ENERGY AUDIT REPORT

Year: 2021

PRAGJYOTISH COLLEGE

GUWAHATI – 781009

Prepared By Department of Physics, Pragjyotish College

CONTENTS

DISCLAIMER:

Energy Audit of Pragjyotish College, Guwahati 09, for estimating the annual power consumed by lights is conducted by Physics Department, Pragjyotish College, fully based on the data shared by the college, office and the energy audit report of 2019 conducted by PPS Energy Solutions Pvt. Ltd.

ENERGY AUDITING:

As per the Energy Conservation Act, 2021, Energy Audit is defined as “the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption”.

DETAILED AUDIT:

The electricity supply for Pragjyotish College is provided by Assam Power Distribution Company Limited.

Based on the data available from the college office, it is found that as compared to the previous audit report a significant change has taken place in terms of replacement of non-LED lights with LED lights. Thus this audit estimates the annual power consumed by lights.

ANNUAL POWER CONSUMED BY TUBE LIGHTS:

There are 682 non-LED tube lights as per the last audit out of which now 75 are replaced by LED ones. Thus the total power consumed per year by those tube lights is 16,705 kWHr. (Please refer Table 1)

ANNUAL POWER CONSUMED BY CFL/LED LIGHTS:

There are 99 CFL lights as per the last audit out of which now 44 are replaced by LEDs. Thus the total power consumed per year by those lights is 1,093 kWHr. (Please refer Table 1)

GRAND TOTAL OF POWER CONSUMED BY TUBE LIGHTS:

The grand total of the above two categories is 17,798 kWHr/Yr.

OBSERVATIONS:

Total energy saved by the replacement of CFL and Non-LED Tube Lighting by LED and LED-tube during the year 2021 is 1162 kWHr. (Please refer Table 1)

RECOMMENDATION:

If all the remaining non-LED lights are replaced by LED lights an additional amount of 8,104 kWh/Yr can be saved. (Please refer Table 1)

Table 1: Energy saved and can be saved use of LED instead of non-LED lights in Pragjyotish College.

Replacement of CFL and Non-LED Tube Lighting by LED and LED-tube during the year 2021									
Already replaced									
Light Type	**Power (W)**	**Replaced By**	**Power (W)**	**No. of Replacement**	**Average Hour per Day**	**Active Days in a year**	**Power Consumed by Non-LED Lighting**	**Power Consumed by LED Lighting**	**Power Saved (kWHr/ Yr)**
CFL	18	LED	12	44	3	240	570	380	190
Non-LED Tube	36	LED-Tube	18	75	3	240	1944	972	972
						Total	2514	1352	1162
Still need to replace									
CFL	18	LED	12	55	3	240	713	475	238
Non-LED Tube	36	LED-Tube	18	607	3	240	15733	7867	7867
						Total	16446	8342	8104
						Present power consumption			17798

PRAGJYOTISH COLLEGE
[ESTD: 1954; NAAC ACCREDITED (3RD CYCLE); RECOGNISED UNDER SECTIONS 2(f) AND 12(B) OF UGC]
Guwahati – 781009
Assam
India

Date: 02/05/22

TO WHOM IT MAY CONCERN

This is to certify that Physics Department, Pragjyotish College, has conducted the Energy Audit of Pragjyotish College, Guwahati 09, for estimating the annual power consumed by lights and found that compared to the previous year power saved is 1,162 kWh in one year because of replacement of many non-LED lights with LED lights. Further, it has also been found that if all the remaining non-LED lights are replaced by LED lights an additional amount of 8,104 kWh/Yr can be saved.

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GREEN AND ENVIRONMENT AUDIT REPORT

[2021 – 2022]

FOR

PRAGJYOTISH COLLEGE
SANTIPUR, GUWAHATI-781009, ASSAM, INDIA

Conducted By

ENVIRO-TESTING-SERVICES

BIJAY NAGAR, NOONMATI, GUWAHATI-781020, ASSAM

MAY-2022

GREEN AND ENVIRONMENT AUDIT REPORT
[2021 – 2022]

FOR

PRAGJYOTISH COLLEGE
SANTIPUR, GUWAHATI-781009, ASSAM, INDIA

Conducted By

ENVIRO-TESTING-SERVICES

BIJAY NAGAR, NOONMATI, GUWAHATI-781020, ASSAM

May-2022

01	*18-05-2022*	Pragjyotish College Santipur, Guwahati-781009, Assam, India		
No.	Date	Description	Checked	Approved
ETS, ENVIRO-TESTING-SERVICES Guwahati	A Report on Green and Environment Audit (2021 – 2022)		*Job No. :ETS /KM /GEAR/ 01 dated 18/05/2022*	
			Doc: Final Report	

ETS-GUWAHATI
ENVIRO-TESTING-SERVICES
Accredited by 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/PC/GEAR/01/2022 **Date: 18th May 2022**

COMPLETION CERTIFICATE

This is a Green and Environmental 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, Pragjyotish College, Santipur, Guwahati, Assam-781009 vide order number PC /Green & Env Audit/Invitation/2021-22 Dated 10.04.2021. The findings of the study carried out during the period of May 2021 to April 2022 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 State Pollution Control Board, Assam, ISO 9001 :2015; ISO 45001:2018 and MSME.

For Enviro Testing Services

ENVIRO TESTING SERVICES GUWAHATI, ASSAM

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

Date: 18.05.2022

ETS-GUWAHATI
ENVIRO-TESTING-SERVICES
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ACKNOWLEDGEMENT

Green and Environment Audit Assessment Team thanks Dr. Manoj Kumar Mahanta, Principal, Pragjyotish 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 all the Heads of the various Departments of Pragjyotish College for giving us necessary inputs to carry out this very vital exercise of Green Audit.

Our special thanks go to the faculty of Pragjyotish College:

Dr. Jyoti Prasad Das, Department of Geography

Mr. Amit Kumar Pradhan, Department of Botany

Mr. Bhrigu Kumar Nath, Department of Geography

Mr. Himadri Saikia, Department of Botany

We are also thankful to other staff 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: 18.05.2022

Contents

1.0 Introduction of the Institute

1.1 Brief Introduction

Pragjyotish College, established on 1st September 1954, seven years after Independence, became a beacon of learning and a symbol of aspirations for the common people of Assam, raring to build a new nation. Pandit Tirthanath Sarma, eminent scholar and litterateur, responded to and actively participated in the nation building by taking charge as the founder Principal of Pragjyotish College. From its modest inception as an arts college, Pragjyotish College has now developed into one of the premier institutions of higher education in Guwahati. At present, it is a well-known full-fledged under-graduate college imparting higher education in multiple streams.

