Elion Technologies & Consulting Pvt Ltd

Certificate

This is to certify that Energy Audit at **Nehru College, Cachar, Assam, 788098** was carried out for the year **2023 - 24.**

The campus administration has initiated measures to incorporate sustainable practices aimed at reducing energy consumption. These efforts include use of BEE star rated appliances and transitioning to LED lights, all aimed at fostering energy efficiency across the campus.

Audit Date – 25/06/2024
Valid Up to – 24/06/2025

Audit Officer

Certificate Number
EA/2024/NC

Elion Technologies & Consulting Pvt Ltd

Certificate

This is to certify that Green Audit at **Nehru College, Cachar, Assam, 788098** was carried out for the year **2023 - 24.**

The campus has submitted the necessary data and credentials for review. The actions and measures taken by the college have been verified. The college's efforts in environmental preservation and sustainability are acknowledged and praised.

Audit Date – 25/06/2024
Valid Up to – 24/06/2025

Audit Officer

Certificate Number
GA/2024/NC

Elion Technologies & Consulting Pvt Ltd

Certificate

This is to certify that Environment Audit at **Nehru College, Cachar, Assam, 788098** was carried out for the year **2023 - 24.**

The campus has supplied essential data and credentials for evaluation. The college is replacing conventional lights with LED lights in phases. Additionally, it is planning to implement a rainwater harvesting system to further enhance environmental sustainability.

Audit Date – 25/06/2024
Valid Up to – 24/06/2025

Audit Officer

Certificate Number
ENV/2024/NC

GREEN AUDIT REPORT
FOR
NEHRU COLLEGE

Elion Technologies & Consulting Private Limited

307, 3rd Floor, DDA Lal Market, H-Block
Vikas Puri, New Delhi-110018
Contact No: +91 9013923982,+91 9013890526
Web: www.elion.co.in.

Table of Contents

Acknowledgment

Elion Technologies and Consulting Pvt Ltd places on record it's thanks to Nehru College, Assam for entrusting the task of conducting green audit study.

We acknowledge with gratitude the whole hearted support and cooperation extended by all team members while carrying out the study.

Site Information

Name of College	Nehru College
College Address	Pailapool, Cachar, Assam, 788098
Execution Partner	ELION Technologies & Consulting Pvt Ltd
Communication Address	307, 3rd Floor DDA Lal Market H-Block Vikas Puri, New Delhi, 110018
Date of Audit	25th June 2024
Year of Audit	2023 – 2024
Audit Participants from Site	Dr. Shuvajit Chakraborty Dr. Madhumita Das Dr. L. Bharati Singh Dr. Meghamala Mahanta Dr. Momota Chakravorty Dr. Rajendra Prasad Goala Mr. S.Merina Singha Mr. Nihaljyoti Das
Total College Area	4.53 Acres (Approx.)
Total Green Area	0.62 Acres (Approx.)

Overview of Institute

The College took its birth on the 28th of July, 1965, though the noble idea of establishing the College was first mooted in a meeting held on the 8th of June 1964, the day of shradh rituals of our first-ever Prime Minister, Pandit Jawaharlal Nehru. It is by way of commemorating as well as paying homage to the great departed leader that the College was given its name after him. The College is located in an area which is basically predominated by socio-economically backward classes as well as tea garden workers. It was established in order to cater to the need of higher education for the children of this locality and its neighbouring areas. The College aims more particularly to uplift these sections of people of the society by spreading quality education amongst them.

The founder Principal of the College, Sri Khitish Chandra Das, M.A. (Double), B.T., was an eminent educationalist and being a man in humanitarian mould and a truth Nehruvian in his persona, he came over to this remote corner of far-flung country side with the sole object of launching a crusade against the encircling gloom of ignorance and literacy.

The College was fortunate enough to have the unflinching support of the local people and leaders, tea-garden workers, business magnates and educated elite at the crucial moments of its nascent stage. In this respect, the name of Shri Sreenandan Dhuby deserves special mention. He donated 6 bighas of land where the College is standing at present as gift to the College when the affiliation of the College assumed a big question. Within a short spell of time, the College acquired more plots of land and now the college is the proud owner of 31 bighas of land from all these sources.

The College started its academic journey with very few students in 1965 in a small room at the erstwhile Nehru High School, Pailapool. About one year later, it was shifted to its own building and today, it is in full expedition with more than 1500 students on its rolls. It is not a miracle nor a wonder at all but a pointer to the fact that its entity and the key-role it plays in its domain are really beyond all questions.

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List of courses offered by the institute:

1. **TDC (CBCS)**

- Political Science (Pass/Honours)
- Bengali (Pass/Honours)

- English (Pass/Honours)
- Manipuri (Pass/Honours)
- Hindi (Pass/Honours)
- Economics (Pass/Honours)
- History (Pass/Honours)
- Education (Pass)
- Philosophy (Pass)

2. TDC (CBCS)

- Political Science
- Bengali
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Introduction

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyses 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 prevalent.

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 CO2 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. 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.

Advantages of Green Audit:

