

DECEMBER 5, 2022

**A REPORT  
ON  
GREEN AUDIT IN UJANI MAJULI KHERKATIA  
COLLEGE, MAJULI**



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**SUBMITTED TO**  
THE PRINCIPAL  
UJANI MAJULI KHERKATIA COLLEGE  
P.O. RATANPUR MIRI, P.S. JENGRAIMUKH,  
DIST. MAJULI, ASSAM-785105



**SUBMITTED BY**  
ADD SQUARE SOLUTIONS  
VILL: DEURIPARA (BEHIND DEEO OFFICE),  
BONGAIGAON-783380  
(ISO 9001:2015 CERTIFIED ORGANIZATION)

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We express our sincere gratitude to all other concerned officials for their support and guidance during the conduct of this exercise.

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B.E.E Certified energy auditor (EA15266)



A handwritten signature in black ink, appearing to read "Deepjyoti Barman".

Deepjyoti Barman  
Proprietor  
Add Square Solution

A handwritten signature in blue ink, appearing to read "Samar Jyoti Hazarika".

Mr. Samar Jyoti Hazarika  
B.E.E Certified energy auditor (EA15266)

## **1. INTRODUCTION:**

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The faster economic development and industrialization leads to several environmental and ecological crisis. Use of fossil fuel and de-forestation are the major reason of climate change. To address this issue, it becomes very essential to adopt the green initiative by all the stakeholders of the society and the role of higher educational institutions is more prevalent.

Ujani Majuli Kherkatia College takes initiative to contribute in sustainable development goals by reducing a significant amount of Green House Gas (GHG) from the atmosphere. As a part of this initiative, the “Green Audit” of the college campus becoming the primary important for self-assessment of the institution which reflects the role of the college in mitigating the present environmental problems.

Green audit is the process of identifying and determining the eco-friendly and sustainable initiatives taken up by the Ujani Majuli Kherkatia College authority. Green Audit is an effective tool to formulate a culture of sustainability by implementing it through systematic identification, quantification, documentation, reporting and monitoring of environmentally important components. Green audit will also help in preserving the rich floral and faunal diversity in and around the campus.

## **2. OBJECTIVE:**

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The idea of the green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in the college campus. The main objectives of Green Audit are:

- Land use analysis of Ujani Majuli Kherkatia College.
- Tree diversity of the College campus.
- Faunal diversity of the College campus.
- Weather data of the College.
- Water analysis of the College.
- Noise level in the surrounding of the College campus.
- Waste disposal of College.
- Transportation of the College.

- Electrical power consumption of the College
- Expenditure on green initiative during the last five years.

### **3. BENEFITS OF GREEN AUDIT:**

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- Better environmental practices of the institute.
- More efficient resource management.
- Benchmarking for environmental conservation initiatives.
- To create a green campus.
- Better waste management through reduction of waste generation and recycling.
- To create plastic free campus and create health consciousness among all the stakeholders of the college.
- Enhance the awareness for environmental conservation guidelines and duties.
- Cost saving methods through better resource management.
- Developing an environmental ethics and value systems among the students and other stakeholders.
- Develop a valuable tool to monitor the environmental and sustainable development of the college.
- Improvement of overall college profile.

### **4. METHODOLOGY ADOPTED FOR GREEN AUDIT**

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The methodology adopted to perform the entire Green Audit exercise includes: collection of data, physical inspection of the campus, observation and review of the documentation, data analysis and reporting.

#### **Step 1 – Data Collection**

Data collection was performed by using different tools such as observation, measurements and communicating with responsible persons of the college.

Following steps were taken for data collection:

- The audit team visited each building and department, library, canteen, open space, gardens of the campus and information was collected by interviewing with the responsible person.

- Land use data of the college has been collected.
- The energy data such as monthly electricity consumption and fuel consumption was collected from the officials and analyzed.
- Waste management facility such as waste bins, vermi compost unit etc. has been visited, other waste disposal process adopted by the college has been discussed and noted.
- All flora and fauna found in the college campus has been identified and listed out.
- Water quality, noise level of the campus has been measured.

#### Step 2 – Campus tour and physical inspection

The audit team visited the campus on 26<sup>th</sup> November 2022 to collect the data and to take the necessary measurements.

#### Step 3 - Document review and verification

During the initial visit, available facility documentation are reviewed with facility representatives. This documentation review includes data related to-

- Land use pattern of the college.
- Geographical location with campus.
- Flora and faunal diversity of the College campus.
- Water analysis of the College.
- Waste management of college.
- Transportation of the College.
- Energy consumption and conservation measures taken by the College.
- Expenditure on green initiative during the last five years.

#### Step 4 – Key parameter measurement and testing

- Water analysis of the College
- Noise level of the College campus

#### Step 5 - Data Analysis

- Analysis of land use land cover data.
- Weather data analysis (Average ambient temperature and humidity analysis)
- Energy consumption data analysis (Electricity and fuel consumption data)
- Water test report analysis.



- Analysis of noise level at different location of the campus.

#### Step 6 - Prepare a Report Summarizing Audit Findings

The results of our findings are summarized in this report. The report includes a description of the college campus including different facilities. The energy and environmental conservation initiatives already taken by the college authority has been mentioned in the report.

Also, the necessary observation and requirements to fulfill the green campus. Discussion of all major energy consuming systems and their operation. The report incorporates a summary of all the activities and effort performed in past few years to conserve environment and energy within the campus or outside. The report also includes the activities performed by the college authorities along with the local communities for awareness generation and community participation towards better environmental practices to address the present environmental challenges.

### **5. DESCRIPTION OF THE COLLEGE CAMPUS**

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The Ujani Majuli Kherkatia. College was established in 1973 pertaining an eco-friendly environment. The campus is located in the upper Majuli and north-eastern region of the world's famous river island Majuli. The geographical location of the college is 27.0506° N, 94.2257° E. The total area of the college is (27 Bigha, 2 katha and 9 Lecha) or 38,114 sq mtr comprising 5,646.98 sq mtr total buildup area including academic and hostel building, 8,020 sq mtr playground area and remaining areas are considered as plantation area and passages among the buildings. The college campus area consists of multiple building both single story assam type and multi-story RCC buildings along with the green vegetation area and trees.

