

**Environmental**  
**Audit**

**SURYA SEN MAHAVIDYALAYA**  
**SILIGURI**

2022-23



**CONDUCTED BY**  
**Environmental Health and Safety Audit Agency**  
**(ESHAA)**

# Certificate of Registration

This is to Certify That  
Environmental Management System of

**SURYA SEN MAHAVIDYALAYA**

SURYA SEN COLONY, BLOCK B, JALPAIGURI, SILIGURI - 734404,  
WEST BENGAL, INDIA.

has been assessed and found to conform to the requirements of

**ISO 14001:2015**

for the following scope :

PROVIDING EDUCATIONAL SERVICES.

Certificate No	: 23MEEPI08	
Initial Registration Date	: 02/12/2023	Issuance Date : 02/12/2023
Date of Expiry	: 01/12/2026	
1st Surve. Due	: 02/11/2024	2nd Surve. Due : 02/11/2025



DIRECTOR

**Magnitude Management Services Pvt. Ltd.**



Third Floor, A-60, Sector-2, Noida, Gautam Budh Nagar, U.P.-201301, India. e-mail: [info@mmscertification.com](mailto:info@mmscertification.com), website: [www.mmscertification.com](http://www.mmscertification.com)


\*Subject to Successful Surveillance Audit in case Surveillance audit is not allowed to be conducted, this certificate shall be suspended/withdrawn

Certificate Verification: Please Re-check the validity of certificate at <http://www.mmscertification.com/activeclients.aspx> or [www.mmscertification.com](http://www.mmscertification.com) at Active Clients.  
Certificate is the property of Magnitude Management Services Pvt. Ltd. and shall be returned immediately when demanded

## CERTIFICATE

---

*This is to certify that Surya Sen Mahavidya, Siliguri has conducted detailed Environmental Green Audit for 2022-23 for their campus and submitted necessary data and credentials for scrutiny. The activity and measure carried out by the college and was found satisfactory. The efforts taken by the students, faculty members and the college authority towards Environment and Sustainability is Highly Appreciated and commendable.*



**Dr Indranil Ghosh**  
**Environmental Auditor**

**Dr.Indranil Ghosh**  
**Environment Safety Health**  
**Audit Agency (ESHAA)**

## Executive Summary

In accordance with the Risk-Based Audit and Evaluation Plan of Surya Sen Mahavidyalaya for 2022-23, the Environment safety and Health Audit Agency (ESHAA) conducted a green audit of the college in October, 2023.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the **standard** Green Policy adopted by different academic institution and the college itself. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the College is in compliance with the applicable regulations, policies and standards.

During the initial planning of the audit, an analysis was conducted in order to identify, predict, evaluate and prioritize the risks associated with the environmental sustainability. The analysis was based upon an examination of the policies, manuals and standards that govern the environmental sustainability, on data analysis, and on the results of preliminary interviews with personnel considered key in the environmental management in the campus. The criteria and methods used in the audit were based on the identified impacts. The methodology used included physical inspection of the campus, review of the relevant documentation and interviews.