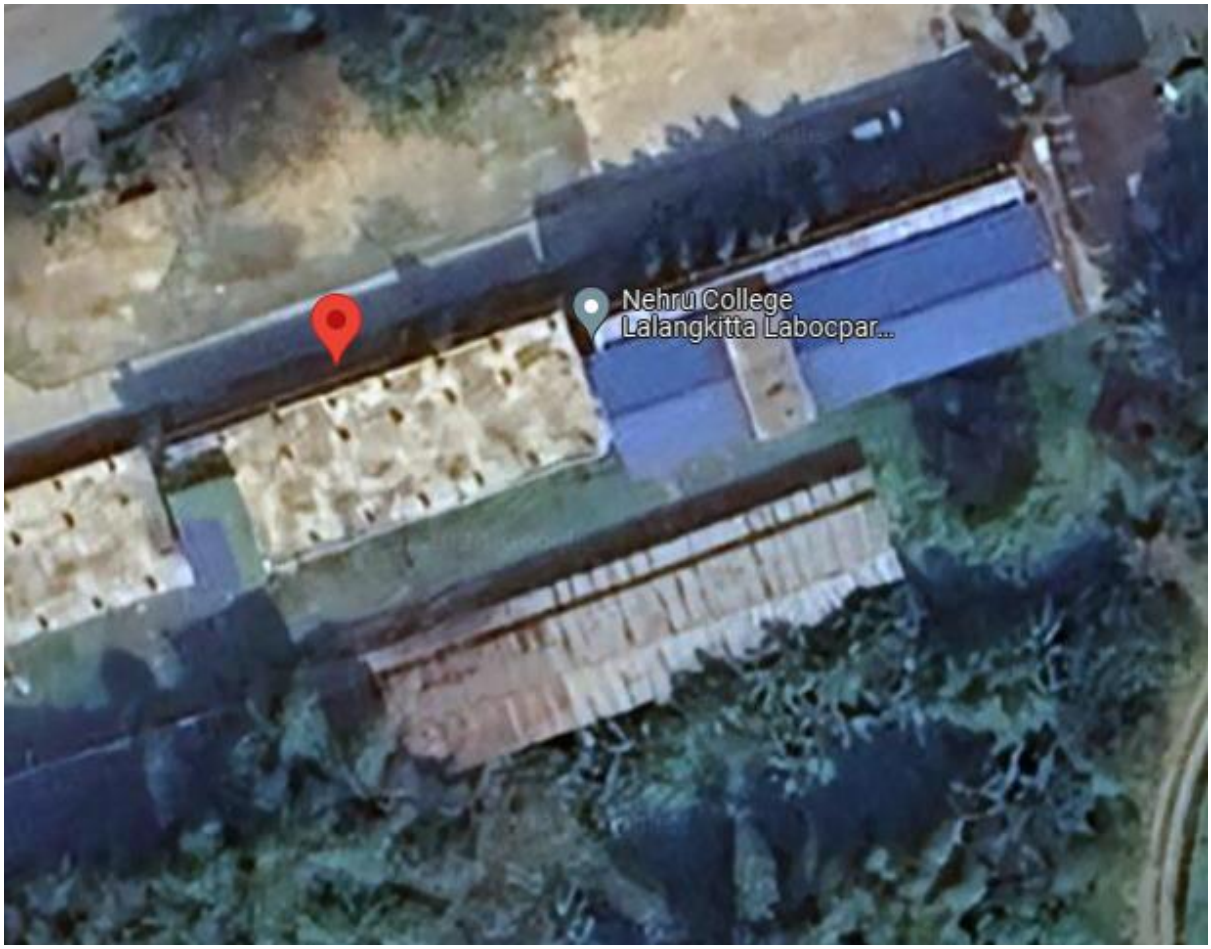
Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Some main advantages of green Audit are:

- It helps to shield the environment.
- Minimizing the waste and managing the cost.
- Authenticate conformity with the implemented laws.
- Minimizing the energy consumptions and focus on green and clean energy.
- Ambient Environmental Condition.
- Awareness and Training on Sustainability for Students.
- Awareness about environmental guidelines and duties.

Environment Setting

The land use around the campus is mix of commercial and residential use. Schools, Restaurants, Commercial complexes, restaurants, Industries etc. are present around the campus.

Nehru College



Location of Nehru College

Green Audit

For Green Audit following 13 major areas (including their subsections) were covered and compliance/ initiatives under these areas were verified/ validated.

a) Good Daylight Design and Ventilation
b) Water Efficiency
c) Wastewater Management
d) Indoor Air Quality
e) Energy Efficiency
f) On-site Energy Generation
g) Temperature and Acoustic Control
h) Paper Waste Management
i) E-Waste Management
j) Canteen and Solid Waste Management
k) Universal Access and Efficient Operation and Maintenance of Building
l) Green Belt
m) Green Programs (Green initiatives)

3.1 Good Daylight Design and Ventilation

a) Corridors are wide with good ceiling height. All the corridors receive good daylight.
b) Classrooms and Library have large windows. Adequate daylight is received through the windows during daytime.
c) Classroom walls, corridors and other areas are white-washed, this enhances the daylight received.
d) Curtains are provided on some of the windows to avoid glare.

3.2 Water Efficiency:

a) Groundwater and Government is the source of water supply in the campus.
b) Approximately per day 1 hours morning and evening Groundwater (Bore well) is running.
c) Groundwater is stored in an underground tank:

Location	Tank Capacity	Type (Underground/Overhead)
Girls' Hostel (4 Nos)	1000 Lt.	Overhead
Teachers' Common room and Library (2 Nos.)	1000 Lt.	Overhead
RUSA Building	1000 Lt.	-
Boys' Wash Room	1000 Lt.	-
Toilet Block	500 Lt.	-
	5000 Lt.	Underground Water Tank

d) RO filter with water dispensers are placed at every floor.
e) PHE Water and Boring water are the main sources of Drinking Water. Four Purifiers (Kutchina Pure Water) have been installed for purifying the water. Individual bottles are used by respective persons.
f) Normally mops are used for floor cleaning and hose is used for cleaning once a week.
g) Sensor based water taps are provided in the washrooms.
h) Dual flushing system is provided in the washrooms.
i) Signages are provided in washrooms emphasizing water conservation.
j) Water from air conditioning unit and reject water from water purifiers is used for watering plants and trees in the garden.


NCSU ROOM


Shot on OnePlus
Meghamala's

3.3 Wastewater Management:

a) Water treatment plant or water recycling plant is not available in the campus.