At present the College has 7 Departments distributed in different buildings which includes classrooms, laboratories, computer centre etc. The college also has canteen and the playground, open greenery space with vegetation and trees.



Figure 1: Google Earth map of Ujani Majuli Kherkatia. College

## 6. LAND USE ANALYSIS:

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Geographical location:

Ujani Majuli Kherkatia College is situated in the upper Majuli of Majuli district. The geographical location of the campus is at latitude  $27.0506^{\circ}$  N, and longitude  $94.2257^{\circ}$  E.

Total land cover data of the college campus has been collected from the college authority. The total area is covered by the buildup area of the college buildings including hostel building, green vegetation or plantation area and play ground. Total land of the college is 27 Bigha, 2 katha and 9 lesa. The detail land use land cover data has been shown in figure no 2 and 3.

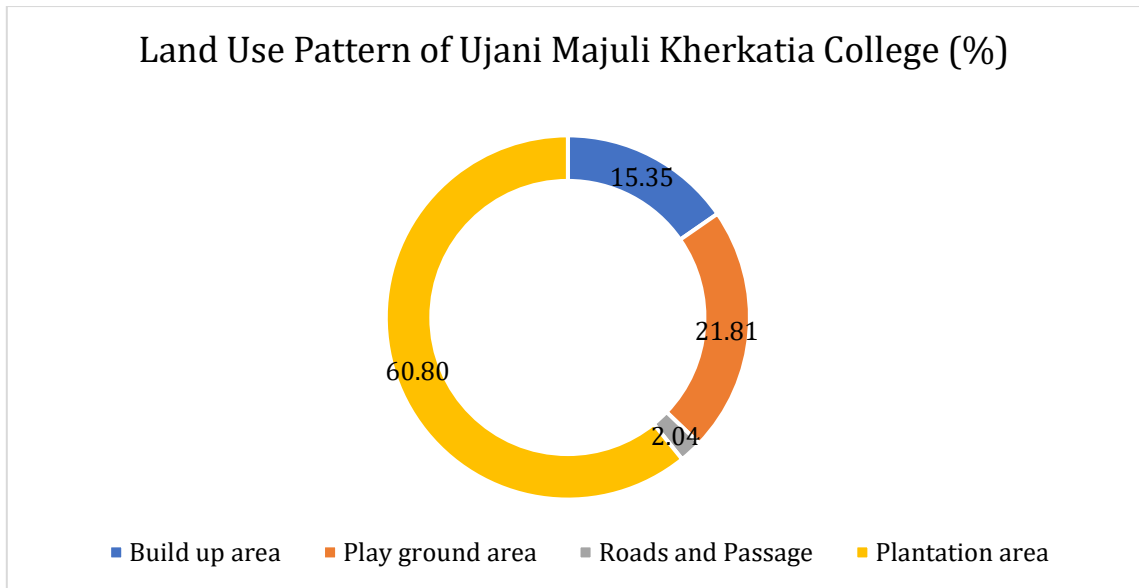


Figure 2: Land Use Pattern of Ujani Majuli Kherkatia College

The total buildup area of the campus is occupied by number of buildings and are shown in below figure-

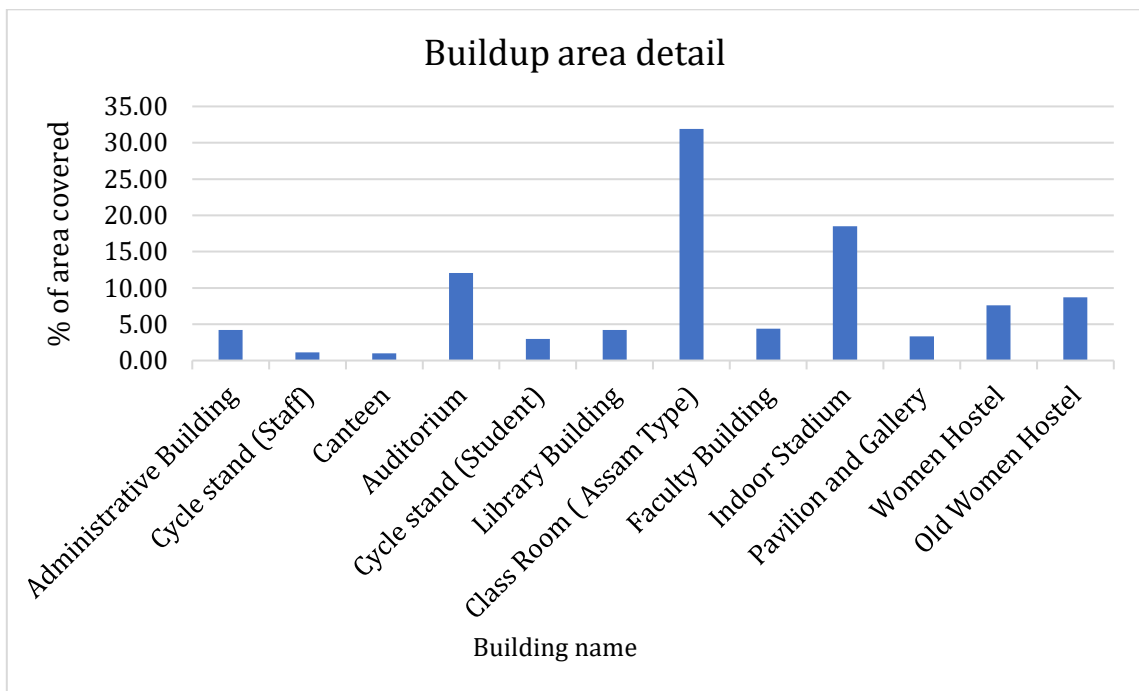


Figure 3: Building wise buildup area

## 7. WEATHER DATA OF THE COLLEGE CAMPUS

The ambient air temperature and relative humidity data were obtained from the NASA website (<https://power.larc.nasa.gov/data-access-viewer/>)

The NASA data are satellite-retrieved; its parameters are computed on a daily average basis using NASA/GEWEX surface radiation Budget model. The model considers the effect of cloud cover and local atmospheric conditions. Compared to BSRN (Baseline Surface Radiation Network) sites the NASA data showed high accuracy with Bias (less than 0.12) and RMSE (Root Mean Square Error) (less than 18%). BSRN sites are the most accurate approved ground sites.