## Acknowledgement

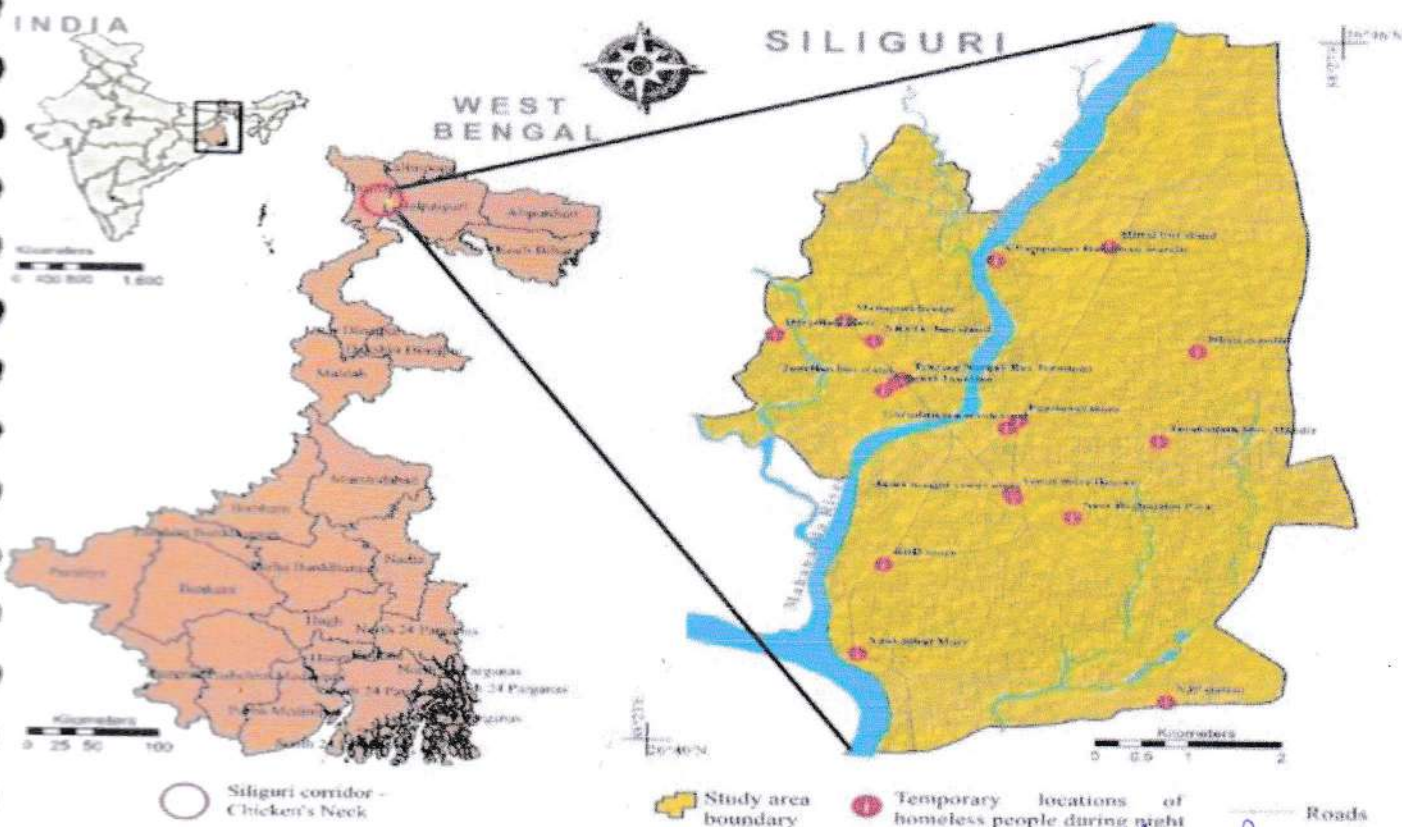
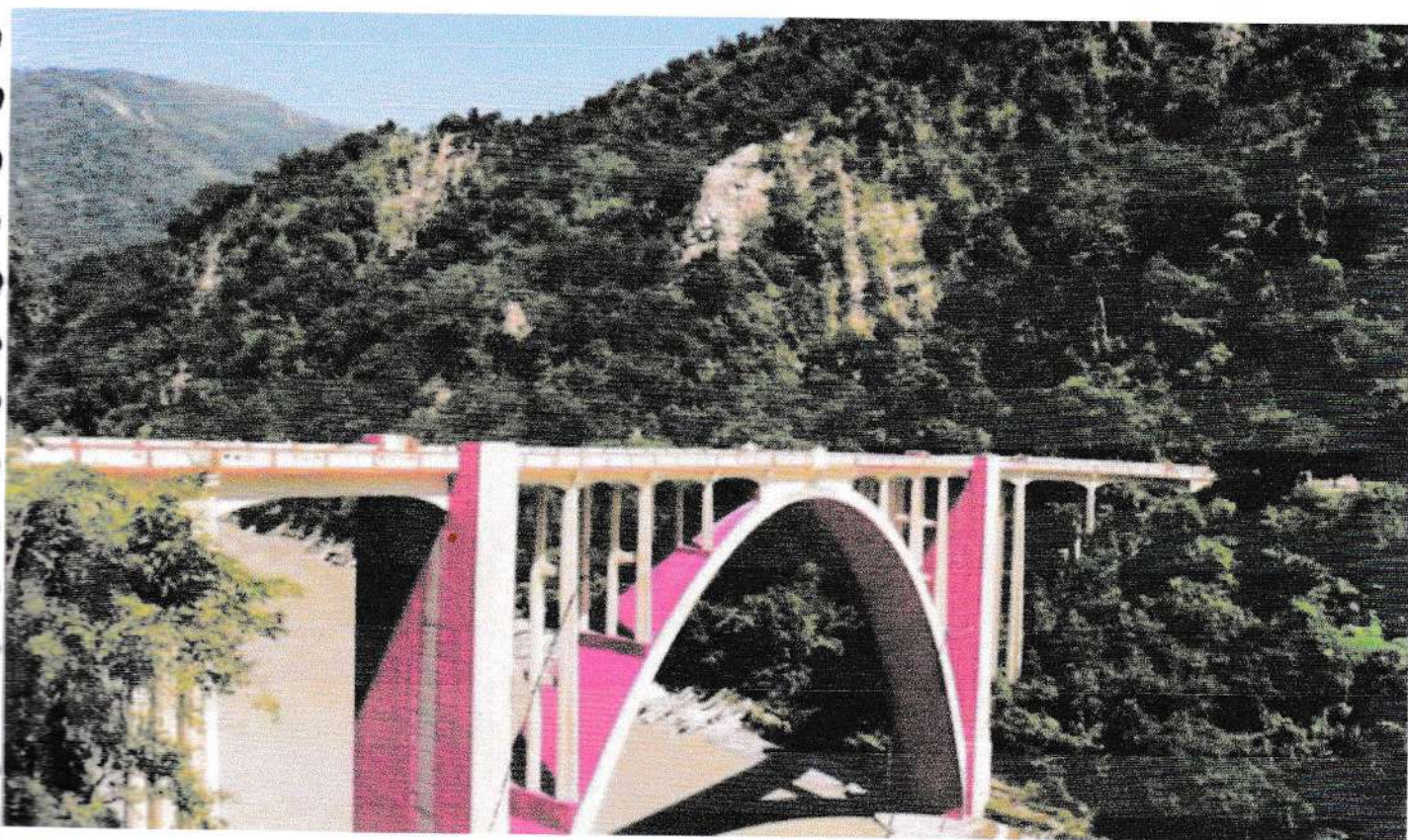
We would like to thank Dr P. K Mishra, Principal of Surya Sen Mahavidyalaya, Siliguri for his consent to conduct this audit. We would like to sincerely thank all the Departments, students, teaching and non-teaching staff for their kind cooperation with us during this survey.

## Assurance

This audit has been conducted in accordance with the *International Standards for the Professional Practice of Auditing*.

In our professional judgment, sufficient and appropriate audit procedures were completed and evidence gathered to support the accuracy of the conclusions reached and contained in this report. The conclusions are based on a comparison of the situations as they existed at the time of the audit with the established criteria.

  
Dr. Indranil Ghosh  
Environment Safety Health  
Audit Agency (ESHAA)



*[Signature]*  
**Pradip Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHA)

## 1.0 Introduction

Green Audit can be defined as it is a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices related to meeting the environmental requirements. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment as whole. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

There is relationship between Green Audit and Sustainable Development of the any organization. The primarily needs for achieving the sustainable development of the business are to determine the Green Audit policy, Green Audit Framework, Accurate implementation, and Result analysis of it. Strong Green Audit process can help to achieve the sustainability. Green Audit framework helps to achieve the goal set by an organization. Green Audit is linked to Sustainable development process. Green Audit and sustainable development process help to reduce the wastage and associated cost as well as increases the product quality.

Green audit is assigned to the criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India which declares the institutions as Grade A, B or C according to the scores assigned during the accreditation.