3.4 Indoor Air Quality;

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, as it relates to the health and comfort of building occupants. Some common indoor pollutant are listed as below:

- Molds and other allergens – This may arise from water seeping into the building envelope or skin, plumbing leaks, condensation due to improper ventilation, or from ground moisture penetrating a building part.
- Carbon monoxide – Sources of carbon monoxide are incomplete combustion of fossil fuels.
- Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions etc.
- Carbon dioxide – Due to human respiration
- Particulate matter – Due to construction and maintenance activities

Major observations under indoor air quality are as below:

a) Split Air Conditioners are used in the Principal office, labs.
b) Indoor plants are present in the campus. Indoor plants can be plotted not only for the aesthetic appearance but also for health benefits. Refer Annexure 1 for details.
c) Indoor air quality tests are not carried. It is recommended to get air quality tested once a year.
d) Exhaust fans are provided in washrooms to dissipate heat and odour.

3.5 Energy Efficiency:

Power is supplied by Local Electricity Distribution Company. The major electricity consuming equipment installed in the campus are Air Conditioners, Water Coolers, Lighting, Desktop, Printers etc.

It was observed that:

a) LED lights are installed in the entire campus.
b) Campus has air conditioners which are in good working condition.

3.6 On Site Energy Generation (usage of LPG/ Natural Gas):

a) LPG is used for cooking in canteen/pantry.

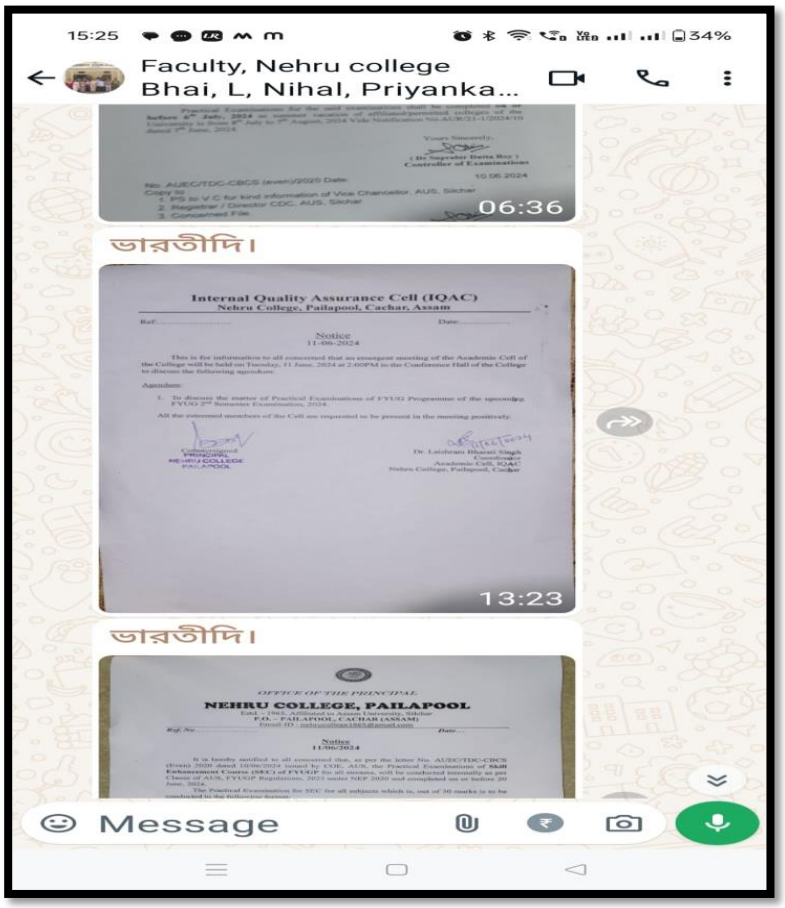
3.7 Temperature and Acoustic Control

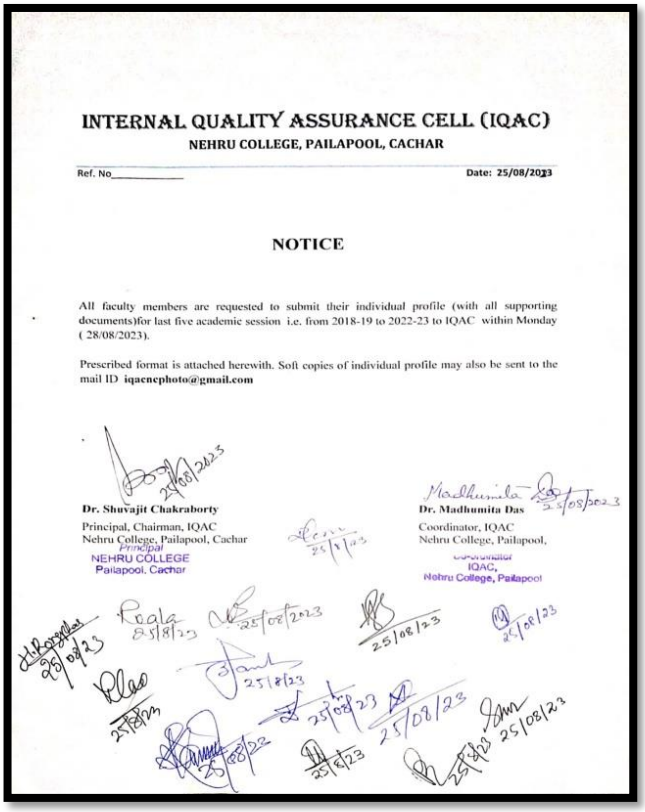
a) The campus has done tree plantation all around the boundary walls (Devadaru, Arjun, Coconut, Neem, Mango, Rose, Moon flower, Tulsi, Mint etc.)
b) There is no noise pollution inside and around the campus.

3.8 Paper Waste Management:

Being academic institution, waste paper is the main solid waste generated in the premises. The College has taken steps to minimize and avoid paper usage. It was observed that:

a) Prints and photocopies are taken on both sides of the pages to avoid excess paper usage. Rather than photocopy, digitalization (scanning) is practiced.
b) Internal notices and communications are through E-mail/Whatsapp.
c) Faculty and administration staff uses old papers and envelops for internal usages as rough work, file markers, page separators etc.
d) Old papers and answer sheets are kept in a separate storage room and disposed off as per college policy.