The below table shows the monthly average air temperature and relative humidity of Ujani Majuli Kherkatia College campus for the year of 2021 (January to December). It has been observed that the average air temperature of the campus is ranging between 16.88 °C to 28.85 °C whereas the average relative humidity of the campus varies from to 61.67 % to 85.08%.

Months	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Max Air Temp (°C)	19.07	21.90	25.48	30.54	30.25	26.60	30.88	31.87	30.69	29.98	22.73	21.40
Min. Air Temp (°C)	14.90	16.78	19.63	23.24	24.81	26.60	27.01	25.42	27.01	22.95	18.01	14.94
Avg. Air Temp (°C)	16.88	19.55	23.11	26.46	28.05	28.28	28.85	28.28	28.54	26.40	20.24	18.09

Table 1: Monthly temperature variation of Ujani Majuli Kherkatia College

Months	Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov	Dec
Max RH (%)	90.75	75.44	77.38	76.44	83.44	74.69	90.12	91.94	87.81	91.00	90.44	90.12
Min RH (%)	64.88	62.19	47.75	48.44	57.12	74.69	74.94	70.62	70.56	69.56	71.75	67.06
Avg RH (%)	78.59	69.59	64.43	61.67	71.90	82.46	83.39	85.08	80.62	80.26	78.92	74.89

Table 2: Monthly Relative Humidity (%) variation of Ujani Majuli Kherkatia College

## 8. WATER QUALITY OF THE COLLEGE CAMPUS

Water quality testing is an important task of green audit as it identifies contaminants and avoids water borne diseases. Ujani Majuli Kherkatia College uses ground water for their daily needs. Water is being used in the campus as drinking water, used in bathrooms both in hostels and academic buildings and for gardening and other purposes. Therefore, it is very important to test the water to ensure the quality to use for all purposes. Water used for drinking is filtered through filtration process and also by using water purifier system in hostel as well as in different location of academic buildings. Cleaning of the water filter is carried out on regular basis to ensure the better quality of drinking water.



*Figure 4: Water filter*



*Figure 5: Water Purifier*

Drinking water indicators:

The following is a list of indicators often measured to identify the quality.

- Alkalinity
- Color of water

- PH Value
- Taste and odor
- Dissolved metals and salts (sodium, chloride, potassium, calcium, manganese, magnesium)
- Microorganisms such as fecal coliform bacteria (*Escherichia coli*), *Cryptosporidium*, and *Giardia lamblia*; see Bacteriological water analysis
- Dissolved metals and metalloids (lead, mercury, arsenic, etc.)
- Dissolved organics: colored dissolved organic matter (CDOM), dissolved organic carbon (DOC)
- Heavy metals

Water quality test has been conducted by the Sub-Divisional level laboratory, Public Health Department (PHE), Majuli Division and the report of the same has been furnished as figure 6 and 7. The values of the various parameters of the water sample tested are within WHO Permissible limit. So, the water sample may be considered as good quality drinking water on the basis of these parameters. Still, it is suggested that the water should be consumed after simple processing like filtration and boiling to avoid any health-related issues.

**SUB-DIVISION LEVEL LABORATORY (PHED) MAJULI**  
**OFFICE OF THE EXECUTIVE ENGINEER (PHE) MAJULI DIVISION, MAJULI**  
**ASSAM**

Test Report

Test Report No: 5712 / MWS / 105 / 06 / 18  
 Issued To: UJK College (Faculty Building)  
 Customer Reference No:  
 Sample Description:  
 Sample Type: Tap  
 Sample on: 19.11.22  
 Sample Collected by: *Prasanta Baruah*

Issue Date: 21.11.22  
 Dated:  
 Sample received On dated: 19.11.22  
 Sample Location: *Office*  
 Sample Quantity: 500 ml  
 Date Of Analysis started: 21.11.22  
 Date of Analysis complete: 21.11.22

Sl No	Parameter	Proposed Use	Result	IS:10500:2012 (Second Revision)		Unit
				Desirable Limit	Max Permissible Limit (domestic water abstract source)	
1	pH	IS: 3025: Part 10/25 C	6.72	6.5-8.5	6.5-8.5	Ph Units
2	Total Dissolved Solids	IS: 3025: Part 16		300	2000	mg/L
3	Turbidity	IS: 3025 Part 10	1	1	5	NTU
4	Iron	APHA 3500-Fe-B	0.46	0.3	1	mg/L
5	Nitrate	IS: 3025: Part 34		45	45	mg/L
6	Chloride	IS: 3025: Part 32		250	1000	mg/L
7	Total Hardness	IS: 3025: Part 21		200	500	mg/L
8	Total Alkalinity	IS: 3025: Part 23		200	600	mg/L
9	Fluoride	IS: 3025: Part 09	0.13	1.0	1.5	mg/L
10	Sulphate	IS: 3025: Part 24		200	400	mg/L
11	Arsenic	IS: 3025: Part 37	0.024	0.01	0.05	mg/L
12	Colour	IS: 3025: Part 4		5	15	Hzn/cm
13	Odour	IS: 3025: Part 3		Agreeable	Agreeable	
14	Taste	IS: 3025: Part 8		Agreeable	Agreeable	
15	Calcium	IS: 3025: Part 40		75	200	mg/L
16	Magnesium	APHA 3500-Mg B		30	100	mg/L

Opinion: The Parameter Tested at Sl. No. \_\_\_\_\_ in the test report does not meet the requirements of IS 10500:2012 (Second revision)

*Bacteriological examination is not found.*

Notes:

- The results given above are related to the sample as received and tested in this laboratory. Reliability of sample lies with the sender.
- The test report cannot be regenerated/re-produced in whole or in part without written permission of Laboratory.
- The test report cannot be used for any publicity or any legal purpose.
- The test samples meant for chemical analysis will be disposed Of after 15 days from the date Of issue of test report unless until specifically requested by the customer for retaining over a longer period.