### 1.1 About the College

Surya Sen Mahavidyalaya, affiliated to University of North Bengal, made its humble beginning on September 18, 1998, from degree course in Arts, Science and Commerce stream. The college is located on a beautiful campus of 1.9 Acres. The campus is located near New Jalpaiguri Junction railway station. Both Mahananda and Sahu river are not far from this college. The main road is around 750 meters away from the college buildings. There are five buildings in the campus and each contains three floors. No industrial area is located in the 5 km radius of the college campus.

The college has only one shift and starts from 9:00 am and closes at 5 pm. Total 8336 students are studying in three different streams viz B.Sc, BA and B Com. There are nine (09) laboratories for the students of B Sc.

The college is thinking about to adopt the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero Carbon foot print, positive impact on occupational health and performance and 100% graduates demonstrating environmental literacy.

  
**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHA)

The goal is to reduce CO2 emission, energy and water use, while creating an atmosphere where students can learn and be healthy. The college administration works on the several factors of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

### **1.2 Objectives of the Study**

The main objective of the green audit is to promote the Environment Management and conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1. Verifying compliance: Verifying compliance with standards or best available techniques.
2. Identifying problems: Detecting any leakage, spills or other such problems with the operations and processes.
3. Formulating environmental policy: Formulating the organization's environmental policy if there is no existing policy.
4. Measuring environmental impact: Measuring the environmental impact of each and every process and operation on the air, water, soil, worker health and safety and society at large.
5. Measuring performance: Measuring the environmental performance of an organization against best practices.
6. Confirming environmental management system effectiveness: Giving an indication of the effectiveness of the system and suggestions for improvement.
7. Providing a database: Providing a database for corrective action and future plans.
8. Developing the organization's environmental strategy: Enabling management to develop its environmental strategy for moving towards a greener corporate and performance culture.
9. Communication: Communicating its environmental performance to its stakeholder's though reporting will enhance the image of the company.

### **1.3 General steps of Audit**

1. Systematic and comprehensive data collection
2. Documentation with physical evidences
3. Independent periodic evaluation with regulatory requirements and appropriate standards
4. Systematic and comprehensive improvement and management of existing system

  
**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit & Energy



  
**Dr. Indrani Ghosh**  
Environment Safety Health  
Aesthetics & Planning



## 1.4 The audit process

### 1.4.1 Pre-audit activities

The pre-audit activities include the following:

1. The sites / area / division that are to be audited need to be determined and selected.
2. The Audit Team was informed of the date of the audit enabled them to adjust and become used to the concept.
3. The audit scopes were identified. Audit Team was consulted when establishing the scope.
4. The audit plan was designed in such a way that it accommodated changes based on information gathered during the audit and effective use of resources.
5. Audit team and assignment of responsibility were established.
6. The required working papers were collected. This facilitated the investigations of audit team on the sites.
7. The background information on the facility including the facility' organization, layout and processes, and the relevant regulations and standards, were collected.
8. The background information on the site's historical uses, and the location of soil and ground water contamination were collected.
9. The pre-audit questionnaire was informed to auditee.

### 1.4.2 Onsite audit activities

The onsite audit includes:

1. The opening meeting is the first step between the audit team and college authority. In this meeting the purpose of audit, the procedure and the time schedule were discussed.
2. Site inspection is the second step for onsite activity. In this step the audit team discovered matters which are important to the audit but which were not identified at the planning stage.
3. Onsite phase of the audit developed a working understanding of how the facility manages the activities that influence the environment and how any EMS, if there is one, works.
4. Assessed strengths and weaknesses, controls and risks associated with their failure were established.
5. Gathering audit evidence ie, collecting data and information using audit protocol.
6. Communicated with the Audit Team to obtain most information.
7. Evaluated the audit evidence against the objectives established for the audit.
8. An exit meeting to explain the audit findings.

  
**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHA)

## 1.5 Methodology

In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

- 1.5.1 Water management
- 1.5.2 Energy Conservation
- 1.5.3 Waste management
- 1.5.4 E-waste management
- 1.5.5 Green area management
- 1.5.6 Green Practices

ESHAA

**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

## 2.0 Water Audit

Evaluating the facility of raw water intake and determining the facilities for water treatment. Water harvesting is the best technique that can be adopted by simply storing water and uses it at the time of scarcity.

### 2.1 Water Use

This indicator addresses water consumption, water sources, irrigation, storm water, appliances and fixtures. A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use.

#### 2.1.1 Observations

The study observed that Boring Well, Siliguri Municipal Corporation (SMC) and PHE are the two major sources of water. Water is used for drinking purpose, toilets, laboratory and gardening. During the survey, no loss of water is observed, neither by any leakages nor by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 5500 L/day, which include 4500 L/day for domestic purposes, 200 L/day for gardening and 800 L/day for different laboratories. Rain water harvesting is completed with Two tanks having capacity 20000 Liters each. For gardening purposes, Rain water is used.

#### 2.1.2 Recommendations

Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged. In campus small scale/medium scale/large scale reuse and recycle of water system is necessary.

Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's used for such usage are regularly serviced and the wastage of water is not below the industry average for such equipment's used in similar capacity.

RO purified water is not recommended. RO purifiers filter out harmful pollutants through its semi permeable membrane and also some essential minerals so the water tastes flat too. RO is recommended for waters with total dissolved solutes above 500ppm but in hilly region (TDS) is below 500ppm

Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. are biodegradable and non-toxic, even where this

  
**Dr. Indrani Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

exceeds the Control of Substances Hazardous to Health (COSHH) regulations.



