should install in the campus properly

Green Management

- Green habitat concept should be adopted for all the building construction activities of the college in future, which may help a long way in reducing energy usage, increasing aesthetic appeal of the buildings and class rooms, besides reducing carbon foot print.
- With a view to the availability of land organised horticulture garden may be initiated
- Further, more green spaces should be established all around the campus around larger trees and shades for the benefit of the students. All these aspects should monitor by Green Campus Committee.
- There should be an annual monitoring plan to assess Air , drinking water, soil and fishery water quality .

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Annexure 1 : Scanned copy of Green Campus Committee

Annexure 2 : Scanned copy of Electric Bill

Annexure 3 : Scanned copy of ISO Certificate

Annexure 4 : Scanned copy of PCB Certificate

Annexure 5 : Scanned copy of MSME Certificate

Office of the Principal

BIKALI COLLEGE, DHUPDHARA

Dr. Monoj Gogoi (M.Sc. ,Ph.D)
Principal
Bikali College, Dhupdhara

P.O. : Dhupdhara, Dist : Goalpara, Assam
Pin : 783123

Website: www.bikalicollege.org
Email: bikalicollege@gmail.com
Phone : 7002777137 (M)

NOTICE

Dated: 15/02/2022

It is hereby informed to all concerned that as per the recommendation of the Academic Council and IQAC a Green Campus Committee, Bikali College is constituted with the following members for the Academic Year 2021-22.

Chairperson	Dr. Monalisha Roychaudhury
Convenor	Dr. Bonti Bordoloi
Member	Jyotirmoy Das
Member	Niva Barman
Member	Jugal Kishore Talukdar
Member	Dhanashree Daimary

Principal,
Bikali College
Dhupdhara

Bikali College
Estd : 1982
Dhupdhara, Dist. Goalpara, Assam

Assam Power Distribution Company Limited

NAME OF ELECTRICAL SUB-DIVISION / IRCA : DHUPDHARA
CIN: U40109AS2003SGC007242
GSTIN: 18AABCL1354J1ZJ
ELECTRICITY BILL

12,540
OR

Website: www.apdcl.org

Centralized Customer Care Number: 1912

Consumer Name: BIKALI COLLEGE CLASS ROOM	**Consumer Number: 038000012752**	**Bill Amount: 1396.0**
Address: DHUPDHARA	Old Consumer Number: GP-57	**Due Date: 20-Mar-2023**
	DTR Number: 105	Bill Number 901216695
	Pole Number: 000	Bill Period: 02-Feb-2023 To 01-Mar-2023
	Connected Load in KW: 4.0	Bill Date : 03-Mar-2023
Contact Number : 7002777137	Contracted Demand in KVA: 4.0	Number of Days: 28
Email	Load Security: 0.0	Meter Status: RUNNING
Tariff Category: LT V(A) GENERAL PURPOSE (OTHER	Meter Number: AE025624	Billing Status: NORMAL
Supply Voltage Level: LT		038000012752

Meter Reading Details

24/3/2023

Reading Type	Meter Number	MF	Previous Reading in KWh	Previous Export in KWh	Current Reading in KWh	Current Export in KWh	Difference Reading in KWh	Difference Export in KWh
KWH (Normal)	AE025624	1.0	6260.0	0.0	6368.0	0.0	108.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0

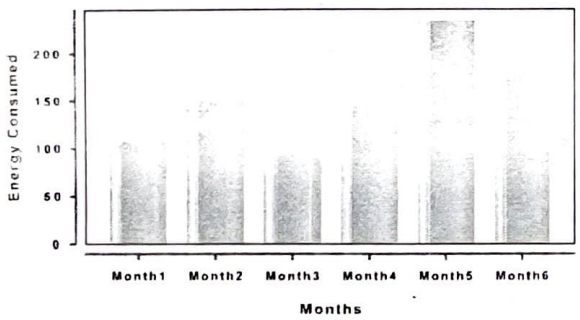
Units Consumed	PF Penalty/Rebate	LT Metering Penalty @ 3%	DTR Penalty @ 10%	HT Rebate @ 3%		Billable Units in KWh	
108.0	0.0					108.0	
0.0	0.0					0.0	
Recorded Demand (in KVA)	0.0	Maximum Demand (in KVA)	0.0	Billing Demand (in KVA)	4.0	Average Power Factor	85.0
Power on Hours	0.0	**Freeze Amount**	0.0	Availability Percentage			