Sample analyzed by: *[Signature]*  
 Quality Manager/Asst. Chemist  
 Majuli SDLL

2022.11.26.12.54

Figure 6: Water Testing Report

**SUB-DIVISION LEVEL LABORATORY (PHED), MAJULI**  
**OFFICE OF THE EXECUTIVE ENGINEER (PHE) MAJULI DIVISION, MAJULI**  
**ASSAM**

Test Report

Test Report No: SDLL/MRJ/43/06/109  
 Issued To: UJK College (Administrative)  
 Customer Reference NO:  
 Sample Description:  
 Sample Type: D/W  
 Sample on: 19.11.22  
 Sample Collected by: *Arante Rana*

Issue Date: 21.11.22  
 Dated:  
 Sample received On dated: 19.11.22  
 Sample Location: Ground water  
 Sample Quantity: 500 ml  
 Date Of Analysis started: 21.11.22  
 Date of Analysis complete: 21.11.22

Sl No	Parameter	Protocol Used	Results	IS:10500:2012(Second Revision)		Unit
				Desirable limit	Max Permissible limit (in absence better alternate source)	
1	pH	IS: 3025: Part 11 @ 25 C	6.74	6.5-6.5	6.5-8.5	Ph Units
2	Total Dissolved Solids	IS: 3025: Part 16		500	2000	mg/L
3	Turbidity	IS: 3025 Part 10	1	1	5	NTU
4	Iron	APHA 3500- Fe B	0.47	0.3	1	mg/L
5	Nitrate	IS: 3025: Part 34		45	45	mg/L
6	Chloride	IS: 3025: Part 32		250	1000	mg/L
7	Total Hardness	IS: 3025: Part 21		200	600	mg/L
8	Total Alkalinity	IS: 3025: Part 23		200	600	mg/L
9	Fluoride	IS: 3025: Part 60	0.13	1.0	1.5	mg/L
10	Sulphate	IS: 3025: Part 24		200	400	mg/L
11	Arsenic	IS: 3025: Part 37	0.004	0.01	0.05	mg/L
12	Colour	IS: 3025: Part 4		5	15	Hazen
13	Odour	IS: 3025: Part 5		Agreeable	Agreeable	
14	Taste	IS: 3025: Part 8		Agreeable	Agreeable	
15	Calcium	IS: 3025: Part 40		75	200	mg/L
16	Magnesium	APHA 3500- Mg B		30	100	mg/L

Opinion: The Parameter Tested at Sl. No----- in the test report does not meet the requirement of IS 10500:2012 (Second revision)

Notes: *Bacteriological contamination is not found.*

- The results given above are related to the sample as received and tested in this laboratory. Reliability of sample lies with the sender.
- The test report cannot be regenerated/re-produced in whole or in part without written permission of Laboratory.
- The test report cannot be used for any publicity or any legal purpose.
- The test samples meant for chemical analysis will be disposed Of after 15 days from the date Of issue of test report unless until specifically requested by the customer for retaining over a longer period.

Sample analyzed by: *[Signature]*

Quality Manager/Asstt. Chemist  
 Majuli SDLL

Figure 7: Water Testing Report



## 9. AIR QUALITY OF THE COLLEGE CAMPUS

Air pollution which is majorly caused due to the combustion of fossil fuel become a concern in all over the world. The degradation of air quality impacts the human health. Although there is no such major industries in the district of Majuli and the Ujani Majuli Kherkatia College is surrounded by the lush green environment, therefore it is expected to have a better air quality. To identify the air quality, measurement of major pollutant concentration was carried out during the audit. Particulate Matter (PM), Carbon di oxide (CO<sub>2</sub>) and Formaldehyde (HCHO) concentration along with ambient air temperature and relative humidity has been measured. Particulate Matter (PM) consists of various mixtures of suspended particles in the air. Particulate Matter (PM) is mainly produced by various natural and anthropogenic activities. However, the significant sources of this pollutant are factories, thermal power plants, motor vehicles, construction activities, forest fires, and natural windblown dust. Particulate Matter (PM) specifically PM<sub>10</sub> and PM<sub>2.5</sub> significantly causes a wide variety of respiratory, cardiovascular, and pulmonary diseases.

The test was conducted with the help of air quality meter Temtop-M 2000. This instrument is sensitive to the size of particles of aerodynamic diameter of 2.5 µm and 10 µm. These range is assumed as the most important for affecting the health of people. All the pollutant concentrations were recorded for 60 seconds in the memory of the instrument, which further downloaded and analyzed. 13 Different locations within the campus were selected and the readings of PM<sub>2.5</sub>, PM<sub>10</sub>, CO<sub>2</sub> and HCHO were recorded.

Below table shows the measured parameters as mentioned above.

Sl. No	Building/Block	Measurement duration	PM <sub>2.5</sub>	PM <sub>10</sub>	CO <sub>2</sub>	HCHO
1	Administrative building (Ground Floor)	60 Sec	27	42	416	0.009
2	Administrative building (First Floor)	60 Sec	27	41	415	0.007
3	Library building	60 Sec	29	40	410	0.007
4	Assam type building (Class Room)	60 Sec	33	46	430	0.005

5	Assam type building varanda (Class Room)	60 Sec	29	43	420	0.005
6	Library building (Book rack)	60 Sec	38	44	512	0.009
7	Library building (Reading Hall)	60 Sec	35	46	517	0.007
8	Library building (Computer Laboratory)	60 Sec	41	52	521	0.011
9	Faculty department building (Ground Floor)	60 Sec	36	48	518	0.009
10	Faculty department building (First Floor)	60 Sec	40	51	520	0.01
11	Near Entrance Gate	60 Sec	29	36	439	0.007
12	In front of administrative building	60 Sec	28	38	430	0.008
13	In front of auditorium building	60 Sec	27	36	428	0.007