**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

## 2.2

## Audit Framework and detailed findings: Water management

Control objective	Control(s)	Audit Observation
Minimize consumption of water.	Repair sources of water leakage, such as dripping taps and showers as quickly as possible.	Regular checking and maintenance of pipelines are done to control water wastage.
	Install appliances which reduce water consumption	Practiced as much as possible.
	Encourage a decrease in water usage among staff, students and conference guests	No, college do not encourage a decrease in water usage among staff, students and conference guests because water consumption is minimal.
	Purchase the most efficient washing machines and dishwashers available which have an economy setting as default	No, college does not purchase the most efficient washing machines and dishwashers as these are not required by the college.
	Use an efficient and hygienic water storage mechanism is to minimize the loss of water during storage	No, college do not use an efficient and hygienic water storage mechanism is to minimize the loss of water during storage as stored water is provided by the PHE Supply and also own boring Supply
	Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration process and ensure that the equipment's used for such usage, are regularly serviced, and the wastage of water is not below the industry average for such equipment's used in similar capacity	College has twelve (12) Water purifiers with RO and large water filter with RO at the different strategic locations in the college for the students. All are with AMC.
	Install Water recycling mechanism, such as rain water harvesting system	College has constructed two tanks for rain water harvesting.

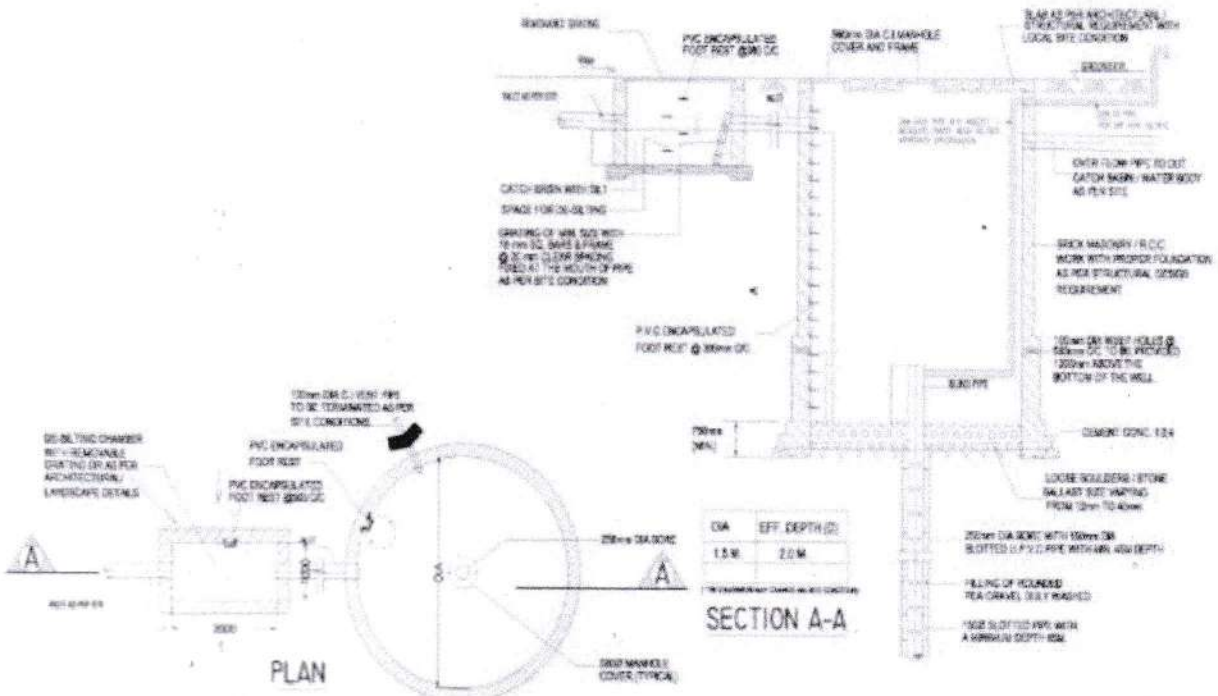
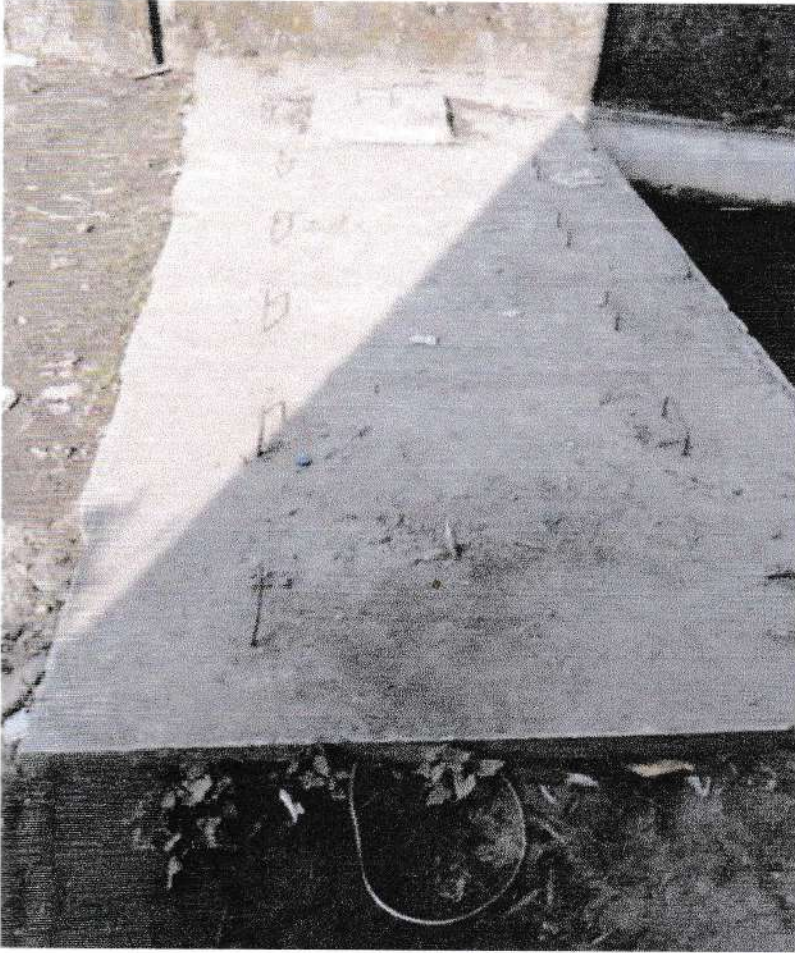


Pic 1: Water Supply from PHE



Pic 2: Purification of drinking water

  
**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)



Rain water Harvesting

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

### 3.0 Energy Audit

It deals with the energy conservation and methods to reduce the consumption and the related pollution.