INTERNAL QUALITY ASSURANCE CELL (IQAC)
NEHRU COLLEGE, PAILAPOOL, CACHAR

Ref. No._____ Date: 25/08/2023

NOTICE

All faculty members are requested to submit their individual profile (with all supporting documents)for last five academic session i.e. from 2018-19 to 2022-23 to IQAC within Monday (28/08/2023).

Prescribed format is attached herewith. Soft copies of individual profile may also be sent to the mail ID **iqacnephoto@gmail.com**

Dr. Shuvajit Chakraborty
Principal, Chairman, IQAC
Nehru College, Pailapool, Cachar
Principal
NEHRU COLLEGE
Pailapool, Cachar

Dr. Madhumita Das
Coordinator, IQAC
Nehru College, Pailapool,
IQAC,
Nehru College, Pailapool

3.9 E-Waste Management:

a) E-waste is disposed off or discarded after approval from committee and is disposed by certified vendors.

3.10 Solid Waste Management:

It was observed that:

a) Wet waste and dry waste segregation is practiced in the premises. Separate bins are provided for wet biodegradable and dry recyclable waste.
b) Compost pit is also available for composting of dry waste such as leaves, flowers etc.
c) The daily waste is collected and disposed off through contractual vendors.
d) Biodegradable waste is mainly generated in canteen.

3.11 Universal Access and Efficient Operation and Maintenance of Building:

It was observed that:

a) College is easily accessible. Staircase and ramps are provided for staff and students.
b) Since the access and staircases are wide and uncluttered, it is possible to have a safe evacuation during emergency.
c) Fire extinguishers and Fire hose reel are provided for emergency. They are inspected and serviced by fire protection Service Company annually.


PAVLO
FIRE

3.12 Green belt/ Landscaping:

a) Large trees and plants are planted in the premises. Plantation also helps maintaining lower temperatures of the area.

3.13 Green Initiatives:

a) College is regularly celebrating important days such as Environment Day, Yoga Day, Earth Day etc. as well as other cultural programs. Solar Power Plant are available in the Campus.

Recommendations/Suggestions

For Improving Energy Consumption:

a) Every classroom and lab with central switch board can have a diagram linking location of a tube light, fan etc. with corresponding switch. This will ensure that correct fitting is switched on/ off and can save time & unnecessary operation.
b) Installation of automatic lights with sensors can be considered.
c) Standard Operation Procedures (SOPs) should be prepared and followed for green purchasing. Equipment with star rating, using eco-friendly materials; with safe disposal policy to be preferred. Policy of returning equipment at the end of life span to the supplier to be preferred.
d) For purchasing new electronic appliances, star rating provided by Bureau of Energy Efficiency (BEE) should be considered. The equipment which has maximum star ratings could be purchased, which will consume less energy, ensure environmental sustainability and also operate at low cost.
e) Usage of light reflectors is recommended as the reflectors can spread light to relatively large areas.
f) If possible, computers should be switched off from main power connections.
g) Notices/signages can be put up/displayed near switches and on notice boards, informing students and staff to switch off all electrical appliances when not in use.
h) Solar power plants can be installed to promote the production of green and renewable energy.
i) Control sensors can help to reduce consumption by automatically dimming lights when people are not around, and keeping blinds open to use natural light & reduce energy consumption.
j) Raise awareness:
    - Encourage students to help in monitoring energy consumption & implement corrective actions
    - Integrate energy education into classroom learning.

Water Conservation:

a) Provide information on water usage and savings to students/ staff through notices, screen savers in computer labs.
b) Dry sweep or use a sponge broom when possible, instead of using a hose to clean floors, sidewalks, or other hard surfaces.
c) Minimize/ reduce water usage by installing water saving faucets such as pressmatic taps, tap aerators, jet sprays etc.
d) Installation of waterless urinals can be considered to reduce water consumption.

e) Water balance diagram can be prepared to quantify the water consumption by installing water meters at key points. Based on data gathered, appropriate measures can be taken to reduce the water consumption.
f) Sewage Treatment Plant shall be install to treat the grey water which can be further use for gardening and cleaning.
g) Rain water harvesting shall be adopted. This will reduce the overall water stress and helps in sustainability.

Paper and other Solid Waste Reduction:

a) Inventories of all solid waste generated in the premises must be maintained.
b) Enhance recycling. This can be done by creating a group where students can recycle books, personal clothes and other material to needy students. This can be an initiative under green program.
c) Standard Operating Procedures (SOP) for Solid and E-waste management and for recycling of waste should be prepared & practiced. The SOP's may include collection, segregation and reuse of different types of wastes, if any (e.g. biodegradable waste for composting). This will help in safe disposal of waste to recycle agencies.
d) Training as well as awareness programs should be organized on segregation of biodegradable waste and recycling of waste. Efforts should be taken to inform students about recycling options and signs should be posted on appropriate bins indicating what could be dumped in each bin.
e) The college can introduce online app, which can be useful for conducting internal exams, assignment/ reports submission. This system can also be used for displaying important notices, timetables.
f) Paper usage shall be monitored to understand the impact of digitization in the facility.

Others:

a) Environmental advisory committee could be formed. The discussions/ information sharing among different departments can generate lot of ideas and awareness on green issues.
b) Maintain minutes of meetings of environmental committees; evaluate the effectiveness of various environmental programs conducted by the institutes. Set annual targets for Green Initiatives & monitor them closely. Create 'Green Champions'.
c) Since each student uses computer lab, the screen savers can be set up for creating environmental awareness. (Ergonomics, water conservation etc.). Short 30 second pop up can be displayed on computer screens when they are on standby mode. Or wallpapers informing students about environment conservation can be created.

d) Consider detailed energy audit (energy consumption, thermal emission, visual comfort) and water audit.
e) Adopt environmentally responsible purchasing policy, and work towards creating and implementing a strategy to reduce environmental impact of its purchasing decision.
f) Indoor air quality tests are not carried. It is recommended to get air quality tested once a year.

Annexure 1 – Indoor Gardening Details

Indoor plants are commonly used for their aesthetics benefits but they also have vital role reducing airborne pollution. The right choice of plants can be an excellent way of improving indoor air quality and general health. Local landscape contractor can be contacted for supply and rotation of these plants.