Situated on the western bank of the Bharalu, a rivulet, in the western part of Guwahati, Pragjyotish College is about 1 kilometre away from its confluence with the mighty Brahmaputra. It is about 4 kilometres from the Guwahati Railway Station and at a distance of about 20 kilometres from the Lokapriya Gopinath Bordoloi International Airport. At the backdrop of the college is a beautiful panoramic view of Nilachal Hills, the famous abode of Mother Goddess Kamakhya.

In the emblem of the college, is ingrained the motto "तेजस्विनावधीतमस्तु" (May our study make us illumined) and a conch shell at the centre on an eight-petalled full-blown beautiful-lotus, which symbolizes pure knowledge and the relationship between the teacher and the learner, praying to the Almighty for energy, protection, maintenance that ultimately leads to peace and bliss.

Motto of the College

Tejasvinavadhitamastu (May our study make us illumined)

Vision

To fulfill the visionary aspirations of the regional youth segment through a process of vibrant and continuous innovations and initiatives in multiple spheres of academic as well as professional development, leading to the fullest realisation of the potential of the students.

Mission

- To make teachers and the taught partners in the learning process.
- To promote a student friendly atmosphere for encouraging them to be self-reliant and self-employable.
- To promote extra-curricular activities simultaneously with curricular activities.
- To mould the students into socially conscious human beings.
- To encourage students to think globally and act locally as productive citizens, through the promotion of scientific temper and action.
- To foster and inculcate moral and spiritual accomplishments amongst the students.
- To develop a transparent and responsive administration.
- To undergo self-analysis and self-discovery leading to elimination of bottlenecks in the context of a holistic framework

In its glorious existence of six decades, Pragjyotish College, as alma mater, has produced a galaxy of eminent personalities in all walks of life. The college celebrated its Diamond Jubilee Year during 2013–14.

1.2 Location of the College Campus

Location	:	Urban
Campus Area	:	7.35 Acres
Built Up Area	:	1.95 Acres

1.3 Physical Structure of the College Campus

Total No of Departments	:31
Auditorium	:01
Hostel	:01
Cafeteria	:01
Health Centre	:00
Heritage Corner	:01
Stationery Corner	:00
Gymnasium	:01
Teachers Common Room	:01
Libraries	:01

1.4 Student, Teacher & Employees Strength

Total Number of Students	: 4027
Total Number of Teachers	: 83
Total Number. of Employees	: 20 (non-teaching)

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 and Water quality

(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

It encompasses area about 30351.42 sq. mts. Total built-up area is 17199.14 sq.mts. out of the total 30351.42 sq. mts of the campus. Both Assam type and multi-storied RRC construction are found within the campus. The play ground inside the college campus covering an area of about 5058.57 sq mts. The presence of garden inside the campus augments the aesthetic value of the college.

The area coverage of different land use classes

Features	**Area (**Acres**)**
Building	1.96
Statue	0.02
Playground	0.21
Roads (inside campus)	0.84
Trees	1.34
Parking Area	0.22
Garden	1.46
Open space	1.30
Total Area	**7.35**

5.2 Geographical Location with Campus Map

Pragjyotish College is situated at Shantipur, Guwahati, Kamrup(M) district of Assam, within the geo-position

Latitude N 26.253836^0

Longitude E 92.357961^0

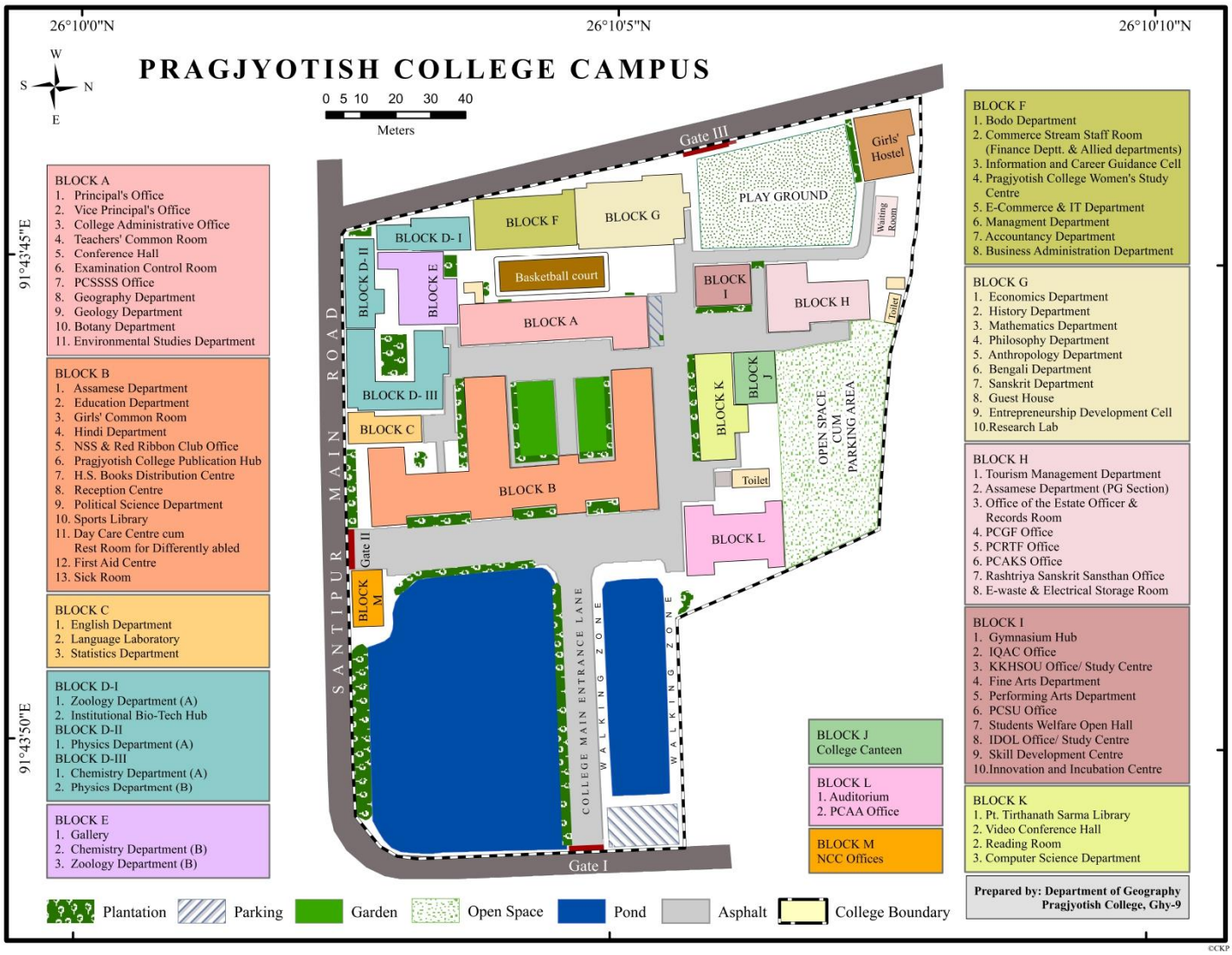


Fig 1: Map of the Pragjyotish College

Glimpses of Pragjyotish 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	11.03.2022	N $26^0 10' 6.88''$ E $91^0 43' 47.91''$