#### 3.1. Energy Conservation

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

##### 3.1.1 Observations

Total energy consumption is determined as 15291 KWH/Year by major energy consuming equipment. All the departments and common facility centres are equipped with CFL lamps. Approximately 36 CFLs (Capacity) and 324 LED bulbs / Tube Lights are counted during survey. The college has 12 number Air conditioning machine ( 2 tons each). Besides this, photovoltaic cells are also installed in the campus as an alternate renewable source of energy. Equipment like Computers ( 50 nos with TFT monitors) are used with power saving mode. Also, campus administration runs switch –off drill on regular basis. In Science departments like Physics, Chemistry, Computer and Geography, the switches were shut down after occupancy time and are one of green practices for energy conservation.

Along with this, college has installed 50 KV solar panels at its roof as well as its different strategic positions of the college to lightening the street as a part of the green practice to minimize the emission of CO2 in the atmosphere.

##### 3.1.2 Recommendations

- Support renewable and carbon-neutral electricity options on any energy-purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- Appreciate that it is preferable to purchase electricity from a company that invests in new sources of renewable and carbon-neutral electricity.
- Installation of Fully LED lamps instead of CFL.
- Proper utilization of newly installed solar cells leads to reduction of electricity consumption and financial burden towards improvement of total environmental quality.

  
Dr. Indranil Ghosh  
Environment Safety Health  
Audit Agency (ESHAA)



### 3.1.3 Audit Framework and detailed findings: Energy management

Control objective	Control(s)	Audit Observation
Reduce energy consumption, especially of energy derived from fossil fuels	Support renewable and carbon-neutral electricity options on any energy-purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.	No, the college does not have any choice of renewable and carbon-neutral electricity options on any energy-purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
	Appreciate that it is preferable to purchase electricity from a company that invests in new sources of renewable and carbon-neutral electricity.	The College have no choice other than <i>WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED</i> . The company is a PSU of govt of West Bengal. The company which invests Roof top Solar PV systems.
	Look in to the possibility of on-site micro-generation of renewable electricity.	The College has installed Solar PV systems (50KV) at its roof.
	Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs.	The College are using CFL/ LED as much as practicable.
	Provide energy efficient heating systems, with adjustable controls for individual heating appliances wherever possible, and ensure that comprehensible instructions are available to staff and students on the use of heating controls.	No heater is used even in winter season.
	Encourage staff, students and conference guests to save energy through visible reminders, incentives and information to increase awareness. This particularly concerns turning off electrical appliances when not in use in both communal and residential rooms.	Misuse of electricity is controlled by turning off the appliances when not required. Visible reminders are not observed.

  
**Dr. Indrani Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

	Monitor and understand the importance of different sources of college energy consumption, and set appropriate and measurable targets for a reduction in certain areas of consumption and/or in the overall consumption of energy.	Disconnect the supply of electricity when not required. (Specially during the month long vacation).
	Conduct switch off drills at regular intervals.	College conducts switch off drills at regular intervals.
	Ensures that all electronic and electrical equipment's, such as computers, are switched off when not in use, and is generally configured in power saving mode when such option is available.	All electronic and electrical equipment's are switched off when not in use. Equipment are configured in power saving mode when such option is available.
	If there are equipment's running on standby mode, reduce the energy consumption on standby mode or minimize the running of equipment's on standby mode.	Equipment's running on standby mode.

**Dr. Indranil Ghosh**  
**Environment Safety Health**  
**Audit Agency (ESHAA)**



Pic 3 : Installation of Solar Cell on the roof and Solar street lights

  
**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

## 4.0 Waste Management Audit

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threat to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus. The different solid wastes collected as mentioned above.

### 4.1 Waste Conservation

Good waste management does more than just clean up the environment – it can also provide diverse benefits for communities that engage in waste management activities. The broader challenge towards the waste management is to develop local/intuitive waste management strategies and to embed local processes to ensure sustainability.

#### 4.1.1 Observations

The total solid waste collected in the campus is 16 Kg/day. Waste generation from tree droppings and lawn management is a major solid waste generated in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Plastic waste. Segregation of chemical waste generated in Chemistry Laboratories is also in practiced. Single sided used papers reused for writing and printing in all departments. Unimportant and non confidential reports/papers are sent for pulping and recycling after completion of their preservation period. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc but it is neither categorized at point source nor sent for recycling. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing. Few glass bottles are reused in the laboratories. The college has practice of paperless office work administration and as a result there is less carbon emission from printers, carbon copy of bills, filing of cartridge etc.

#### 4.1.2 Recommendations

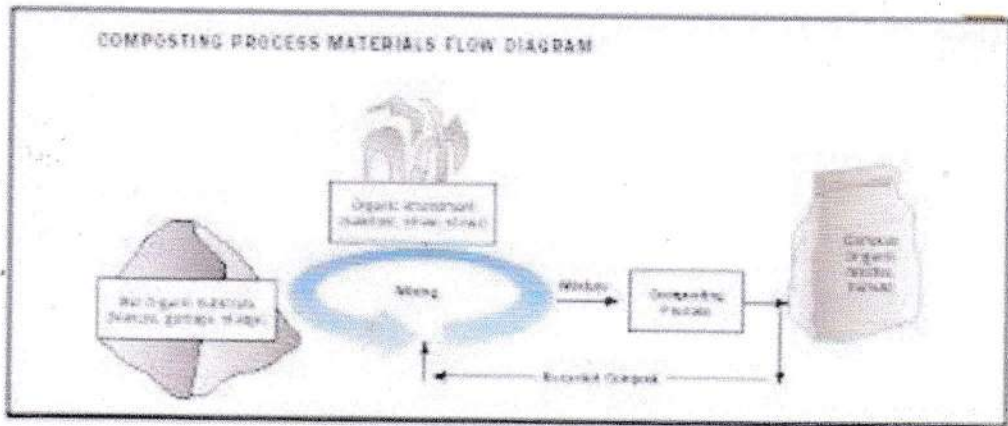
Reduce the absolute amount of waste that it produces from college staff offices. Make full use of all recycling facilities provided by Siliguri Municipality Corporation and private suppliers, including glass, cans, white, coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture. Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.