Plants	VOC it removes	Indoor source of VOC's	Plant care
 Aloe Vera	Formaldehyde, Trichloroethylene and Benzene	Chemical based cleaners and paints	Easy to grow with enough sunlight
 Bamboo Plant	Formaldehyde, Trichloroethylene and Benzene	Paints, Plastics, Wood products etc.	Thrives under low light conditions as well as easy to maintain
 Chinese Evergreen	Benzene	Paints	Low maintenance plant that prefers low light conditions.

 English Ivy	Formaldehyde, Benzene, Air borne fecal matter particles	Wood, Paper products, Air borne fecal – matter particles from pests	Easy to maintain
 Janet Craig	Formaldehyde, Benzene and Trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 Golden Pothos or Devils Ivy	Formaldehyde, Cleanses air	Exhaust fumes, carpeting materials, panelling and furniture products made with particle board	Extremely easy to maintain under low to bright light conditions. Fast growing and grows well under Fluorescent light.
 Mass Cane	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.

 Snake plant	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety Of light conditions. Hard to damage or kill.
 Peace Lily	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Relatively easy to maintain. Survives in low light conditions.
 Red-edged Dracaena	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety of light conditions. Hard to damage or kill.
 Spider Plant	Formaldehyde, benzene, carbon monoxide and xylene	cooking fuels, wood products, Printing	Easy to maintain under medium to bright light condition.

 Parlor Palm	Purifies indoor air	-	Easy to maintain

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ENVIRONMENT AUDIT REPORT
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For giving us necessary inputs to carry out this very vital exercise of Environment Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

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Concept

The term 'Environmental audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Environmental Audit, many leading companies/ institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as:
"A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."

The European Commission, in its proposed regulation on environmental auditing, has also adopted the ICC definition of Environmental Audit.

Introduction

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues.

Environmental Management Systems (EMS) is very popular in the industrial sector, but the general belief is that EMS is something pertaining to industries only. Other parts of the world have started adopting compatible environmental management systems either voluntarily or for promoting standards by external certification. International environmental standards do not suit the existing Indian educational system.

A very simple indigenized system has been devised to monitor the environmental performance of educational institutions. It comes with a series of questions to be answered on a regular basis. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user- friendly and totally voluntary. The environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.

Overview of Campus

The College took its birth on the 28th of July, 1965, though the noble idea of establishing the College was first mooted in a meeting held on the 8th of June 1964, the day of shradh rituals of our first-ever Prime Minister, Pandit Jawaharlal Nehru. It is by way of commemorating as well as paying homage to the great departed leader that the College was given its name after him. The College is located in an area which is basically predominated by socio-economically backward classes as well as tea garden workers. It was established in order to cater to the need of higher education for the children of this locality and its neighbouring areas. The College aims more particularly to uplift these sections of people of the society by spreading quality education amongst them.

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- Political Science
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Audit Objectives

The broad aims/ benefits of the eco-auditing system would be –

- Environmental education through systematic environmental management approach.
- Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Reduction in resource use.
- Financial savings through a reduction in resource use.
- Curriculum enrichment through practical experience.
- Development of ownership, personal and social responsibility for the college campus and its environment.
- Enhancement of university profile.
- Developing an environmental ethic and value systems in young people.

Executive Summary

An environmental audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance.

Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.

Environmental Audit

The areas of eco/environmental/green auditing to be followed/practiced by participating institutions:

I. Waste Minimization and Recycling
II. Greening
III. Energy Conservation
IV. Water Conservation
V. Clean Air
VI. Animal Welfare
VII. Environmental Legislative
VIII. General Practices

Is any Environmental Audit conducted earlier?

No

What is the total permanent population of the Campus?

	Male	Female	Total
Students	746	831	1577
Teachers	07	09	16
Non-Teaching Staff	03	01	04
Sub Total	-	-	-
Approximate Number of Visitors (Per day)			5-10
What is the total number of working days of your campus in a year?			-

Where is the campus located?

The campus is Located at Pailapool, Cachar, Assam, India

Which of the following are available in your campus?

1	Garden area	Yes
2	Playground	Yes
3	Kitchen	Yes
4	Toilets	Yes
5	Garbage Or Waste Store Yard	Yes
6	Laboratory	Yes
7	Canteen	Yes
8	Hostel Facility (Numbers)	No
9	Guest House	No

Which of the following are found near your campus?

1	Municipal dump yard	Nil
2	Garbage heap	Nil
3	Public convenience	Yes
4	Sewer line	Nil
5	Stagnant water	Nil
6	Open drainage	Yes
7	Industry – (Mention the type)	Labac Tea Garden, Brick Industry
8	Bus / Railway station	Yes, Pailapool Bus Stop (Approx. 1km) , Sribar Railway Station (Approx. 2km)
9	Market / Shopping complex / Public halls	Yes, Barak Srishti Hut (1km Approx.) Family mart Pailapool Community Hall (1km Approx.)

I - WASTE MINIMIZATION AND RECYCLING

1.	Does your institute generate any waste? If so, what are they?	Yes. Organic Waste, Solid Waste, Liquid Waste, e-waste, Paper waste, Plastic waste
2.	What is the approximate amount of waste generated per day? (in Kilograms/month) (approx.)	3 Kg approx./ Per day
3.	How is the waste generated in the institute managed? By 1 Composting 2 Recycling	Composting , Reusing
	3 Reusing	
	4 Others(specify)	
4.	Do you use recycled paper in institute?	No
5.	Do you use reused paper in institute?	Yes
6.	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.	By arranging various awareness programs and disseminating the message of recycling and reusing papers amongst the people of the local community. Yes, messages in this aspect have been disseminated amongst the students in the classrooms by the teachers.
7.	Can you achieve zero garbage in your institute? If yes, how?	Not yet achieved. Possible to a certain extent through waste management policy and planning. 1. Minimization of waste production. 2. Workshops and Trainings on waste management.