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

S/N	Parameters	Unit	Metrological Data at Pragjyotish College Date: 11.03.2022	
1	Temperature	^{0}C	Min	16
			Max	24
2	Relative Humidity	%	10.30am	68
			16.30pm	75
3	Wind Speed	Km/hr	10.30am	3.6
			16.30pm	4.8
4	Wind Direction	-	10.30am	SE
			16.30pm	SW

5.3.2 Ambient Air Quality

The average results obtained in the month of March 2022 at Pragjyotish 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	11.03.2022	N $26^0 10' 6.88''$ E $91^0 43' 47.91''$

Table 2: Ambient Air Quality at Pragjyotish 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	94.6	100	Clear	IS5182(23)
2	Particulate Matter (PM2.5)	µg/m^3	56.2	60		CPCB Guideline
3	Sulphur Dioxide (SO_2)	µg/m^3	8.2	80		IS5182(2)
4	Nitrogen Dioxide(NO_2)	µg/m^3	9.8	80		IS5182(vi)
5	Pb in PM 10	µg/m^3	<0.2	1.0		IS5182(vi)
6	Pb in PM2.5	µg/m^3	<0.2	1.0		IS5182(vi)
7	Ni in PM10	ng/m^3	<0.2	20		IS5182(vi)
8	Ni in PM2.5	ng/m^3	<2.0	20		IS5182(vi)
9	As in PM10	ng/m^3	BDL	06		IS5182(vi)
10	As in PM2.5	ng/m^3	BDL	06		IS5182(vi)

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 Pragjyotish 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 $26^0 10' 3.59''$	E $91^0 43' 50.96''$	75.5	61 – 72	75
2	Near Principal Office	N$26^0 10' 5.718''$	E $91^0 43' 49.037''$	62.2	52 – 67	
3	Near Library	N$26^0 10' 5.968''$	E$91^0 43' 46.8282''$	63.1	45 – 62	
4	Near Conference Hall	N$26^0 10' 4.73''$	E$91^0 43' 45.47''$	60.8	55 – 64	
5	Room no C001	N$26^0 10' 3.28''$	E$91^0 43' 47.002''$	60.1	56 - 63	
6	Room no E001	N$26^0 10' 3.53''$	E$91^0 43' 45.390''$	60.1	58 - 68	
7	Room no B3	N$26^0 10' 5.79''$	E$91^0 43' 46.128''$	59.8	54 - 67	
8	Near Canteen	N$26^0 10' 6.43''$	E$91^0 43' 46.64''$	60.8	59 – 69	

5.3.4 Drinking Water Quality

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

Sr.No.	Sampling Locations	GPS Co-ordinate	
1	Pond Water Near College Gate (PW)	N26^{0}10$'$4.51$''$	E91^{0}43$'$50.04$''$
3	Inside college drinking water facility (DW)	N26^{0}10$'$4.54$''$	E 91^{0}43$'$46.38$''$

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 Pragjyotish 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-H+B	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-Cl-B/D	250
9	Residual Chlorine (mg/L)	APHA 20th Edition, 4500-Cl-B	0.2
10	Sulphates as SO_4 (mg/L))	APHA 20th Edition, 4500-SO_4^{2-}E	250
11	Nitrate (mg/L)	APHA 20th Edition, 4500-NO_3-B	45
12	Fluoride (mg/L)	APHA 20th Edition, 4500-F^- D	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 Pragjyotish College

S/N	Parameters	Unit	DW	PW
1	Odour	--	NS	NS
2	Temperature (^{0}C)	^{0}C	27	27
3	Turbidity (NTU)	NTU	0.4	3.6
4	pH	-	7.2	7.8
5	Conductance (mS/cm)	mS/cm	0.48	0.62
6	Total Dissolved Solid (mg/L)	mg/L	68.0	138.0
7	Total Suspended Solid (mg/L)	mg/L	28.0	64.0
8	Chloride (mg/L)	mg/L	22.1	28.2
9	Residual Chlorine (mg/L)	mg/L	<0.01	<0.01
10	Sulphates as SO_4 (mg/L))	mg/L	9.8	11.7
11	Nitrate (mg/L)	mg/L	7.8	8.4
12	Fluoride (mg/L)	mg/L	0.36	0.21
13	Calcium (mg/L)	mg/L	24.1	28.4
14	Magnesium (mg/L)	mg/L	26.1	29.3
15	Iron (mg/L)	mg/L	0.12	1.1
16	Manganese	mg/L	0.002	0.006
17	Zinc	mg/L	0.02	0.06
18	Arsenic	mg/L	<0.001	<0.001
19	Total Coliform (MPN/100 mL)	mg/L	03	10
20	Faecal Coliform (MPN/100 mL)	mg /L	NIL	5

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	Near Garden Area	$N26^{0}10^{/}4.51^{//}$	$E91^{0}43^{/}50.04^{//}$

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 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 Pragjyotish College

S/N	Parameters	[S1]
1	PH (1: 2)	6.8
2	Conductance (ms)	0.38
3	Sand (%)	87.0
	Silt (%)	1.04
	Clay (%)	11.9
4	Water Holding Capacity (%)	48.3
5	Bulk Density (gcm^{-3})	1.2
6	Cation Exchange capacity (meq/kg)	0.31
7	Nitrogen (%)	0.07
8	Potassium (mg/kg)	18.2
9	Sodium (mg/kg)	23.1
10	Calcium (g/kg)	18.4
11	Magnesium (mg/kg)	36.2
12	Phosphorous (mg/kg)	12.2
13	Organic matter (%)	0.67
14	Sodium Absorption Ratio (SAR)	1.4
15	Zinc (mg/kg)	16.8
16	Copper (mg/kg)	6.4

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.