  
**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

### 4.1.3 Audit Framework and detailed findings: Waste Management

Control objective	Control(s)	Audit Observation
Maximize the proportion of waste that is recycled & minimize the quantity of non-recyclable refuse	Reduce the absolute amount of waste that it produces from college staff offices.	No, the college has not used any controls to reduce the absolute amount of waste that it produces from staff offices.
	Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.	Yes. College uses the facilities provided by the local authority to recycle the wastes.
	Compost, or cause to be composted, all organic waste, green waste and un-recycled cardboard produced in or collected from kitchens, gardens, offices and rooms.	College has waste composting facility. Two pits are constructed to compost the organic waste generated,
	Recycle or safely dispose of white goods, computers and electrical appliances.	Safe disposal through authorized agents for computers and electrical wastes.
	Use reusable resources and containers and avoid unnecessary packaging where possible	College tries to use reusable resources and avoid unnecessary packaging where possible.
	Always purchase recycled resources where these are both suitable and available.	College tries to purchase recycled resources where these are both suitable and available.
	Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated	Yes. College has sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated
	Make specific arrangements for events, such as cultural Events, internal and external seminars and conferences, where significant recyclable waste is likely to be produced, in order to both minimize the waste produced and maximize what is recycled/reused	Yes! College arranged the events with least production of waste.
	Promote reuse of items and waste recycling among staff, students and conference guests through training, posters and incentives	Yes!, the college has promoted reuse of items and waste recycling among staff, students and conference guests through training, posters and incentives
	Promote reuse of items and waste recycling among staff, students and conference guests through training, posters and incentives	Yes, the college dispose all waste, whether solid or otherwise, in a scientific manner and ensure that it is not released directly to the environment.
	Adoption of paperless office to reduce waste.	Yes! College has implemented paper less office partially.

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)



*Handwritten signature*

## 5.0 E-waste Management

E-waste can be described as electronic equipment that is near or at the end of its useful life. E-waste makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

### 5.1 E-waste Management System

Electronic waste or e-waste is generated when electronic and electrical equipment become unfit for their originally intended use or have crossed the expiry date. Computers, servers, mainframes, monitors, compact discs (CDs), printers, scanners, copiers, calculators, fax machines, battery cells, cellular phones, transceivers, TVs, iPods, medical apparatus, washing machines, refrigerators, and air conditioners are examples of e-waste (when unfit for use).

E-waste typically consists of metals, plastics, cathode ray tubes (CRTs), printed circuit boards, cables, and so on. Valuable metals such as copper, silver, gold, and platinum could be recovered from e-wastes, if they are scientifically processed. The presence of toxic substances such as liquid crystal, lithium, mercury, nickel, polychlorinated biphenyls (PCBs), selenium, arsenic, barium, brominated flame retardants, cadmium, chrome, cobalt, copper, and lead, makes it very hazardous, if e-waste is dismantled and processed in a crude manner with rudimentary techniques. E-waste poses a huge risk to humans, animals, and the environment. The presence of heavy metals and highly toxic substances such as mercury, lead, beryllium, and cadmium pose a significant threat to the environment even in minute quantities.

Consumers are the key to better management of e-waste. Initiatives such as Extended Producer Responsibility (EPR); Design for Environment (DfE); Reduce, Reuse, Recycle (3Rs), technology platform for linking the market facilitating a circular economy aim to encourage consumers to correctly dispose their e-waste, with increased reuse and recycling rates, and adopt sustainable consumer habits.

#### 5.1.1 Observation:

E-waste generated in the college is very less. It is handled, treated and disposed in scientific way. There are 30 computers (with TFT monitors), 03 photo copiers and 15 photocopy-cum- printer-cum-scanners are available in the college. The college generates some e-waste like chips, bulbs, circuit boards, mother boards, computers, batteries, relays, and switches. The non-working computers, spare parts and other non-working electrical equipment are stored in separate places. The college has intention to adopt the Buy back policy. E-waste handled is 80 kg (approx) per year and disposed off through authorized vendors.

  
**Dr. Indrani Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

### 5.1.2 Recommendations

- Recycle or safely dispose of white goods, computers and electrical appliances.
- Use reusable resources and containers and avoid unnecessary packaging where possible. Always purchase recycled resources where these are both suitable and available.

### 5.1.3 Audit Framework and detailed findings: E Waste Management

Control objective	Control(s)	Audit Observation
Reduce the E waste generation	Adoption of Extended Producer Responsibility (EPR). The EPR is an environment protection strategy that makes the producer responsible for the entire life cycle of the product, especially for take back, recycle and final disposal of the product.	College has specific policy for E waste management as per govt rule.



**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)



## **6.0 Green area Management Audit**

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programs.

### **6.1 Green Area**

Green spaces are important reservoirs of biodiversity, providing resources, ecosystem services and habitats for species of interest, improving functional and structural connectivity at the urban level.

#### **6.1.1 Observations**

There are 0.76 acres land is available as green area. Campus is located in the vicinity of different types (species) plants. The campus is enriched by bio diversities like bryophytes, pteridophytes, arthropod, Mollusca and reptiles. Various tree plantation programs are being organized at college campus. Various tree plantation programs are being organized at college campus. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among students. The plantation program includes various types of indigenous species, ornamental and medicinal wild plant species. There is garden which is maintained by the gardener.