Billing Details

Current Demand	Outstanding Amount	Adjustment Amount	Government Subsidy	Solar Rebate	Net Bill Amount
Rs. 1396.05	Rs. 0.00	Rs. 0.00	Rs. 0.0	0.0	**Rs. 1396.0**
					In Words: Rupees One Thousand Three Hundred Ninety Six Only

PLEASE PAY YOUR BILL ON TIME AND HELP US TO SERVE YOU BETTER

Energy Consumption (Last Month's Bill)



Charges Breakup			
Details	Units	Rate	Amount
Energy Charge	108.0	6.55	707.40
	0.0	0.0	0.00
	0.0	0.0	0.00
Total Energy Charge			707.40
Energy Charge Re-Estimated			0.00
Demand/Fixed Charge	4.0	155.0	570.74
FPPPA Charge		0.5	54.0
Electricity Duty		5.0	63.91
Govt. Subsidy		0.0	0.0
Meter Rent		20.0	0.0
Transformer M D Charge			
Overdrawal Penalty			0.0
Adjustment Amount			0.0
Charges for dishonoured cheque			0.0
Arrear Principal			0.0
Arrear Surcharge			0.0
Current Surcharge			0.0
Miscl. Arrear			0.0
Rebate if paid before due date			**0.0**
Payable amount before due date			**1396.0**
Payable amount after due date			**1396.0**

Checked by E&OE:

Prepared by: eSuvidha

Signature with seal

Assam Power Distribution Company Limited

NAME OF ELECTRICAL SUB-DIVISION / IRCA : DHUPDHARA
CIN: U40109AS2003SGC007242
GSTIN: 18AABCL1354J1ZJ
ELECTRICITY BILL

Website: www.apdcl.org

Centralized Customer Care Number: 1912

Consumer Name: BIKALI COLLEGE
Address: DHUPDHARA

Contact Number : 7002777137
Email :
Tariff Category: LT V(A) GENERAL PURPOSE (OTHER
Supply Voltage Level: LT

Consumer Number: 038000012748
Old Consumer Number: GP-53
DTR Number: 105
Pole Number: 000
Connected Load in KW: 8.0
Contracted Demand in KVA: 8.0
Load Security: 0.0
Meter Number: 13249895

Bill Amount: 8403.0
Due Date: 21-Mar-2023
Bill Number: 901225679
Bill Period: 02-Feb-2023 To 01-Mar-2023
Bill Date : 06-Mar-2023
Number of Days: 28
Meter Status: RUNNING
Billing Status: NORMAL

038000012748

Meter Reading Details

Reading Type	Meter Number	MF	Previous Reading in KWh	Previous Export in KWh	Current Reading in KWh	Current Export in KWh	Difference Reading in KWh	Difference Export in KWh
KWH (Normal)	13249895	1.0	72141.0	0.0	73115.0	0.0	974.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0

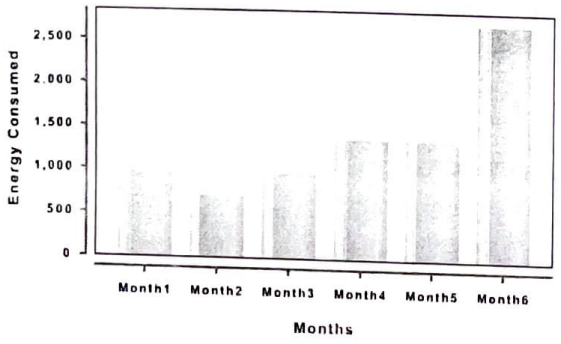
Units Consumed	PF Penalty/Rebate	LT Metering Penalty @ 3%	DTR Penalty @ 10%	HT Rebate @ 3%		Billable Units in KWh	
974.0	0.0					974.0	
0.0	0.0					0.0	
Recorded Demand (in KVA)	0.0	Maximum Demand (in KVA)	0.0	Billing Demand (in KVA)	8.0	Average Power Factor	85.0
Power on Hours	0.0	**Freeze Amount**	0.0	Availability Percentage			

Billing Details

Current Demand	Outstanding Amount	Adjustment Amount	Government Subsidy	Solar Rebate	Net Bill Amount
Rs. 8402.65	Rs. 0.00	Rs. 0.00	Rs. 0.0	0.0	**Rs. 8403.0**
					In Words: Rupees Eight Thousand Four Hundred Three Only