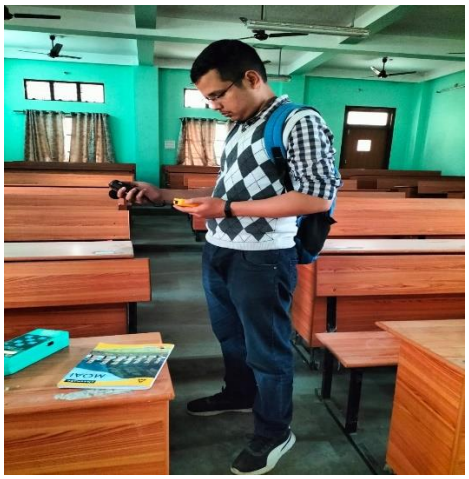
1	**A**	**B**	**C**	**D**
2		**Equation**	**Value**	**Unit**
3	Time of Measurement		Day time	
4	Room Identification			
5	Number Of lamps			
6	Length of the room			m
7	Width of the room			m
8	Floor Area	A=Length*Width		m^2
9	Height of the lamp from the Plane of measurement			m
10	Room index	(L*W)/Hm*(L+W)		
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 Pragjyotish College

S/N	Location	ILER	Assessment
1	Room No. B1	2.76	Satisfactory
2	Room No. B3	1.58	Satisfactory
3	Room No B14	2.25	Satisfactory
4	Room No C001	2.56	Satisfactory
5	Room No E001	2.75	Satisfactory
6	Office of the Principal	2.14	Satisfactory
7	Library	1.87	Satisfactory
8	Conference Hall	2.64	Satisfactory


Ambient Air and Noise Monitoring at Pragjyotish College



Illumination Study at College Premises


Soil and water Sampling at different locations of Pragjyotish College

Photographic view of Environmental Monitoring at Pragjyotish College

5.4 Floral and Faunal diversity

5.4.1 Floral Biodiversity

The survey was conducted in the month of February and March 2021 following the Quadrat sampling procedure. 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 species**
Tree	:	145
Shrubs	:	72

List of trees are presented in Table- 7 - 8

Table 7 : List of Trees recorded at Pragjyotish College

S/N	Family	Scientific name	Vernacular name	English Name	Uses	No.
1	Myrtaceae	*Psidium guajava L.*	Modhuriaam	Guava	Fruitis edible, young leaves are edible	**10**
2	Rhamnaceae	*Ziziphus jujube Mill.*	Bogori	Jujube	Fruitsedible	**3**
3	Meliaceae	*Azadiracta indica Nees.*	Neem	Indianlilac	Seed oil is used as pesticides and Insecticides	**10**
4	Combretaceae	*Terminalia bellirica Roxb.*	Bhomora	Beleric myrobalan	Dried fruits are used as medicine	**1**
5	Rubiaceae	*Neolamarckia cadamba*	Kadam	Burflower tree	Shade tree	**6**
6	Fabaceae	*Cassia fistula*	Sonaru	Goldens hower	Avenue tree	**2**
7	Moraceae	*Ficus religiosa*	Aahot	Peepal	Bark and ripe fruits are used in treatment of asthma	**1**
8	Myrtaceae	*Syzygium cumini*	Kolajamu	Javaplum	Fruitis edible	**3**
9	Arecaceae	*Areca catechu L.*	Tamul	Betelnut	Nut is chewed with betel leaf and works as digestive.	**2**
10	Annonaceae	*Monoon longifolium*	Debadaru	Masttree	Ornamental	**12**
11	Arecaceae	*Cocos nucifera*	Narikol	Coconut	Fruitis edible	**2**
12	Sapotaceae	*Mimusops elengi L.*	Bokul	Spanish cherry	Ornamental	**13**
13	Caesalpinaceae	*Delonix regia*	Krishnasura	Flame tree	Ornamental	**3**
14	Fabaceae	*Dalbergia sissoo*	Sisoo	Indian Rosewood	Avenue tree, Timber is used for making Furnitures	**10**
15	Anacardiaceae	*Mangifera indica L.*	Aam	Mango	Fruits Edible	**5**
16	Myrtaceae	*Syzygium jambos*	Bogijamu	Roseapple	Fruits edible	**1**
17	Putranjiviaceae	*Putranjiva rouxburghii Wall.*	Putranjivi	Child life tree	Leaves are used to treat skin disorders, seed oil is used in siddha and unani practices.	**3**
18	Santalaceae	*Santalum album L.*	Chandan	Sandal wood	Used for skin care and beauty purpose	**2**

19	Fabaceae	*Pterocarpus santalinus*	Rokto chandan	Red sandal wood	Used for skin care and beauty purpose	**3**
20	Lamiaceae	*Tectona grandis*	Segun	Teak	Wood is used in many Purpose	**1**
21	Araucariaceae	*Araucaria columnaris*		Christmas pine	Ornamental	**6**
22	Lythraceae	*Lagerstroemia speciosa*	Ajar	Queen flower	Ornamental	**5**
23	Comretaceae	*Terminalia chebula*	Hilikha	Chebulic myroabalan	Fruit is edible	**8**
24	Fabaceae	*Peltophorum pterocarpum*	Radhachura	Copperpod	Ornamental	**1**
25	Dilleniaceae	*Dillenia indica*	Ou tenga	Elephant apple	Fruits are edible	**1**
26	Musaceae	*Musa paradisica L.*	Kolgos	Banana	Whole plant along with fruits are edible	**10**
27	Myrtaceae	*Eucalyptus maculata Hook.*		Spotted Gum	Provide wood , gum and oil is used as medicine	**7**
28	Phyllanthaceae	*Phyllanthus emblica*	Aamlakhi	Gooseberry	Fruitis edible	**2**
29	Rubiaceae	*Gardenia angusta L.*	Togor	Cape jasmine	Ornamental	**1**
30	Moraceae	*Ficus racemosa*	Dimoru	Cluster fig	Ornamental	**1**
31	Arecaceae	*Dypsis lutescens*	Momai tamul	Golden canepalm	Fruitsareedible	**5**
32	Myrtaceae	*Melaleuca viminalis*		Weeping bottle brush	Ornamental	**1**
33	Combretaceae	*Termanalia arjuna*	Arjun	Arjun tree	Bark has medicinal properties,usedto treat many diseases	**3**
34	Moraceae	*Ficus rumphii*	Pakari bor	Mock Bodh tree	Shade tree	**1**
35	Fabaceae	*Acacia auriculformis*	Akashmoni	Earleaf acacia	Ornamental plant	**1**
35	Rutaceae	*Aegel marmelos*	Bael	Golden apple	Fruits are edible	**1**
36	Moraceae	*Artocarpus heterophyllus*	Kothal	Jackfruit	Fruit is edible	**2**
37	Fabaceae	*Leucaena leucochephala*	Subabul	River tamarind	Shade tree	**1**
38	Arecaceae	*Phoenix dactylifera*	Khejoor	Date palm	Fruits are edible	**5**
39	**Fabaceae**	***Albiiz lucidior***	**Moj**	**Potka Siris**	**Shade tree**	**1**