II – GREENING THE CAMPUS

1.	Is there a garden in your campus?	Yes
2.	Do students spend time in the garden?	Yes
3.	Total number of Plants in Campus	
4.	Provide some names of trees and plants in the campus.	Arjun, Siris, Neem, Mango, Devdaru,etc.
5.	Is the university campus have any Horticulture Department?	NA
	If yes, number of Staff working in Horticulture Department?	NA
6.	Number of Tree Plantation Drives organized by institute per annum.(If Any)	Three Plantation Drives were organized by College in the last Financial Year.
7.	Number of Trees Planted in Last year.	30
	Survival Rate	70%
8.	Plant Distribution Program for Students and Community	No
9.	Plant Ownership Program	No

III – ENERGY

1.	List down ways that you use energy in your campus. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.	1. Electricity, LPG, Firewood's. 2. Switch off lights and fans when not in use. 3. Reduce the use of lights during day time as far as possible.
2.	Are there any energy saving methods, equipments, techniques employed in your campus? If yes, please specify. If no, suggest some	No
3.	Give an estimate of number of lights installed in your campus along with numbers?	CFL : 08 , LED : 88 , Halogen Bulb : 03
4.	Are any alternative energy sources employed/ installed in your campus? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Specify.	Nil
5.	Do you run "switch off" drills at campus?	No
6.	Are your computers and other equipment's put-on power-saving mode?	Yes
7.	Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?	No

IV - WATER CONSERVATION

1.	List all the uses of water in your campus?	1. For Drinking Purpose. 2. To maintain Cleanliness and hygiene. 3. Watering Plants 4. Cooking in Canteen 5. In Toilets.
2.	How does your campus store water? (mention tanks with capacity) Are there any water saving techniques followed in your campus?	Uses Water Tanks to store water. Capacity of these tanks are 6000 liters.
3.	If there is water wastage, specify why and how can the wastage be prevented/ stopped?	Rain water. College is planning to do rain water harvesting.
4.	Locate the point of entry of water and point of exit of waste water in your campus. Entry- Exit-	Entry: Front east corner of the Campus (Near Girl's Hostel) Exit: Backside of the Campus.
5.	Write down few ways that could reduce the amount of water used in your campus?	Our water usage is minimal. However, we can even more reduce water wastage by creating awareness (Through talk and seminar) among teachers and students about the necessity of preservation of water and also to close water taps after using.
6.	Record water use from the campus water meter for six months (record at the same time of each day). At the end of the period, compile a table to show how many liters of water have been used.	Not recorded but an initiative in this regard shall be undertaken.

7.	Does your campus harvest rain water? (Please explain the method and uses)	No but very soon we are going to harvest rain water.
8.	Is there any water recycling System.	No

V - CLEAN AIR

1.	Are the Rooms in Campus are Well Ventilated?	YES				
2.	Number of windows per room (aggregate value to be provided)	Minimum 4 per room and 12 in Halls.				
3.	What is the ownership of the vehicles used by your College? (Please Tick only one)					
		Yes	Operator-owned vehicles			
4.	Provide details of school-owned motorized vehicles?	Buses	Cars	Vans	Other	Total
	No. of vehicles	–	–	–	–	–
	No. of vehicles more than five years old	---	---	---	---	---
	No. of Air conditioned vehicles	-	-	-	-	-
	PUC done	-	-	-	-	-
5.	Specify the type of fuel used by your school's vehicles:	Buses	Cars	Vans	Other	
	Diesel	-	-	-	-	
	Petrol	-	-	-	-	
	CNG	-	-	-	-	
	LPG	-	-	-	-	
	Electric	-	-	-	-	
6.	Air Quality Monitoring Program (If Any)	Nil				
7.	Students suffer from respiratory ailments? (If Any)	No such cases				
8.	Details of Diesel/Gas Generator. (Rating & Make)	Nil				

VI – ANIMAL WELFARE

1.	List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.) (if any)	Dogs, Cats, Birds, Insects, Goats, Cows, Snakes, Gecko, Chameleon, Garden Lizard , Squirrel, Monkey, Butterfly, Moth, Frog, Owl etc.
2.	How many dogs in your area have under gone Animal Birth Control - Anti Rabies (ABC - AR)?	None
3.	Does your institute have a Bio-diversity Programme or a KARUNA CLUB?	No

VII - ENVIRONMENTAL LEGISLATIVE COMPLIANCE

1.	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	No
2.	Does your institute have any rules to protect the environment? List possible rules you could include.	No
3.	Does Environmental Ambient Air Quality Monitoring conducted by the Institute?	No
4.	Does Environmental Water and Wastewater Quality monitoring conducted by the Institute?	No
5.	Does stack monitoring of DG sets conducted by the Institute?	No
6.	Is any warning notice, letter issued by state government bodies?	Not So Far
7.	Does any Hazardous waste generated by the Institute? If yes explain its category and disposal method.	No

8.	Does any Bio medical waste generated by the Institute? If yes explain its category and disposal method.	No

VIII – GENERAL

1.	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	No
2.	Does your institute have any rules to protect the environment? List possible rules you could include.	No
3.	What is the housekeeping schedule of garden and common areas in your institute?	Yes
4.	Are students and faculties aware of environmental cleanliness ways? If Yes Explain	No
5.	Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. celebrated in your Campus?	Yes
6.	Does Institute participate in National and Local Environmental Protection Movement?	Yes
7.	Does Institute has any Recognition/certification for environment friendliness?	No
8.	Does Institute using renewable energy?	No
9.	Does Institution conducts a green/environmental audit of its campus?	No
10.	Has the institution been audited / accredited by any other agency such as NABL, NABET, TQPM, NAAC etc.?	Yes, by NAAC

Recommendations

- Environment Policy to be adopted by the Campus.
- Equipments when not in use shall be switched off and should not run in standby modes or ideal.
- Installation of water meter at Bore well for monitoring of daily water consumption.
- Indoor Air quality monitoring shall be carried out.
- Awareness programmes shall be carried out for promoting environmental awareness in nearby areas.
- Rain water harvesting shall be adopted by the college to conserve the rain water. It reduces overall water stress and helps in sustainability.