PLEASE PAY YOUR BILL ON TIME AND HELP US TO SERVE YOU BETTER

Energy Consumption (Last Month's Bill)



Charges Breakup

Details	Units	Rate	Amount
Energy Charge	974.0	6.55	6379.70
	0.0	0.0	0.00
	0.0	0.0	0.00
Total Energy Charge			6379.70
Energy Charge Re-Estimated			0.00
Demand/Fixed Charge	8.0	155.0	1141.48
FPPPA Charge		0.5	487.0
Electricity Duty		5.0	376.06
Govt. Subsidy		0.0	0.0
Meter Rent		20.0	18.41
Transformer M D Charge			
Overdrawal Penalty			0.0
Adjustment Amount			0.0
Charges for dishonoured cheque			0.0
Arrear Principal			0.0
Arrear Surcharge			0.0
Current Surcharge			0.0
Miscl. Arrear			0.0
Rebate if paid before due date			**0.0**
Payable amount before due date			**8403.0**
Payable amount after due date			**8403.0**

Checked by E&OE:

Prepared by: eSuvidha

Signature with seal

Assam Power Distribution Company Limited

NAME OF ELECTRICAL SUB-DIVISION / IRCA : DHUPDHARA
CIN U40109AS2003SGC007242
GSTIN 18AABCL1354J1ZJ
ELECTRICITY BILL

Website: www.apdcl.org

Centralized Customer Care Number: 1912

Consumer Name: BIKALI COLLEGE	**Consumer Number: 038000012749**	**Bill Amount: 2741.0**
Address: DHUPDHARA	Old Consumer Number: GP-54	**Due Date: 20-Mar-2023**
	DTR Number: 105	Bill Number 901216692
	Pole Number: 000	Bill Period: 02-Feb-2023 To 01-Mar-2023
	Connected Load in KW: 13.0	Bill Date: 03-Mar-2023
Contact Number: 7002777137	Contracted Demand in KVA: 13.0	Number of Days: 28
Email	Load Security 0.0	Meter Status: RUNNING
Tariff Category: LT V(A) GENERAL PURPOSE (OTHER	Meter Number: ASA-92281	Billing Status: NORMAL
Supply Voltage Level: LT		038000012749

Meter Reading Details

Reading Type	Meter Number	MF	Previous Reading in KWh	Previous Export in KWh	Current Reading in KWh	Current Export in KWh	Difference Reading in KWh	Difference Export in KWh
KWH (Normal)	ASA-92281	1.0	7936.0	0.0	8041.0	0.0	105.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0

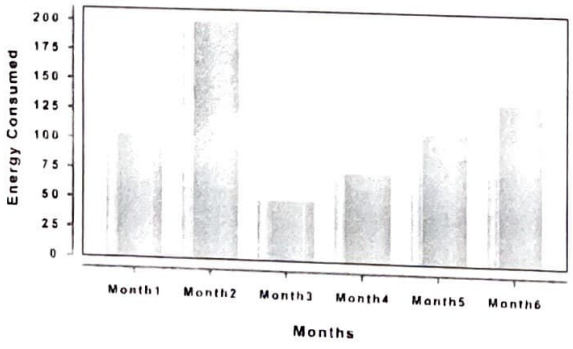
Units Consumed	PF Penalty/Rebate	LT Metering Penalty @ 3%	DTR Penalty @ 10%	HT Rebate @ 3%		Billable Units in KWh	
105.0	0.0					105.0	
0.0	0.0					0.0	
Recorded Demand (in KVA)	0.0	Maximum Demand (in KVA)	0.0	Billing Demand (in KVA)	13.0	Average Power Factor	85.0
Power on Hours	0.0	**Freeze Amount**	**0.0**	Availability Percentage			

Billing Details

Current Demand	Outstanding Amount	Adjustment Amount	Government Subsidy	Solar Rebate	Net Bill Amount
Rs. 2740.69	Rs. 0.00	Rs. 0.00	Rs. 0.0	0.0	**Rs. 2741.0**
					In Words: Rupees Two Thousand Seven Hundred Forty One Only

PLEASE PAY YOUR BILL ON TIME AND HELP US TO SERVE YOU BETTER

Energy Consumption (Last Month's Bill)