Table 3: Air Quality Detail

## 10. NOISE LEVEL OF THE CAMPUS AND SURROUNDING AREA

Under the Air (Prevention and Control of Pollution) Act, 1981, noise is considered as a pollutant. Noise mostly occurs in two major situations community noise and industrial noise. Community noise is also called environmental noise and is defined as the noise emitted from all the sources except the noise from the industrial sources. As far as community noise is concerned the WHO guidelines recommend less than 35 dB(A) in classrooms which is important for good teaching and learning conditions. The noise level monitoring was carried out to assess the equivalent noise level (Leq) around the Ujani Majuli Kherkatia college campus. The test was carried out for 60 seconds in each location and the maximum, minimum and the average noise level readings were recorded. The noise monitoring was carried out at the 13 different locations within the campus. Below table shows the measured noise level in the campus.

Sl. No	Building/Block	Measurement duration	Average (dB)
1	Administrative building (Ground Floor)	60 Sec	38
2	Administrative building (First Floor)	60 Sec	41
3	Library building	60 Sec	29
4	Assam type building (Class Room)	60 Sec	27
5	Assam type building varanda (Class Room)	60 Sec	44
6	Library building (Book rack)	60 Sec	32
7	Library building (Reading Hall)	60 Sec	35
8	Library building (Computer Laboratory)	60 Sec	23
9	Faculty department building (Ground Floor)	60 Sec	36
10	Faculty department building (First Floor)	60 Sec	44
11	Near Entrance Gate	60 Sec	54
12	In front of administrative building	60 Sec	67
13	In front of auditorium building	60 Sec	58

*Table 4: Noise level test in different locations*

From the data obtained Table 4, it is observed that the ambient noise level in certain locations found as slightly beyond the prescribed standard limit during testing period. The exceeding of maximum permissible limits in these areas can be attributed to the noise emerging from vehicular movements through nearby roads. Because of gathering of a large number of stakeholders for official works, the noise level in the administrative building may be on higher side. Although the noise level in most of the location were found as slightly on higher side, the same is permissible by keeping in mind to minimize as much as possible and not allowed to exceed the limit. As per WHO noise quality guidelines, noise level values are summarized with regard to specific environments and effects. For each environment and situation, the guideline values take into consideration the identified health effects and are set, based on the lowest levels of noise that affect health (critical health effect).

Specific Environment	Time Base (hours)	Standard limits as per WHO guidelines	
		LAeq [dB]	LAm <sub>ax, fast</sub> [dB]
Outdoor living area	16	50 - 55	-
Dwelling, indoors, Inside bedrooms	16	35	-
	8	30	45
Outside bedrooms	8	45	60
School class rooms and pre-schools, indoors	During class	35	-
Pre-school bedrooms, indoors	Sleeping time	30	45
School, playground outdoor	During play	55	-
Hospital, ward rooms, indoors	8	30	40 -
	16	30	
Hospitals, treatment rooms, indoors	-	As low as possible	-
Industrial, commercial, shopping and traffic areas, indoors and outdoors	24	70	110
Ceremonies, festivals and entertainment events	4	100	110
Public addresses, indoors and outdoors	1	85	110
Music through headphones/earphones	1	85 (under headphones, adapted to free-field values)	110
Impulse sounds from toys, fireworks and firearms	-	-	120-140 (peak sound pressure (not LAm <sub>ax, fast</sub> ), measured

			100 mm from the ear)
Outdoors in parkland and conservation areas	-	Existing quiet outdoor areas should be preserved and the ratio of intruding noise to natural background sound should be kept low	

Table 5: Standard limit of noise level as per WHO guidelines

## 11. TREE DIVERSITY OF THE COLLEGE CAMPUS

The College campus area is vastly diverse with a variety of tree species. These tree species are the integral part of the college. Most of these tree species are planted by the college authority through various tree plantation programs conducted in different periods of time. These trees have increased the quality of life by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife. The impact of these trees has not only within the college fraternity but also the people surrounding the college. They contribute the environment by moderating the effects of the sun, rain and wind and by absorbing and filtering the sun's radiant energy, keeping the campus cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Thus, the college campus has been playing a significant role in maintaining the environment of the entire area.

The study was carried out in the entire college campus to identify the various tree species and reveals that a total 20 numbers of tree species belonging to 14 families are found in the campus. The following are the tree species found in the college campus.

Sl. NO	Name of the Plant Species	Family	Common Name	Qty
1	<i>Cedrus deodara</i>	Pinaceae	Devadaru	8
2	<i>Phyllanthus emblica</i>	Phyllanthaceae	Amlokhi	3
3	<i>Areca catacheau</i>	Arecaceae	Beetlenut	3
4	<i>Mangifera indica</i>	Anacardiaceae	Mango	2
5	<i>Cascabela thevetia</i>	Apocynaceae	Karabi	3
6	<i>Aegle marmelos</i>	Rutaceae	Bel	2
7	<i>Caesalpinia pulcherrima</i>	Fabaceae	Radhachura	2
8	<i>Callistemon sp.</i>	Myrtaceae	Bottle Brush Tree	1
9	<i>Cassia fistula</i>	Fabaceae	Sonaru	3
10	<i>Cocos nucifera</i>	Aracaceae	Coconut	3
11	<i>Dalbergi asisoo</i>	Fabaceae	Sisu	5
12	<i>Delonix regia</i>	Fabaceae	Krishnachura	5
13	<i>Eucalyptus maculate</i>	Myrtaceae	Eucalyptus	1
14	<i>Gmelina arborea</i>	Verbenaceae	Gomari	7
15	<i>Lagerstroemia speciosa</i>	Lythraceae	Ajar Tree	2
16	<i>Mesua ferrea</i>	Calophyllaceae	Nahor	20
17	<i>Mimusops elengi</i>	Sapotaceae	Bakul	2
18	<i>Pinus kesiya</i>	Pinaceae	Pine tree	9
19	<i>Terminalia arjuna</i>	Combretaceae	Arjun	2
20	<i>Zizyphus jujuba</i>	Rhamnaceae	Bogori (Chinesedate)	3

Table 6: Tree Diversity of College Campus

## 12. FAUNAL DIVERSITY OF THE CAMPUS

“Majuli” the largest river island in the world is considered as biodiversity “hot spot” in the country. Favorable climate condition, topography and different other factors results in a diversity of ecological habitats such as forests, grasslands and wetlands.