Table 8 : List of Shrubs recorded at Pragjyotish College

SL no.	Family	Scientific name	Vernacular Name	English name	Uses	No.
1	Malvaceae	*Gossypium arboreum*	Kopah	Cotton	Seed hairs are used in textile industry.	**1**
2	Apocyanaceae	*Tabernaemontana divaricata*	Kathana	Jasmine	Ornamental	**3**
3	Apocyanaceae	*Cascabela thevetia*	Korobi	Yellow Oleander	Ornamental	**3**
4	Rosaceae	*Photinia sp.*	Lalbati	Christmas berry	Ornamental	**16**
5	Cycadaceae	*Cycas circinalis*	Cycas	Cycas	Ornamental	**3**
6	Cupressaceae	*Cryptomeria spp.*		Cryptomeria	Ornamental	**8**
7	Rutaceae	*Citrus limon*	Kajinemu	Lemon	Fruits edible	**5**
8	Apocyanaceae	*Calotropis gigantea*	Aakon	Milkweed	Gum is used to treat skin disease traditionally	**5+**
9	Fabaceae	*Bauhinia purpurea*	Kanchan	Camelfoot tree	Ornamental	**5**
10	Rubiaceae	*Mussaenda erythrophylla*	Mussanda	Mussanda	Ornamental	**2**
11	Rubiaceae	*Ixora coccinia L.*	Ashok	West Indian Jasmine	Ornamental	**7**
12	Euphorbiaceae	*Codiaeum variegatum*	Pataa bahar	Golden dust croton	Ornamental	**5**
13	Euphorbiaceae	*Riccinus communis*	Eragos	Castor	Castor oil obtained	**5+**
14	**Cupressaceae**	***Thuja ocidentalis***	**Mayurpakhi**	**Thuja**	**Ornamental**	**9**

Eucalyptus maculate Hook.

Ficus racemosa

Cycas circinalis

Phoenix dactylifera

Psidium guajava L.

Pterocarpus santalinus

Photographic View of the Floral Diversity at Pragjyotish 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.

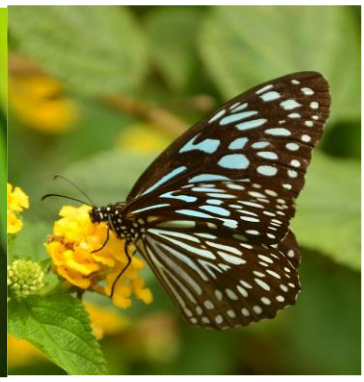
The survey was conducted during February – March 2022. The natural landscape of Pragjyotish college campus includes green vegetation covers, botanical Garden, open water bodies and marshy land which provides a unique environmental setting conducive for a wide range of floral and faunal diversity. The campus is rich in animals that includes different animal species belonging to the Phylum Arthropoda and Chordata.. Among Arthropods 18 species of butterfly and 4 species of Spiders were recorded. Among Chordates, 11fishes, 4 amphibians, 7 reptiles, 16 birds and 5 mammalian fauna were recorded in the college campus.

Table 9 : Different butterfly species recorded at Pragjyotish College Campus

Serial No.	Common Name	Scientific Name
1	Grey Pansy	*Junonia alites*
2	Common palmfly	*Elymnias hypermnestra*
3	Black veined Albatros	*Appias olferna*
4	Great eggfly	*Hypolimnas bolina*
5	Small branded swift	*Pelopidas mathias*
6	Himalayan Spangle	*Papilio protenor*
7	Common Mormon	*Papilio polytes*
8	Red Helen	*Papilio helenus*
9	Lime(Swallowtail)	*Papilio demoleus*
10	Black and white helen	*Papilio nephelus*
11	Common crow	*Eupolea core*
12	One Spot grass yellow	*Eurema andersonii*
13	Indian cabbage white	*Appiascanidia*
14	Lemon Pansy	*Junonia lemonias*
15	Common mime	*Papilio clytia*
16	Common banded demon	*Notocrypta paralysos*
17	Chocolate demon	*Ancistroides nigrita*
18	Tailed Joy	*Graphium agamemnon*
19	Bush hopper	*Ampittia dioscorides camerta*
20	Dark blue tiger	*Tirumala septentrionis*

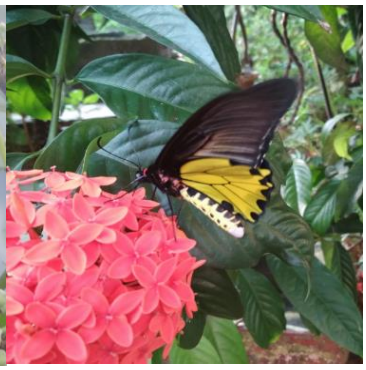

Bush hopper


Common palmfly


Dark blue tiger


Common crow


Grey Pansy


Birdwing

Photographic View of the Fnunal Diversity at Pragjyotish College

Table 10: Different species of spider recorded in the college campus

Serial No.	Scientific Name
1	*Argiope pulchella*
2	*Phintella vittata*
3	*Nephilia pilipes*
4	*Ampittia dioscorides camerta*

Table11: Different fishes recorded in two ponds of the college

S.NO	Scientific Name of Fish	Common Name
1	*Channa punctatus*	Goroi
2	*Channa striatus*	Shol
3	*Cyprinus carpio*	Common carp
4	*Amblypharyngodon mola*	Moa
5	*Catla catla*	Bhakua
6	*Cirrhinus mrigala*	Mirika
7	*Puntius sophore*	Senduri puthi
8	*Clarius batrachus*	Magur
9	*Heteropneustes fossilis*	Singi
10	*Monopterus cuchia*	Kuchia
11	Labeo rohita	Rohu
12	Anabus testudineus	Kawoi
13	*Mystus vittatus*	Tengra

Table12: Different species of amphibia found in the college campus

Serial No.	Name
1	*Bufo melanostictus*
2	*Rana tigerina*
3	*Euphlyctis cyanophlyctis_*
4	*Microhyla ornata*

Table13: Different species of reptiles found in the college campus

Serial No.	Name
1	*Bungarus fasciatuS*
2	*Enhydris enhydris*
3	*Ptyas mucosa*
4	*| Lycodon aulicus*
5	*Ahaetula nasutus*
6	*Sphenomorphus macculalus*
7	*Eutropis carinata*