#### **6.1.2 Recommendations**

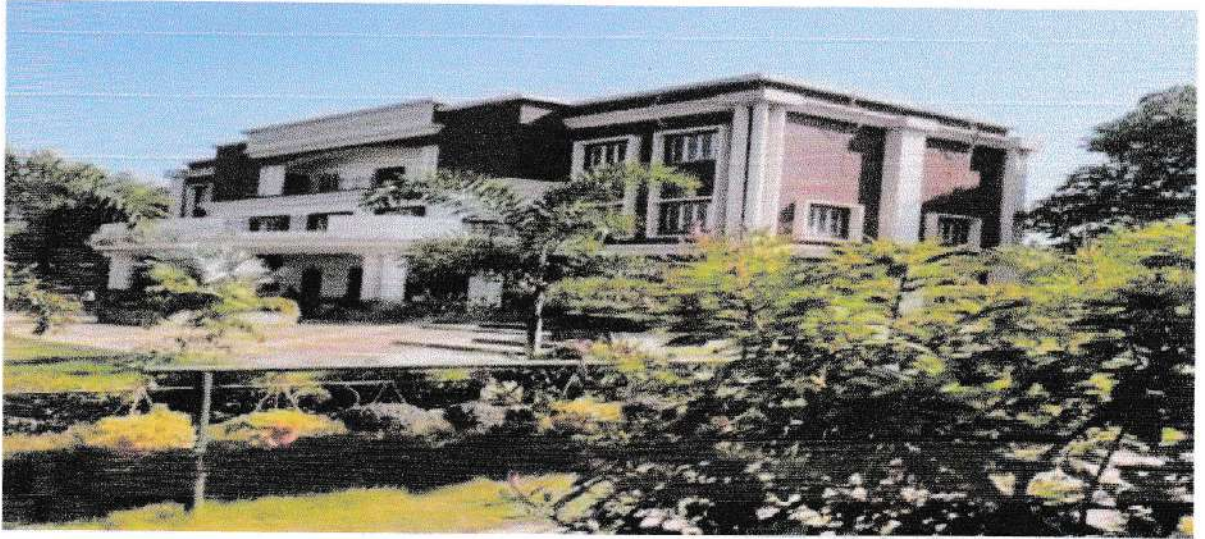
- Reviews periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy if any. The Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.



### 6.1.2 Audit Framework and detailed findings: Green Area Management

Control objective	Control(s)	Audit Observation
Development of green area to compensate CO <sub>2</sub> .	Proper Land use pattern to develop green area.	No. There is no proper land use policy of the college.
	Proper Taxonomical identification of plants in the campus.	There is taxonomical identification of the plants.
	Conduct Environment Awareness program.	Environment Awareness program regularly organized by the college authority.





**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)


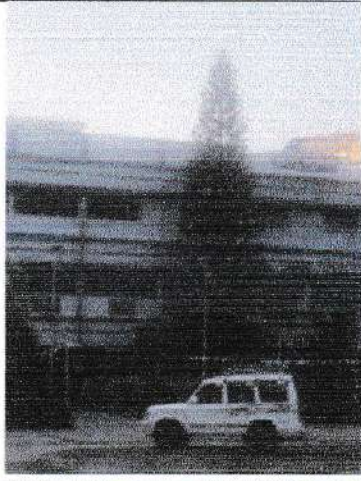

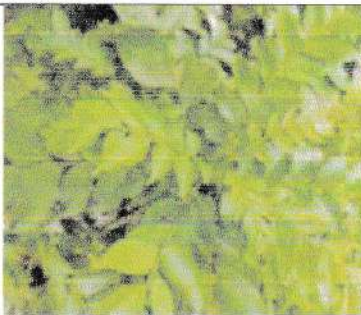


Pic 5A, 5B & 5C: Green area

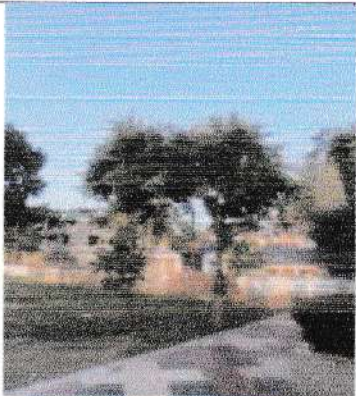



  
**Dipranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHA)

## Taxonomical Identification of plants


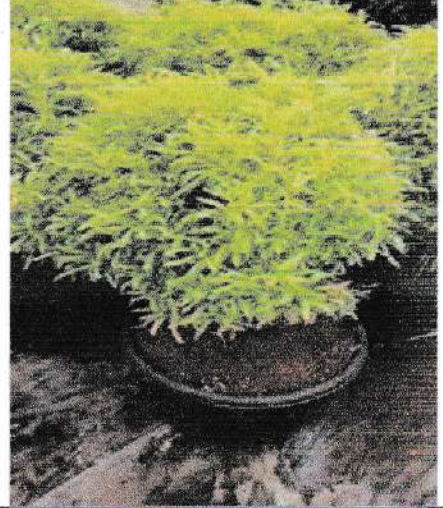


Name	Scientific name	Description	Picture
Morfolk Island Pine	<i>Araucaria heterophylla</i>	<i>Araucaria heterophylla</i> is a species of conifer. As its vernacular name Norfolk Island pine implies, the tree is endemic to Norfolk Island, an external territory of Australia located in the Pacific Ocean between New Zealand and New Caledonia.	
Bougainvillea	<i>Bougainvillea glabra</i>	<i>Bougainvillea glabra</i> , the lesser bougainvillea or paper flower, is the most common species of bougainvillea used for bonsai. The epithet 'glabra' comes from Latin and means "bald".	
Lucky bamboo plant	<i>Dracaena sanderiana</i>	<i>Dracaena sanderiana</i> is a species of flowering plant in the family Asparagaceae, native to Central Africa. It was named after the German-English gardener Henry Frederick Conrad Sander. The plant is commonly marketed as "lucky bamboo".	
Oxycardium plant	<i>Philodendron hederaceum</i> (Jacq.)	<i>Philodendron hederaceum</i> , the heartleaf philodendron ( <i>syn.</i> <i>Philodendron scandens</i> ) is a species of flowering plant in the family Araceae, native to Central America and the Caribbean which is common in the houseplant trade. <i>Philodendron hederaceum</i> var. <i>hederaceum</i> , the "velvet philodendron," is a subspecies which is in the houseplant trade under its previous name of <i>Philodendron micans</i> . While toxic under certain conditions, it is also	