The island with its fertile land and highly productive wetlands forms the ideal habitat for a variety of birds which supports not only the indigenous resident birds but also attracts a large number of migratory birds including some uncommon species. Ujani Majuli Kherkatia College is situated in the upper Majuli of Majuli district. The campus

is an example of co-existence of human and environment as the campus is rich in flora and faunal diversity.

“Majuli” falls within the greater Brahmaputra valley of Assam and influenced by monsoon climate. Due to vast occurrence of wetlands and high level of water table, the environment remains moist throughout the year except for driest months of December and January. The mean annual rainfall over the period of 1980 to 2004 is 1704.65 mm. More than 90 per cent of annual rainfall is received in the months of April, May, June, July, August, September and October.

The faunal diversity of the college has been studied and listed as below-

Animal Group: Aves



Local Name: Common Myna

Scientific Name: *Acridotheres Tristis*



Local Name: House Crow

Scientific Name: *Corvus Splendens*



Local Name: House Sparrow

Scientific Name: *Passer Domesticus*



Local Name: Red-Vented Bulbul

Scientific Name: *Pycnonotus Cafer*



Local Name: Common tailor bird

Scientific Name: *Orthotomus sutorius*



Local Name: Spotted dove

Scientific Name: *Streptopelia chinensis*



Local Name: Koel

Scientific Name: *Eudynamys scolopaceus*



Local Name: Jungle babbler

Scientific Name: *Argya striata*



Local Name: Small Blue Kingfisher

Scientific Name: *Alcedo atthis*



Local Name: Open bill stork

Scientific Name: *Anastomus oscitans*





Local Name: Black Crowned Night Heron  
Scientific Name: *Nocticorax nycticorax*



Local Name: Great Egret  
Scientific Name: *Ardea alba*

Animal Group: Reptilia



Local Name: Tejia  
Scientific Name: *Chamaeleo* sp.  
Animal Group: Amphibia



Local Name: Common house gecko  
Scientific Name: *Hemidactylus frenatus*  
Animal Group: Mollusca



Local Name: Asian Common Toad  
Scientific Name:  
*Duttaphrynus melanostictus*



Local Name: Snail  
Scientific Name: *Achatina fulica*.

Animal Group: Anthropoda



Local Name: Dragonfly

Scientific Name: *Anax indicus*



Local Name: Grasshopper

Scientific Name: *Tettigonia viridissima*



Local Name: Honey Bee

Scientific Name: *Apis florea*



Local Name: Indian Cabbage White

Scientific Name: *Pieris canidia*



Local Name: Mottled Emigrant

Scientific Name: *Catopsilia pyranthe*



Local Name: Oriental Striped Tiger butterfly

Scientific Name: *Danaus Genutia*

Figure 8: Faunal Diversity of Ujani Majuli Kherkatia College

### 13. WASTE DISPOSAL OF THE COLLEGE

The activity and actions required to manage the waste from beginning to the final disposal is called as waste disposal process. The activities include the collection of waste, transportation, treatment and disposal of waste considering waste management process. At present the biodegradable waste are decomposed within the college campus, non-biodegradable waste such as single used plastics are burned out periodically. E-waste is generally kept in the store room. On the other hand, the wet waste such as vegetable, excess food is taken by the local vendor.



*Figure 9: Waste collection bins of the College*

#### 13.1 SOLID WASTE MANAGEMENT:

Every building of Ujani Majuli Kherkatia College has waste bins made of bamboo located in suitable location of the building from where housekeeping staffs take the wastes. From these waste bins, wastes are dumped in big bin to decompose by the housekeeping staffs regularly. There are different types of waste generated within the campus. Out of these the some of the major wastes are as paper waste, organic waste, e-waste etc.

Separation of bio degradable waste and non-biodegradable waste is one of the major tasks of solid waste management. Ujani Majuli Kherkatia College practices the separation of these two types of waste by keeping different waste bins for different waste. Biodegradable waste is taken to the vermi-compost bed for bio composting and to generate organic fertilizer which are to be used in the gardens as organic manure.

Vermicomposting is the technology where the plant biomass produced in the college campus is converted into available plant nutrient rich organic manure within a short time span with the use of locally available appropriate species of composting earthworms.

The college administration has initiated the construction of vermi-compost unit within the campus and the same has shown below-



*Figure 10: Vermi-Compost Unit (Under construction stage)*

### **13.2 LIQUID WASTE MANAGEMENT:**

Liquid waste is generated from hostels and canteen.

Liquid wastes generated by the College are of two types:

1. Sewage waste
2. Canteen effluent.

The liquid wastes are mainly drained. The College does not have any sewage treatment plant yet.

### **13.3 E-WASTE MANAGEMENT:**

Ujani Majuli Kherkatia College follows suitable mechanism to dispose E-wastes generated from various sources. E-wastes are generated from computer laboratories, Academic and Administrative Offices. The e-waste includes out of order equipment's or obsolete items like laboratory instruments, electronic circuits, computer desktops or different computer components, laptops and accessories, printer and cartridges, charging cables, Wi-fi devices and cables, CCTV components, sound systems, display units, UPS and battery, biometric machine, scientific instruments etc. All these wastes which cannot be reused or recycled is being disposed through authorized vendors.

## **14. RAIN WATER HARVESTING IN THE COLLEGE CAMPUS**

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Rainwater harvesting is an important environment friendly approach for water conservation. The extensive and unplanned use of groundwater has not only disturbed the natural water level but also has made the groundwater contaminated and unfit for use. Rainwater harvesting green practice having benefit of maintaining the groundwater level.