Charges Breakup

Details	Units	Rate	Amount
Energy Charge	105.0	6.55	687.75
	0.0	0.0	0.00
	0.0	0.0	0.00
Total Energy Charge			687.75
Energy Charge Re-Estimated			0.00
Demand/Fixed Charge	13.0	155.0	1854.9
FPPPA Charge		0.5	52.5
Electricity Duty		5.0	127.13
Govt. Subsidy		0.0	0.0
Meter Rent		20.0	18.41
Transformer M D Charge			
Overdrawal Penalty			0.0
Adjustment Amount			0.0
Charges for dishonoured cheque			0.0
Arrear Principal			0.0
Arrear Surcharge			0.0
Current Surcharge			0.0
Miscl. Arrear			0.0
Rebate if paid before due date			**0.0**
Payable amount before due date			**2741.0**
Payable amount after due date			**2741.0**

Checked by E&OE:

Prepared by: eSuvidha

Signature with seal

Integral Certification (P) Ltd.

Certificate OF REGISTRATION

This is to Certify that the Management System of

ENVIRO TESTING SERVICES

BIJAY NAGAR, NOONMATI, GUWAHATI - 781020,
ASSAM, INDIA

has been found to conform to the Quality Management System standard:

ISO 9001:2015

This certificate is valid for the following scope of operations:

ENVIRONMENTAL ASSESSMENT, MANAGEMENT AND MONITORING FOR SOIL, WATER, AIR, FLORA AND FAUNA.

Certificate No.: 09110783A

Date of initial registration	*Date of this Certificate*	*Surv. audit on or before/ Certificate expiry*	*Recertification Due*
24 August 2022	*24 August 2022*	*23 August 2023*	*23 August 2025*

Accreditation

This Certificate remains valid subject to satisfactory surveillance audits.

EGAC Accredited QMS Certification CAB # 112001

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Director

ICL/FM-001/REV06

For verification and updated information concerning the present certificate visit to www.iclcert.com

This certificate is property of Integral Certification (P) Ltd. and shall be returned immediately when demanded.

Integral Certification (P) Ltd.
301, U-60 (3rd Floor), Shakar Pur, Laxmi Nagar, Delhi-110092
E-mail: info@iclcert.com **Website :** www.iclcert.com
Contact No. : +91-9319332223

Integral Certification (P) Ltd.

Certificate OF REGISTRATION

This is to Certify that the Management System of

ENVIRO TESTING SERVICES

BIJAY NAGAR, NOONMATI, GUWAHATI - 781020, ASSAM, INDIA

has been found to conform to the Environmental Management System standard:

ISO 14001:2015

This certificate is valid for the following scope of operations:

ENVIRONMENTAL ASSESSMENT, MANAGEMENT, GREEN AUDIT AND ENVIRONMENTAL AUDIT

Certificate No.: IN19503B

Date of initial registration	*Date of this Certificate*	*Surv. audit on or before/ Certificate expiry*	*Recertification Due*
08 February 2023	*08 February 2023*	*07 February 2024*	*07 February 2026*

This Certificate remains valid subject to satisfactory surveillance audits.

Accreditation

EGAC Accredited EMS Certification CAB # 011201

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

Director

ICL/FM-001/REV06

For verification and updated information concerning the present certificate visit to www.iclcert.com

Integral Certification (P) Ltd.
301, U-60 (3rd Floor), Shakar Pur, Laxmi Nagar, Delhi-110092
E-mail: info@iclcert.com **Website :** www.iclcert.com
Contact No. : +91-9319332223

Pollution Control Board, Assam
(Department of Environment & Forests : : Government of Assam)
অসম প্রদূষণ নিয়ন্ত্রণ পৰিষদ
(অসম চৰকাৰৰ বন আৰু পৰিবেশ বিভাগ)

No.WB/GUW/T-2445/13-14/200 2722

Dated Guwahati the 09th March, 2023

OFFICE ORDER

In exercise of the powers conferred under section 17(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 17(2) of the Air (Prevention & Control of Pollution) Act, 1981, the Pollution Control Board, Assam is pleased to renew the recognition of the Laboratory for a period of six (6) months in favour of **M/s. Enviro Testing Services, Bijoy Nagar, House No. 35, Noonmati, Guwahati-22, Kamrup (M), Assam** awarded vide Pollution Control Board, Assam order No. WB/GUW/T-2445/13-14/198 dtd.19.02.2022. This Renewal of recognition is awarded subject to the following terms & conditions for the purpose of analyzing certain parameters discharged from the industries or any other institutions.