Table14: Different species of birds found in the college campus

Sr. No.	Common Name	Scientific Name
1	Coppersmith Barbet	*Megalaima haemacephala*
2	Black Drongo	*Dicrurus macrocercus*
3	Indian Jungle Crow	*Corvus culminatus*
4	Common Myna	*Acridotheres tristis*
5	Spotted Dove	*Spilopelia chinensis*
6	Oriental Magpie Robin	*Copsychus saularis*
7	*White-breasted kingfisher*	*Halcyon smyrnensis*
8	House Sparrow	*Passer domesticus*
9	Red Vented Bulbul	*Pycnonotus cafer*
10	Purple Sunbird	*Cinnyris asiaticus*
11	Asian Pied Starling	*Gracupica contra*
12	Blue Throated Barbet	*Megalaima asiatica*
13	House crow	Corvus splendens
14	Jungle Myna	*Acridotheres fuscus*
15	Asian barred owlet	*Glaucidium cuculoides*
16	Asian Koel	*Eudynamys scolopaceus*

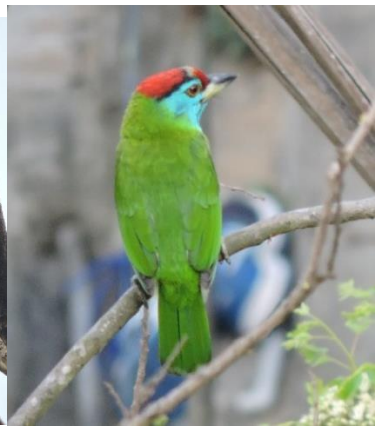
Channa punctatus

Catla catla

Labeo rohita

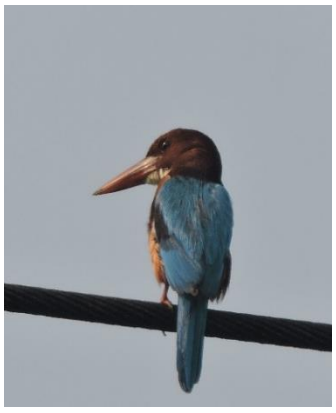
Anabus testudineus

House crow



Blue Throated Barbet

Asian Pied Starling



White-breasted kingfisher

Asian Pied Starling

Black Drongo

Photographic View of the Faunal Diversity at Pragjyotish College

5.5 Management Practices with respect to Water, Energy and Waste

5.5.1 Water Management Practices

- Water Storage per day= 13000. Lt
- Water Tank Cleaning=Twice per Annum
- Daily Consumption of water= 12,500 Lt

S/N	Location	Number of storage tank	Capacity
1	ADM Building	2	2000
2	RUSA Building	2	3000
3	Commerce Building	2	2000
4	Heritage Building	1	2000
5	Girls Common Room	1	1000
6	Girls'Hostel	3	3000

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 the one rain water harvesting unit capacity 1000 L within the college campus. The stored water is mainly used in gardening and many other purposes. Apart from this one big pond is also in the 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.

5.5.2 Energy Management Practices

- Electric Load = 80 KW
- Daily Consumption=unit 334 kwh
- Electric Bill paid for the period of 2021-22 =Rs. 6,75,676

Electrical Items in the college	No. of Tubes	No. of CFL Light	No. of LEDs	No. of Fens Celling+wall+exhust	No. of LCD projector	No. of Computers +Printers	No. of photocopier	Common /sophisticated analytical equipments	No. of Ac
Total Electrical components used in the college campus	848	110	349	758	30	30	05	-	42

Observations:

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

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

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

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

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

vi) The college is utilising natural lighting as first preference

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

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

ix) Regarding the use of renewable energy college has installed solar panels and Solar street light also

x) 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, Garden 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 4000 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 = 8.5 kg Non-biodegradable waste = 2.5 kg. Liquid waste= 9.5 kL E waste per annum = 90 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.
    - Specific waste management plans are adopted to manage solid waste in the campus. College has tie-up with Guwahati Municipal Corporation (GMC) and the generated solid waste is managed with help of GMC.
    - 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 and organic waste are used in the vermicomposting unit
    - Waste like broken bulbs, tubes etc. which cannot be repaired are dumped temporarily at the dumping bin and later on disposed of to the municipality collection van.

Vermicomposting unit at Prgjyotish College Campus

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 Pragjyotish College during survey it was observed that on an average, there are 49 number of four wheelers are used by faculty while 150 number of two wheelers are used by students and staff. Further very few student uses bicycles. 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 Pragjyotish College

It is estimated that the average mileage covered by each vehicle is about	10 km.
The total mileage covered by the 150 number of two wheelers per year	(150 × 10 × 200) = 300000 km
The average mileage covered by four wheelers is also the same	8 km per day
The total mileage covered by 49 four wheelers per year	(49 ×8 × 200) = 78400 km
The total mileage covered by two and four wheelers per year	(300000+ 78400) = 378400km
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 150 number Two Wheelers	(300000 /35) = 8571L
The total quantity of fuel consumed by 49 number four wheelers per year	(78400/15) = 5227 L
The total fuel consumption per year (Two+ Four) Wheelers	(8571 + 5227) = 13798 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 13798 litres of fuel per year	(13798 × 2.68) = 36978 kg

6.2 Flora and Carbon Footprint Reduction

Carbon Absorption Capacity of Flora at Pragjyotish College

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

- Carbon absorption capacity of one full grown tree = 6.8 kg CO_2
- Carbon absorption capacity of one semi grown tree = 3.4 kg CO_2
- Carbon absorption capacity of one Shrubby vegetation = 0.2 kg CO_2

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	145	6.8	986
Semi Grown	72	3.4	245
		Total amount of carbon absorption by Flora	**1231**

6.3 Oxygen Emission Capacity of Flora at Pragjyotish College

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

- Oxygen Emission capacity of one full grown tree = 117.6 kg O_2
- Oxygen Emission capacity of one semi grown tree = 58.8 kg O_2
- Oxygen Emission Capacity of 400 number of Shrubby vegetation = 550 kg O_2