The campus has rain water harvesting system (which is under construction during audit) to conserve rain water and for better utilization.



*Figure 11: Rain water Harvesting System (Under construction stage)*

#### 15. VEHICULAR MOVEMENTS:

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It was estimated that on an average around 25 nos. of two wheelers and 10 nos. of four-wheeler vehicles has a regular movement in the campus. The College has a designated parking place for faculty and student separately.



*Figure 12: Parking area of the college campus*

## 16. ELECTRICAL POWER CONSUMPTION AND ENERGY CONSERVATION INITIATIVES

Energy consumption in different forms has been continuously rising almost in all the sectors- agriculture, industry, transport, commercial, residential (domestic) and educational institutions. This has increased the dependency on fossil fuels and electricity. Therefore, energy efficiency improvement and possible energy conservation became a necessary objective for energy consumers. The Government of India enacted the Energy Conservation Act, 2001 in October 2001. The Energy Conservation Act, 2001 became effective from 1st March, 2002. The Act provides for institutionalizing and strengthening delivery mechanism for energy efficiency programs in the country and provides a framework for the much-needed coordination between various Government entities. Ujani Majuli Kherkatia. College, an educational institute in Majuli district of Assam taking initiative for reducing energy intensity in the College Campus.

The Ujani Majuli Kherkatia. College campus consisting of multiple buildings. The following Tables show the basic information about the building and the utilities.

Sl. No	Basic Building Data (Arts Campus)	Value
1	Connected Load/Contract Demand (For Academic & Administrative Building) Consumer Number: 178000000511	11.2 kW/12 kVA
2	Installed capacity of DG set	20 kVA (1 No) Make: Mahindra Powerol Model: 3305GM
3	Electricity consumption (January'2022 to October'2022)	3,438.00 kWh
4	Cost of electricity consumption (January'2022 to October'2022) @ 6.45/unit	Rs. 38,380.00
4.1	Cost of electricity consumption through DG set. (January'2022 to October'2022)	Rs. 19,260.00
4.2	Total cost of electricity (Utility + DG set)	Rs.57,640.00
5	Total Numbers of building covered	6 Nos

5.1	Working hours (Academic and Administration building)	8 Hrs (9 AM to 5PM)
5.2	Working hours (Hostel building)	24 Hr x7 days
5.3	Working Days/week	6 Days
6	Whether sub-metering of electricity consumption for each building	No

Table 7: Basic building Description

## 16.1 PRESENT ENERGY SCENARIO

### 16.1.1 Review of analysis of electricity bill of Ujani Majuli Kherkatia. College.

At present the overall energy consumption is catered by the electricity supply from Assam Power Distribution Company Limited and own DG sets. The college has electrical connection having consumer number (178000000511) with connected load/Contract demand as 11.2kW/12kVA. The college also has one 20kVA DG set to supply electricity during power cut.

### 16.1.2. Energy Consumption.

The total electricity consumption from January 2022 to October 2022 was 3,438.00 kWh and the total bill paid to distribution companies was Rs. 38,380.00.

Monthly electricity consumption(kWh) and electricity bill (Rs.) paid from January 2022 to October 2022 has shown in figures below.



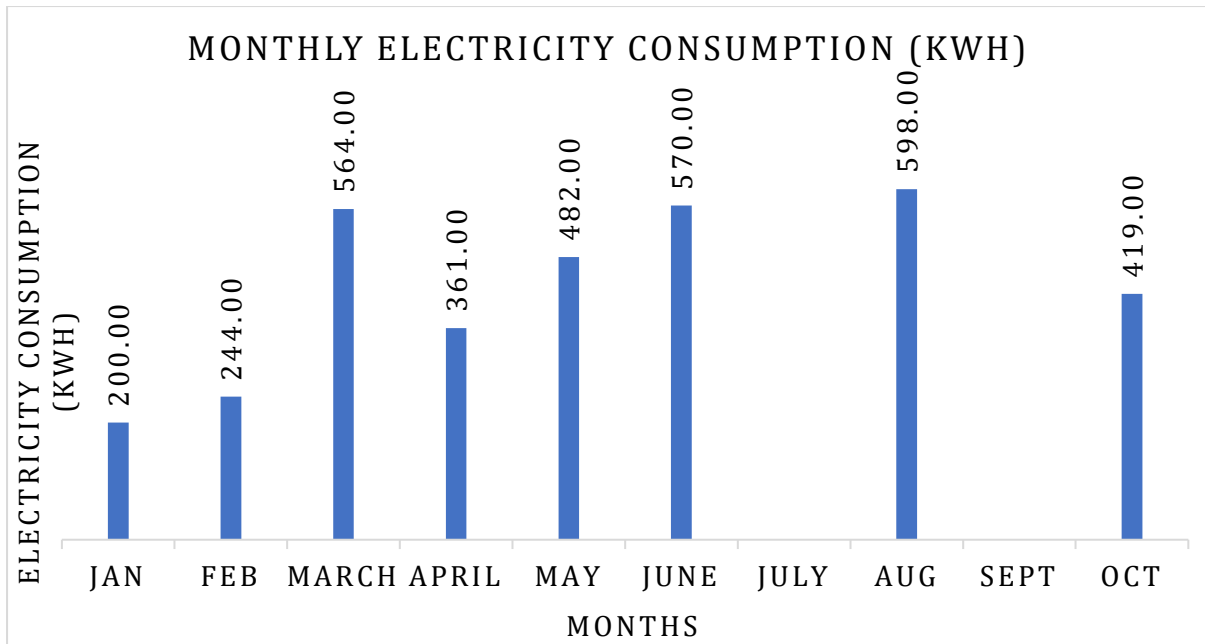


Figure 13: Monthly energy consumption from March 2021 to February 2022 (kWh)