Terms & Conditions:

1. The recognition shall be valid till 08th September, 2023.
2. The recognition may be revoked or withdrawn subject to the violation of the following conditions :-
   - i. The laboratory shall carry out analysis only for the parameters authorized by the Board as mentioned in the certificate of approval.
   - ii. The laboratory shall carry out analysis of samples as per IS, APHA code of Federal Regulation and should specify the method in the analysis report.
   - iii. The laboratory will keep a proper record of receipt of samples, the reading of each and every parameter analyzed and calculation of results of all parameters on permanent register and will subject to inspect by the Board.
   - iv. The samples collected should be analyzed within seven (7) days from the date of collection and copy of the same along with the brief inspection report to be sent to Pollution Control Board, Assam.
   - v. The accredited laboratory will collect samples as required by the process, which will be divided in two parts. One part will be analyzed, while the other part will be preserved for thirty days. For air samples, the used thimbles and filter papers will be preserved for six (6) months so that the Board can check randomly and verify the credibility.
   - vi. The Board officials may visit laboratory for checking preserved samples at random.
   - vii. The Laboratory must submit information on whether ETPs/APCDs installed by the respective unit was running or not along with test report. At the time of collection samples by the Laboratory, all the processes of the unit should invariably be running. The analysis report should generally reflect site conditions and capacity at which the industry was running at the time of sampling.
   - viii. Records pertaining to inventory of the chemicals/ reagents shall be kept properly on a permanent register and will be subject to inspection by the Board.
   - ix. Laboratory will submit details of staff involved in sampling and testing and the person coming for collection of sample should have authority letter of Laboratory.
   - x. Any change in address, staff or other additions/ alterations in the facilities of the laboratory should immediately be reported to this office within fifteen (15) days.

Contd....p/2

xi. *Prior information is to be given* to the concerned Regional Officers and Head Office for collection of sample and Regional Officers/Field Officer will associate during the sampling.

xii. **The approval shall be suspended or cancelled if the Board has reason to believe that the data reported by the Laboratory is repeatedly erroneous. Further the Laboratory and its key personnel shall be liable to be proceeded against for imposition of penalty in case the Board has reason to believe that the data reported by the Laboratory is intentionally manipulated.**

xiii. If it is found that the aforementioned Laboratory has any involvement with any of the industry against whom allegations have been made forging of Board's Authority, will result in withdrawal of recognition apart from other legal proceeding as provided under existing laws.

xiv. If the laboratory failed to achieve the satisfactory performance regarding testing of the coded samples supplied by the Pollution Control Board, Assam will result in withdrawal of recognition.

xv. The instruments/equipment should be always kept in working and perfectly calibrated condition.

xvi. The Laboratory has to submit a brief plan on safety measures undertaken for risk management pertaining to the work environment.

xvii. **In legal matters, the analytical reports of the above laboratories will not be binding to the Board and such reports generated by the State Board will always prevail over.**

xviii. **Regarding compliance of occupiers, Boards analytical report and opinion will stand final over the reports and opinion of the aforesaid laboratory.**

xix. Board will have every right to accept or reject the analytical and other reports submitted by the aforesaid laboratory without assigning any reason thereof.

xx. **National Accreditation Board for Testing and Calibration Laboratories (NABL) is mandatory at the time of Next renewal of recognition i.e from the year 2023 onward.**

3. This order will remain valid for **six (6) month with effect from the date of issue of this order** subject to the outcome of Hon'ble Gauhati High Court Order in WP(C)/8468/2018. But the said recognition may also be withdrawn at any time in case of violation of any of the aforementioned conditions or any of the conditions mentioned in **Annexure-A(i) & (ii)** or for any other unlawful activities, which are not proper under the law of the land.
4. This order has been passed as per the approval of the Competent Authority.

(Shantanu Kr. Dutta)
Member Secretary

Memo No.WB/GUW/T-2445/13-14/200-A/2722 Dated Guwahati the 09th March, 2023

Copy to:

1. The ACES, Central Laboratory, PCBA for information and necessary action.
2. *M/s. Enviro Testing Services, Bijoy Nagar, House No.35, Noonmati, Guwahati-22, Kamrup (M)* for information and necessary action.