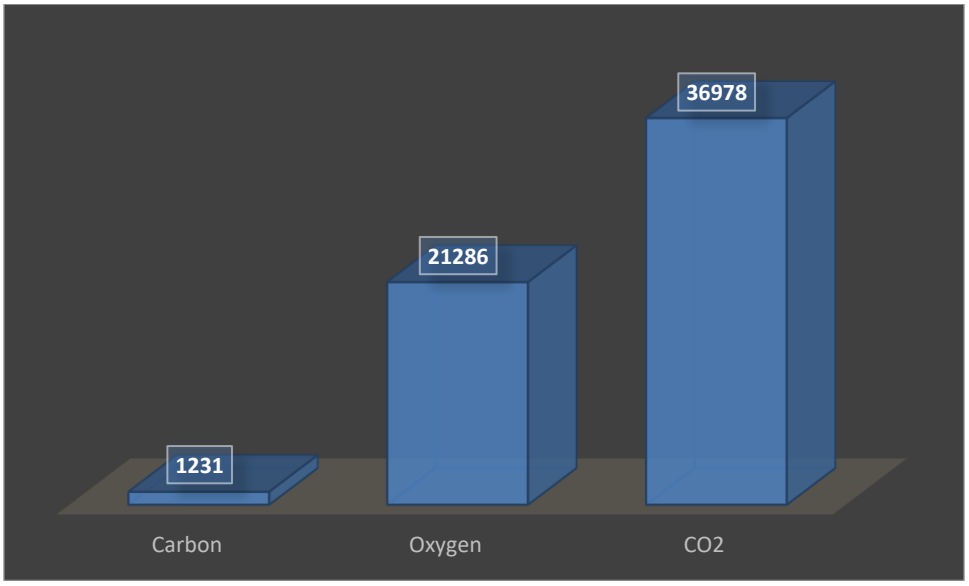
Type of Tree	Total No. of Tree	Amount of O_2 Emission / tree (kg)	Total O_2 Emission (kg)
Full Grown	145	117.6	17052
Semi Grown	72	58.8	4234
		Total amount of Oxygen Emission by Flora	21286

6.4 Summary of Carbon Footprint Reduction at Pragjyotish College

Carbon Absorption Capacity of Flora	1231 kg
Oxygen Emission Capacity of Flora	**21286** kg
The total quantity of CO_2 emitted by vehicles	36978 kg

6.5 Summary of Carbon Footprint per person at Pragjyotish College

Total Carbon Footprint in Tonnes	:	36.9
Total Carbon Footprint in kg	:	36978
Total Average number of persons in the College	:	3800
Carbon emission per person in kg	:	36978/3800 = 9.7
Carbon emission per person in kg	:	9.7 kg



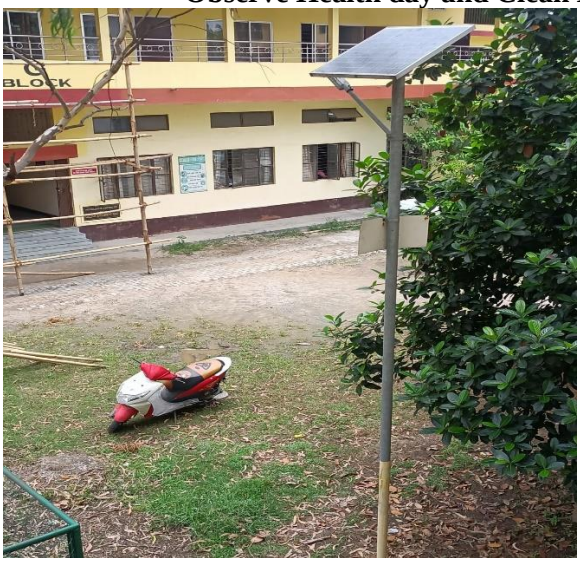
7.0. Organizational effort

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 tree, shrubs and herbs species	Tree- 145, Shrubs- 72
5	How may numbers of existing full-grown tree, semi grown trees	Full Grown - 145 Semi Grown – 72
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. Various community development works in terms of education, health & hygiene, environmental education etc. has been initiated.
9	Is the college having solar, wind, or other forms of renewable energy?	Yes. Planning for solar PV generation
10	What are the good practices pertaining to Transport?	Encourage the use of public transport, Bicycle and Zero vehicle movement in the college campus atleast one day in a week.
11	What is the average number of vehicle movements in terms of two & Four wheelers	Two Wheelers: 140 - 150 Four Wheelers: 40 – 50
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.

Celebration of Independence Day in the College Campus

Observe Health day and Clean Drive by student of Pragjyotish College



Street Solar Light, Dust bin and Rain water harvesting Unit

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 more rain water harvesting unit to cater the need of the college as well as to save ground water

(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 existing capacity of the solar panels should increase. Authority should take action to replace the existing lights 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, the existing vermicompost plant may be improved in organised way
- 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.
- 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.
- Air quality, drinking water quality should monitor annually.

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Annexure 1 : Scanned copy of Green Campus Committee of Kanya Mahavidyalaya
Annexure 2 : Scanned copy of electric bill paid receipt
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

PRAGJYOTISH COLLEGE

GUWAHATI – 781 009

Email: pragcollege@yahoo.co.in Website: www.pragjyotishcollege.org.in

Fax & Telephone: 0361-2544531

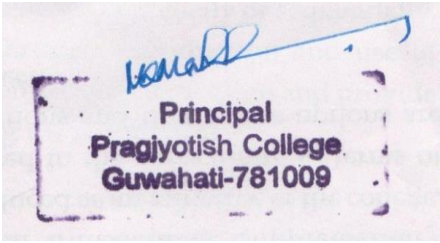
Dated: 28.02.2019

A Committee is constituted with the following faculty members to undertake a **Green Audit** for the college.

Members of the Green Audit Committee:

1. Dr. Manoj Kumar Mahanta, Principal , Chairperson
2. Dr. Jyoti Prasad Das, Convener (Department of Geography)
3. Amit Kumar Pradhan, Member (Department of Botany)
4. Bhrigu Kumar Nath (Department of Geography)
5. Himadri Saikia, Member (Department of Botany)

The Committee will continue until further orders from Authority.



Assam Power Distribution Company Limited

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

Website: www.apdcl.org

Centralized Customer Care Number: 1912

Consumer Name: THE PRINCIPAL, PRAGJYOTISH COLLEGE	**Consumer Number: 006000002737**	**Bill Amount: 83076.000**
Address: ,SANTIPUR GUWAHATI 9,GUWAHATI	Old Consumer Number: 63000001300	**Due Date: 26-Apr-2022**
	DTR Number: 2171	Bill Number:900057360
	Pole Number :000	Bill Period: 01-Mar-2022 To 31-Mar-2022
	Connected Load in KW: 80.0	Bill Date : 11-Apr-2022
Contact Number : 9864049782	Contracted Demand in KVA: 94.11	Number of Days: 31
Email : Pragcollege@yahoo.co.in	Load Security:175480.000	Meter Status: DEFECTIVE
Tariff Category: HT IV BULK SUPPLY (GOVERNMENT EDUCATION)	Meter Number: APD19648	Billing Status: ESTIMATED
Supply Voltage Level: HT		006000002737

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)	APD19648	30.0	20897.600	0.000	20897.600	0.000	0.000	0.000

Units Consumed	PF Penalty/Rebate	LT Metering Penalty	DTR Penalty	HT Rebate	Voltage Rebate	Voltage Penalty	Billable Units in KWh
Normal | 10034.700	0.000	301.040	0.000	0.000	0.000	0.000	10335.740