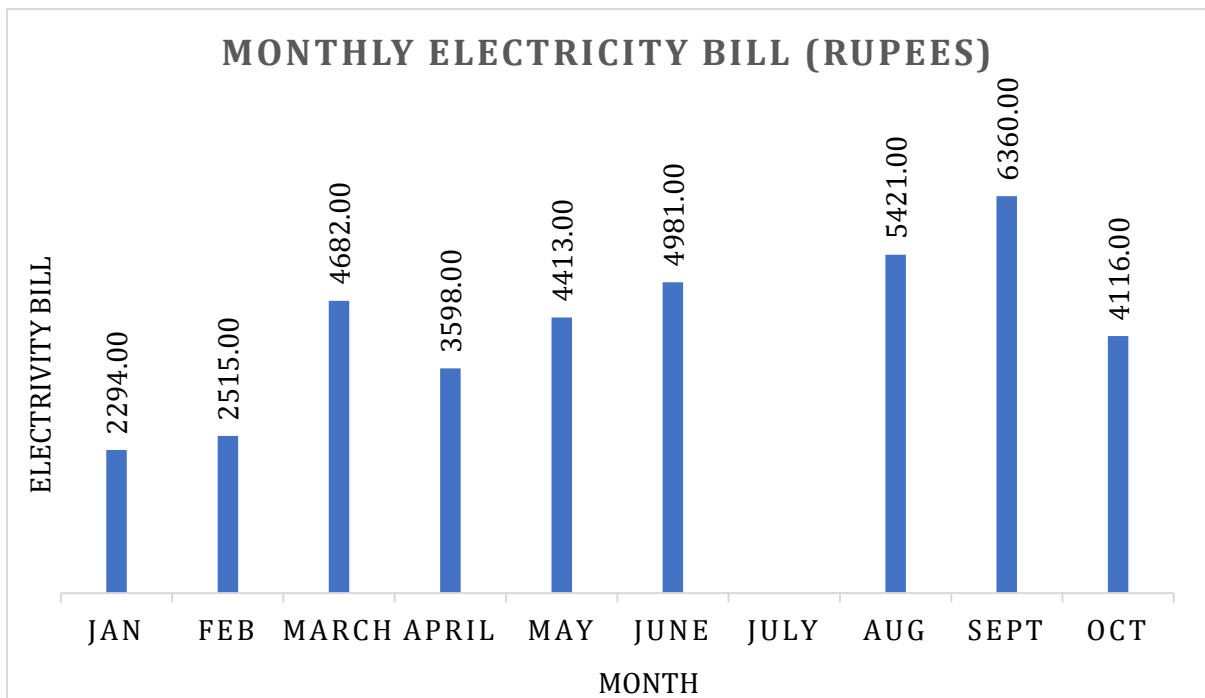


Figure 14: Monthly Electricity Bill (Rupees)

## **17. ESTABLISHMENT OF ENVIRONMENT CLUB:**

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An Environment club among the students has been established on 13<sup>th</sup> February 2020 keeping its vision to create awareness and commitment among the students to protect and conserve the environment. It aims to achieve clean surroundings with the help of students and to inculcate environmental consciousness to save our earth. The Club organizes activities on a regular basis to engage the students in various eco-friendly and sustainable projects.

### Objectives of Environment Club

- To create awareness of environment protection, conservation & restoration.
- To promote environmental awareness & develop social & life skills.
- To increase the awareness level of students towards environmental issues and give them power to make change.
- To provide opportunities for students to involve in a variety of activities relating to the environment.
- To promote environmental awareness and empower students to take action and work toward building a sound environmental ethic.

## **18. ROUTINE GREEN PRACTICES**

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- Foundation Day Celebration:

Each year the college celebrates its foundation day on 1<sup>st</sup> of July. On this occasion along with other routine activities, green initiative of the college also gets special emphasize by the college administration.

- World Environment Day Celebration:

The Ujani Majuli Kherkatia College celebrates world environment day every year through a participatory event not only within the barrier of college campus but also along with the local community. Awareness campaign were organized on various environmental issues along with tree plantation within and outside the campus were carried out during the day.

- Reducing the use of Paper:

The college administration adopts the concept of utilization of paper as less as possible. Practices like, re-use of one-sided paper for notes, sketches, rough work, rough printouts, etc.; cashless transactions, and utilizing multi user printer at central administrative locations of the Institute office also aims at reducing the use of papers.

- Usage of bicycles and public transport:

The college administration always promotes the use of bicycles among the staff and students. Hostellers are discouraged from having two wheelers/cars. Three-wheeler E-Rikshaw are one of the sustainable transports adopted by the students and other staff.

- Installation of Signboard and Posters:

To create an awareness among all the stakeholders of the college and to initiate the behavioral change towards the sustainable environmental practices the college authority has install several posters, stickers and signboards. It is expected that this may reduce the wastage of resources.



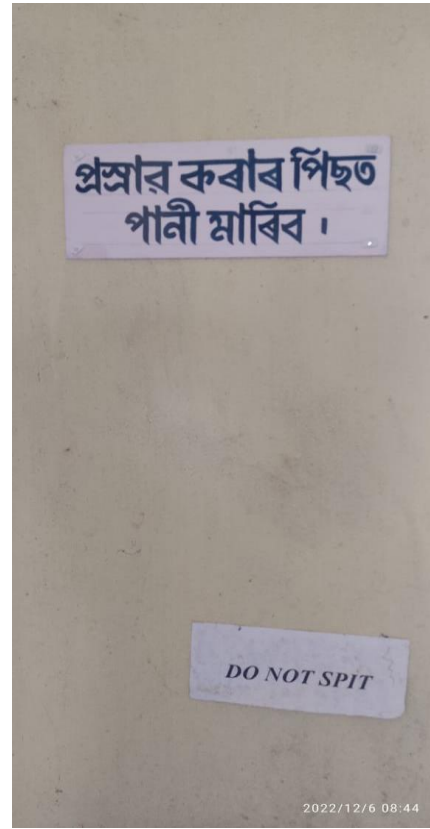


Figure 15: Signage installed in different locations

Plantation Drive on “Foundation Day” on 1<sup>st</sup> July 2022



Tree plantation Program on 13<sup>th</sup> August 2022 under “Chief Minister’s Institutional Plantation Programme”



Cleanliness drive on various occasions



Plantation drive on various occasions