Photographic Evidences


NEHRU COLLEGE


EDUCATION
MAKES A MAN
PERFECT

Conclusion

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. Overall, a large are of campus is for landscaping. The audit has identified several observations for making the campus premise more environmentally friendly. The recommendations are also mentioned with observations for university campus team to initiate actions.

The audit team opines that the overall site is maintained well from environmental perspective. There are no major observations but recommendation is made in this report which would further strengthen the goal to achieve 100% environment friendly campus.

References

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle
- Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Water [Prevention & Control of Pollution] Cess Act-1977 (Amended 2003) and Rules- 1978
- The Air [Prevention & Control of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

End of Report

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ENERGY AUDIT REPORT
FOR
NEHRU COLLEGE

Elion Technologies & Consulting Private Limited

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Table of Contents

Acknowledgement

Elion Technologies and Consulting Pvt Ltd places on record it's thanks to Nehru College, Assam for entrusting the task of conducting energy audit study.

We acknowledge with gratitude the whole hearted support and cooperation extended by all team members while carrying out the study.

Site Information

Name of College	Nehru College
College Address	Pailapool, Cachar, Assam, 788098
Execution Partner	ELION Technologies & Consulting Pvt Ltd
Communication Address	307, 3rd Floor DDA Lal Market H-Block Vikas Puri, New Delhi, 110018
Date of Audit	25th June 2024
Year of Audit	2023 – 2024
Audit Participants from Site	Dr. Shuvajit Chakraborty Dr. Madhumita Das Dr. L. Bharati Singh Dr. Meghamala Mahanta Dr. Momota Chakravorty Dr. Rajendra Prasad Goala Mr. S.Merina Singha Mr. Nihaljyoti Das
Total College Area	4.53 acres
Total Green Area	0.62 Acres approx.

Executive Summary

The College took its birth on the 28th of July, 1965, though the noble idea of establishing the College was first mooted in a meeting held on the 8th of June 1964, the day of shradh rituals of our first-ever Prime Minister, Pandit Jawaharlal Nehru. It is by way of commemorating as well as paying homage to the great departed leader that the College was given its name after him. The College is located in an area which is basically predominated by socio-economically backward classes as well as tea garden workers. It was established in order to cater to the need of higher education for the children of this locality and its neighbouring areas. The College aims more particularly to uplift these sections of people of the society by spreading quality education amongst them.

The founder Principal of the College, Sri Khitish Chandra Das, M.A. (Double), B.T., was an eminent educationalist and being a man in humanitarian mould and a truth Nehruvian in his persona, he came over to this remote corner of far-flung country side with the sole object of launching a crusade against the encircling gloom of ignorance and literacy.

The College was fortunate enough to have the unflinching support of the local people and leaders, tea-garden workers, business magnates and educated elite at the crucial moments of its nascent stage. In this respect, the name of Shri Sreenandan Dhuby deserves special mention. He donated 6 bighas of land where the College is standing at present as gift to the College when the affiliation of the College assumed a big question. Within a short spell of time, the College acquired more plots of land and now the college is the proud owner of 31 bighas of land from all these sources.

The College started its academic journey with very few students in 1965 in a small room at the erstwhile Nehru High School, Pailapool. About one year later, it was shifted to its own building and today, it is in full expedition with more than 1500 students on its rolls. It is not a miracle nor a wonder at all but a pointer to the fact that its entity and the key-role it plays in its domain are really beyond all questions.

At the time of inception, the College was affiliated to Gauhati University. But with the setting up of Assam University, Silchar, today the Degree Course has come under the jurisdiction of Assam University while the Secondary Course still remains under the Assam Higher Secondary Education Council, Guwahati. Presently, the College comes under Government Provincialisation as per the Assam College Employees Provincialisation Act, 2005.

List of courses offered by the institute:

1. TDC (CBCS)

- Political Science (Pass/Honours)
- Bengali (Pass/Honours)
- English (Pass/Honours)
- Manipuri (Pass/Honours)
- Hindi (Pass/Honours)
- Economics (Pass/Honours)
- History (Pass/Honours)
- Education (Pass)
- Philosophy (Pass)

2. TDC (CBCS)

- Political Science
- Bengali
- English
- Manipuri
- Hindi
- Economics
- History
- Education
- Philosophy

Electricity is supplied by Local Electrical Distribution Company at and is stepped down to 415V using a transformer of rating 63KVA.

The energy audit included detailed data collection, analysis of data and identification of specific energy saving proposals.

Chapter 01: Introduction

M/S Nehru College, Assam evinced interest in availing the services of Elion Technologies and Consulting Pvt Ltd for conducting energy audit of their premise.

Elion Technologies and Consulting Pvt Ltd team conducted the Detail Energy audit on 25th June 2024.

This report is on the energy audit carried out M/S Nehru College, Assam. The detailed energy audit comprised of the following activities:

- Data collection of power consuming equipment's.
- A brief session on energy management was conducted to seek more inputs from the personnel engaged in operation and maintenance of electro mechanical services.
- Analysis of collected data.
- Discussion with the officials on the identified proposals.
- Discussion and reporting of the findings of energy audit with the Engineers and management staff.

All the identified energy savings proposals have been discussed with the executives concerned before finalizing the projects.

The contents of the report are based solely on the data provided by Nehru College, Assam officials during the energy audit.

The management should implement the suggestions made in the report after verifying requisite safety aspects.

Methodology for Energy Audit:

The following is a list of general procedure and information undertaken during the energy audit:

- General information of the site.
- Baseline energy description.

- Past energy consumption bills which includes electricity bills.
- On site data collection
- Energy analysis of different sectors.
- Recommendation of energy conservation measures.

The primary goal of the energy audit was to identify sources and areas of potential energy savings and cost saving throughout the campus by measures of optimization, replacement, retrofitting, and on the other hand, to also provide recommendations on operational and maintenance practices improvements.