Member Secretary

Annexure-A

LIST OF PARAMETERS MENTIONED BELOW:-

A. Water & Waste Water

Sl. No	Parameters	Sl. No	Parameters
1	pH	27	Ammonical Nitrogen
2	Temperature	28	TKN
3	TSS	29	Phosphate
4	Zinc	30	Iron
5	BOD	31	Lead
6	COD	32	Copper
7	Total Dissolved Solids	33	Nickel
8	Chloride	34	Cr (Total & Hexa)
9	Sulphate	35	Cadmium
10	Oil & Grease	36	Aluminium
11	Sodium	37	Manganese
12	Phenol	38	Arsenic
13	Odour	39	Insecticides
14	Turbidity	40	Total Acidity
15	Alkalinity	41	DO
16	Conductivity	42	Cobalt
17	Total Hardness	43	Vanadium
18	Calcium hardness	44	Molybdenum
19	Magnesium Hardness	45	Silver
20	Nitrate	46	Hydrazine
21	Sulphite	47	Barium
22	Fluoride	48	Colour
23	Residual Chloride	49	Anionic Detergent
24	Boron	50	Mercury
25	Free Ammonia	51	Selenium
26	Sulphide	52	Nitrite

B. Bacteriology & Bio-Assay

Sl. No	Parameters
1	Total Coliform
2	Fecal Coliform

C. Noise Parameter

Noise Level Monitoring - Noise in dB(A)

Manoj Saxena

Addl. Chief Env. Scientist
Pollution Control B[illegible]
Bamunimaidam, C[illegible]

D. Ambient Air Parameters

Sl. No	Parameters	Sl. No	Parameters
1	Oxides of Sulphur	8	Benzene
2	Oxides of Nitrogen	9	Benzo (a) Pyrine
3	PM 10	10	Arsenic
4	PM 2.5	11	Nickel
5	Ozone	12	Total Hydrocarbon
6	Lead	13	Formaldehyde
7	Carbon Monoxide	14	Ammonia

E. Stack Parameters

Sl. No	Parameters	Sl. No	Parameters
1	Oxides of Sulphur	7	Nickel
2	Oxides of Nitrogen	8	Hydrogen Sulphide
3	Particulate Matter	9	Carbon Dioxide
4	Oxygen	10	Hydrogen Fluoride (HF)
5	Carbon Monoxide	11	Vanadium
6	Hydrochloric Acid Vapour & Mist (HCl)	12	Chlorine

F. Parameters For Soil Analysis

Sl. No	Parameters	Sl. No	Parameters
1	pH	9	Phosphorous
2	Soil Type	10	Manganese
3	Water Holding Capacity	11	Nitrogen
4	Iron	12	Sodium
5	Organic Matter	13	Potassium
6	Copper	14	SAR
7	Nickel	15	Boron
8	Chlorides	16	Zinc

G. Fugitive Emission (LEL-CH_4),

Light Intensity (Lux Meter),
VOC

H. Work Zone Monitoring

I. Waste Sludge Parameters (Non Hazardous & Hazardous)

Monoj Laikin
Addl. Chief Env.
Pollution Control B
Guwahati, Gu

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

सूक्ष्म , लघु एवं मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER — **UDYAM-AS-16-0015132**

NAME OF ENTERPRISE — **ENVIRO TESTING SERVICES**

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	29/04/2023

MAJOR ACTIVITY — **SERVICES**

SOCIAL CATEGORY OF ENTREPRENEUR — **GENERAL**

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	ENVIRO TESTING SERVICES

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	-	Name of Premises/ Building	BIJOY NAGAR,
Village/Town	Kamrup,	Block	-
Road/Street/Lane	NOONMATI,	City	Assam,
State	ASSAM	District	KAMRUP , Pin 781020
Mobile	9435732705	Email:	envirotesting2011@gmail.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE — **15/12/2001**

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS — **15/12/2001**

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7010 - Activities of head offices	70100 - Activities of head offices	Services
2	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services
3	71 - Architecture and engineering	7110 - Architectural and engineering	71100 - Architectural and engineering	Services

	activities; technical testing and analysis	activities and related technical consultancy	activities and related technical consultancy	
4	71 - Architecture and engineering activities; technical testing and analysis	7120 - Technical testing and analysis	71200 - Technical testing and analysis	Services
5	74 - Other professional, scientific and technical activities	7490 - Other professional, scientific and technical activities n.e.c.	74904 - Security consulting	Services

DATE OF UDYAM REGISTRATION **29/04/2023**

* **In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2020 issued by the M/o MSME.**

Disclaimer: This is computer generated statement, no signature required. Printed from https://udyamregistration.gov.in & Date of printing:- 29/04/2023

For any assistance, you may contact:

1. District Industries Centre: **DIC KAMRUP (ASSAM)**

2. MSME-DFO: **GUWAHATI (ASSAM)**