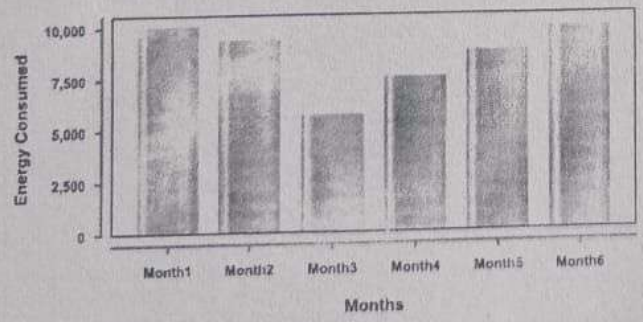
Recorded Demand (In KVA)	0.66	Maximum Demand (in KVA)	19.8	Billing Demand (in KVA)	94.11	Average Power Factor	99.4
Power on Hours	744.0			Availability Percentage			

Billing Details

Current Demand	Outstanding Amount	Adjustment Amount	Solar Rebate	Net Bill Amount
Rs. 83075.870	Rs. 0.000	Rs. 0.000	0.00	**Rs. 83076.000**
				In Words: Rupees Eighty Three Thousands Seventy 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(Normal)	10335.740	6.450	66665.520
Total Energy Charge			66665.52
Energy Charge Re-Estimated			0.000
Rooftop Solar Adjustment			0.00
Demand/Fixed Charge (KVA)	94.11	130.0	12454.36
Electricity Duty			3955.99
Govt. Subsidy		0.0	0.0
Overdrawal Penalty			0.0
Meter Rent		0.0	0.0
Charges for dishonoured cheque			0.0
Arrear Principal			0.000
Arrear Surcharge			0.000
Current Surcharge			0.000
Adjustment Amount			0.000
Rebate if paid before due date			**0.00**
Payable amount before due date			**83076.00**
Payable amount after due date			**83076.00**

Checked by E&OE:

Prepared by: 40000541

Signature with seal

Certificate

This is to Certify that

ENVIRO TESTING SERVICES

Bijay Nagar, Noonmati, Guwahati - 781020,
Assam, India

has been found in Compliance with requirements of

Quality Management System

ISO 9001:2015

for the following scope:

Environment Work Deals With Testing of Soil, Water and Air.

Certificate No.	:	QMS/025224/1221
Original Certificate Date	:	08-December-2021
Issue Date	:	08-December-2021
Expiry Date	:	07-December-2024

To check this certificate status visit:
"http://uasl.uk.com/certifiedorganization.html"

Authorised Signature

Quality Control Certification

UK Office: 1929, Chynoweth House,
Trevissome Park, Truro-TR48UN, Cornwall, UK

India Office: 2nd Floor, Aman Market,
Narela Mandi, Delhi - 110 040, India

Certificate

This is to Certify that

ENVIRO TESTING SERVICES

Bijay Nagar, Noonmati, Guwahati - 781020,
Assam, India

has been found in Compliance with requirements of
Occupational Health and Safety Management Systems

ISO 45001:2018

for the following scope:

Environment Work Deals With Testing of Soil,
Water and Air.

Certificate No.	:	OHSMS/025225/1221
Original Certificate Date	:	08-December-2021
Issue Date	:	08-December-2021
Expiry Date	:	07-December-2024

To check this certificate status visit:
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India Office: 2nd Floor, Aman Market,
Narela Mandi, Delhi - 110 040, India

Pollution Control Board, Assam

(Department of Environment & Forests : : Government of Assam)

অসম প্রদূষণ নিয়ন্ত্রণ পৰিষদ

(অসম চৰকাৰৰ বন আৰু পৰিৱেশ বিভাগ)

No.WB/GUW/T-2445/13-14/198 1949

Dated Guwahati the 19th Feb 2022

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 One (1) year subject to the outcome of Hon'ble Guwahati High Court Order WP(C)/8468/2018 to **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-2445/13-14/197 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 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.

2. This order will remain valid for **one (1) year with effect from 20 Feb, 2022** 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.
3. This order has been passed as per the approval of the Competent Authority.

Member Secretary

Memo No.WB/GUW/T-2445/13-14/198-A 1949 Dated Guwahati the19th Feb 2022

Copy to:

1. The Chairman, Pollution Control Board, Assam for favour of information.
2. The Incharge, Central Laboratory, PCBA for information & necessary action.
3. M/s. Enviro Testing Services, Bijoy Nagar, House No.35, Noonmati, Guwahati-22,Kamrup (M) for information and necessary action.

Member Secretary

Annexure-A(i)

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	Silica
22	Fluoride	48	Colour
23	Residual Chloride	49	Anionic Detergent
24	Boron	50	TVC
25	Free Ammonia	51	MLSS
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)

Annexure-A(ii)

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)

Member Secretary
Pollution Control Board, Assam

भारत सरकार
Govt. of India
सूक्ष्म, लघु और मध्यम उद्यम मंत्रालय
MINISTRY OF MICRO, SMALL & MEDIUM ENTERPRISES

उद्योग आधार Udyog Aadhaar

D

Type of Enterprise	Micro	Small	Medium
Manufacturing	A	B	C
Services	D	E	F
UAN	AS03D0000207		

GM-DIC - KAMRUP METROPOLITAN

Udyog Aadhaar Memorandum

1	Name of Entrepreneur	SATYA NATH GOSWAMI
2	Social Category	GENERAL
3	Name of Enterprise	ENVIRO - TESTING SERVICES
4	Type of Organization	
5	Postal Address	H. NO. 35, BIJAY NAGAR, NOONMATI, GUWAHATI - 781020, ASSAM. District: KAMRUP METROPOLITAN State: ASSAM PIN: 781020 Mobile No: 9435707936 Email: envirotesting2011@gmail.com
6	Date of commencement	15/12/2001
7	Previous Registration details-if any	::
8	Bank Details	IFS Code: SBIN0006196 Bank Account: 30368995867
9	Major Activity	SERVICES

11

SN	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit Code	Activity Type
1	71 - Architecture and engineering activities; technical testing and analysis	7120 - Technical testing and analysis	71200 - Technical testing and analysis	Services

11	Persons employed	10
12	Investment (Plant & Machinery / Equipment's)	10(Rs. In Lakhs)
13	District Industry Centre	KAMRUP METROPOLITAN

Declaration

I hereby declare that information given above is true to the best of my knowledge. Any information, that may be required to be verified, shall be provided immediately before the concerned authority.

PRINT

Click here for Udyog Aadhaar Acknowledgement