Chapter 02: Energy Consumption Details

Following table below show the electrical utilities installed in the campus:

Rating of Transformer (in KVA)	63 KVA
Year of installation of the Transformer	2012-13
Rating of DG Set (in KVA)	-
Rating of Capacitor Bank (if present)	-
Capacity of Solar Power Plant (if installed)	No

The main areas of energy consumption as observed during the audit are as follows:

- Air Conditioners
- Lighting
- Fans
- Motors & Pumps
- Desktops & Printers

The main sources of energy to meet the required consumptions are as follows:

- Electricity supply from Power Distribution Company.
- Backup power from DG Set.


POWER SAVINGS
GUIDE
ENERGY EFFICIENCY
ISEER - 3.52*
24°C

Chapter 03: Lighting System

Following is the summary of lights installed at various locations of the college campus:

Type of lights (LED/CFL/Conventional Bulb/Tube Light)	Location	Rating	Quantity	Number of Hours being turned on
This is example-LED Bulb	Main Room	10W	10	3
LED Bulb	Teachers' Common Room	8W	10	8
LED Light	Office Room	18W/20 W	10 - 15	7
LED Light	Examination Hall/Room	8W/10W	5	7
LED Light	Teachers' Toilet	8W	4	10
Tube Light/LED	Classroom	8W/10W	2 - 3	8
Tube Light	Canteen	8W	3 - 4	7
LED/Tube Light	Principal's Chamber	8W/10 W	3 - 5	10
LED Light	Girls' Common Room	8W/10 W	5	6
LED	Language Lab	8W	16	1
LED	Library	8W	12	8
Tube Lights	Gym	8W	4	2
Tube Lights	Smart Classroom	8W	4	4

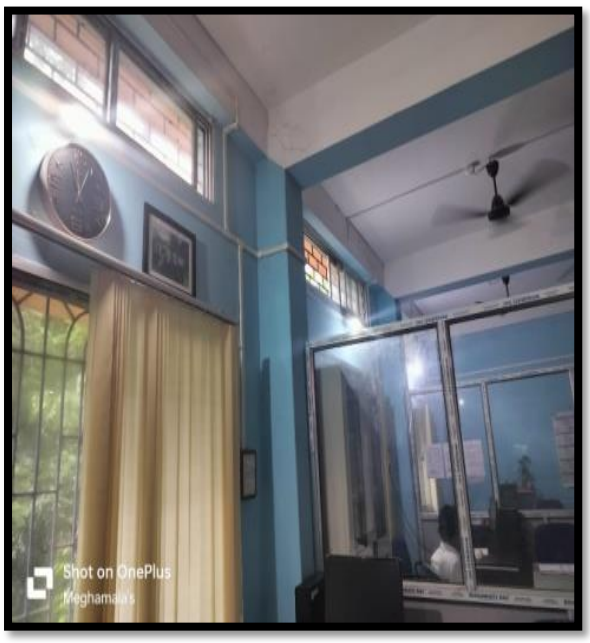
Observation:

- Most of the lights used in the campus are LEDs. Campus has replaced all the conventional lights with energy efficient LED lights which is a good practice.

- Sticker to "SWITCH OFF LIGHT" and "SAVE ENERGY" are displayed in the rooms.

Recommendation:

- Regular cleaning of light fixtures to be done to get maximum lux level.



Chapter 04: Air Conditioning

Split, Ductable/VRV and Cassette Air Conditioners are used in facility for air conditioning. Following is the list of ACs present in the campus:

Type of AC (Windows/Split/Package and Location)	Capacity in Ton	Whether any star rating available	Set Temperature	Running Hours	Whether AC performance is satisfactory (Yes/No)
Windows Main Room	2	3	26	13	Yes
Split AC/Principal's Room	1	3	18 to 24	3 to 4	Yes
Split AC-3Nos./Language Lab	1	3	18 to 24	1	Yes

Observation:

- All air conditioners are found to be functioning properly and well maintained.
- Regular servicing and maintenance of air conditioners are done with proper cleaning.

Recommendation:

- All doors to be kept closed while using the air conditioners and regular annual service of AC's should be carried out.
- Set Temperature of Air Conditioner shall be maintained at 26°C.
- A reduction in 1°C set point temperature, the energy cost comes down by 5%. By carefully selecting the seasonal temperature in different areas as per requirement considerable saving on account of power consumption can be achieved.
- Whenever Air Conditioners are replaced in future, BEE 5 star rated air conditioners shall be considered which are energy efficient.
- Installation of AC energy savers can be considered for air conditioners having longer running hours.

Chapter 05: Pumps and Motors

Name of Pump and make	Running Hours	Any VFD	Rated Capacity in KW	Head	RPM
Submersible/Crompton	Morning: 1 Hr.	No	1.10/1.50	24m - 54m	-
Submersible/Crompton	Evening: 1 Hr.	No	1.10/1.50	24m - 54m	-

Name of Motor and make	KW	Measured Current
Crompton	1.10 /1.50 KW	8.60Amp
Crompton	1.10 /1.50 KW	8.60Amp

Observation:

These pumps are strategically placed to ensure efficient water distribution and management throughout the Campus. All pumps and motors are functioning properly and well maintained.

Recommendation:

Proper maintenance and upkeep of pumps and motors to be done.


Crompton
Crompton Greaves Consumer Electricals Limited
Pumps Division Ahmednagar
SELF PRIMING REGENERATIVE PUMP

Conclusion

The energy audit performed at Nehru College showcased commendable efforts towards sustainability within the college. The replacement of conventional lights with energy-efficient LED alternatives marks a significant stride in reducing energy consumption.

Despite these advancements, there remains untapped potential for further enhancing energy efficiency. The audit report likely contains specific recommendations aimed at maximizing sustainability efforts. Implementing these suggestions could significantly bolster the college's energy-saving initiatives, continuing the positive trajectory towards a more environmentally conscious campus.

End of Report

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