		under current review for numerous health benefits.	
Ficus cristina	<i>Syzygium Campanulatum</i>	Christina Ficus or Syzygium Campanulatum plant belongs to family Myrtaceae or the sea apple family. It is popularly used as an urban landscaping plant due to its hardiness and adaptability. Also known as the wild cinnamon, the species can easily be planted as trees, hedges or shaped into topiaries. Syzygium Campanulatum produces attractive reddish or pink leaf shoots all year round and flushes exceptionally after pruning.	
Pine	<i>Arancaria Columnaries D</i>		
Caesalpinia coriaria	<i>Libidibia coriaria</i>	Libidibia coriaria, synonym Caesalpinia coriaria, is a leguminous tree or large shrub native to the Caribbean, Central America, Mexico, and northern and western South America. Common names include divi-divi, cascalote, guaracabuya, guatapana, nacascal, tan yong, and watapana.	
curry tree	<i>Murraya Koenigii</i>	The curry tree or Bergera koenigii, is a tropical and subtropical tree in the family Rutaceae, native to Asia. The plant is also sometimes called sweet neem, though M. koenigii is in a different family to neem, Azadirachta indica, which is in the related family Meliaceae.	
Mango	<i>Mangifera indica</i>	Mangifera indica, commonly known as mango, is a species of flowering plant in the family Anacardiaceae. It is a large fruit tree, capable of growing to a height of 30 metres. There are two distinct genetic populations in modern mangoes – the	



  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

		"Indian type" and the "Southeast Asian type".	
Radhachura	<i>Peltophorum pterocarpum</i>	Peltophorum pterocarpum is a species of Peltophorum, native to tropical southeastern Asia and a popular ornamental tree grown around the world.	
Silver Bismarck Palm	<i>Bismarckia nobilis</i>	Bismarckia is a monotypic genus of flowering plant in the palm family endemic to western and northern Madagascar, where it grows in open grassland.	
Panama rubber tree	<i>Castilla elastica</i>	Castilla elastica, the Panama rubber tree, is a tree native to the tropical areas of Mexico, Central America, and northern South America. It was the principal source of latex among the Mesoamerican peoples in pre-Columbian times.	
Jelly Palm/ Cocos capitata /	<i>Butia capitata</i>	Butia capitata, also known as jelly palm, is a Butia palm native to the states of Minas Gerais and Goiás in Brazil. It is known locally as coquinho-azedo or butiá in Minas Gerais. This palm grows up to 8m. It has feather palm pinnate leaves that arch inwards towards a thick stout trunk.	

  
**Dr. Indrani Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHA)

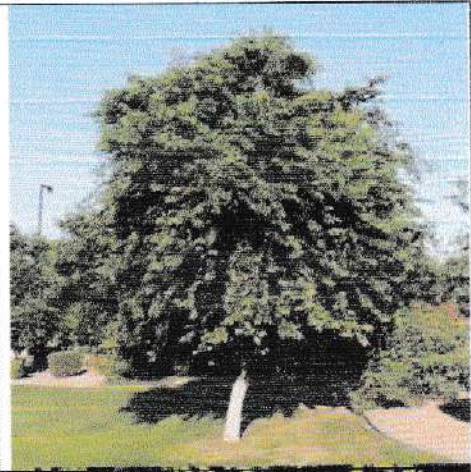

Euodia	<i>Tetradium</i>	Euodia is a plant genus in the family Rutaceae. Euodia is sometimes misspelled as Evodia. The species now included in the genus Tetradium were previously included in Euodia, and may be commonly referred to as euodia.	
Aralia bush	<i>Aralia racemosa</i>	<i>Aralia</i> plants have large <b>bipinnate (doubly compound)</b> leaves clustered at the ends of their stems or branches; in some species the leaves are covered with bristles. The stems of some woody species are quite prickly, as in <i>Aralia spinosa</i> . The <b>flowers</b> are whitish or greenish occurring in terminal <b>panicles</b> , and the spherical dark purple berry-like <b>fruits</b> are popular with <b>birds</b> .	
Sago palm	<i>Cycas revoluta</i>	<i>Cycas revoluta</i> is a species of gymnosperm in the family Cycadaceae, native to southern Japan including the Ryukyu Islands. It is one of several species used for the production of sago, as well as an ornamental plant. The sago cycad can be distinguished by a thick coat of fibers on its trunk.	
Weeping fig	<i>Ficus benjamina</i>	<i>Ficus benjamina</i> is a <b>tree</b> reaching 30 m (98 feet) tall in natural conditions, with gracefully drooping branchlets and glossy <b>leaves</b> 6–13 cm (2+ <sup>3</sup> / <sub>8</sub> –5+ <sup>1</sup> / <sub>8</sub> inches), oval with an <b>acuminate</b> tip. The <b>bark</b> is light gray and smooth. The bark of young branches is brownish. The widely spread, highly branching tree top often covers a diameter of 10 meters. It is a relatively small-leaved fig. The changeable leaves are simple, entire and stalked. The <b>petiole</b> is 1 to 2.5 cm ( <sup>3</sup> / <sub>8</sub> to 1 inch) long. The	

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

		<p>young foliage is light green and slightly wavy, the older leaves are green and smooth; the leaf blade is <b>ovate</b> to <b>ovate-lanceolate</b> with wedge-shaped to broadly rounded base and ends with a short dropper tip. The pale glossy to dull leaf blade is 5 to 12 cm (2 to 4+½ inches) cm long and 2 to 6 cm (1 to 2+½ inches) wide. Near the leaf margins are yellow crystal cells ("cystolites"). The two membranous, deciduous <b>stipules</b> are not fused, lanceolate and 6 to 12 mm (¼ to ½ inch) (rarely to 15 mm or 9/16 inch) long.</p>	
Ashoka	<i>Saraca asoca</i>	<p><i>Saraca asoca</i>, commonly known as the Ashoka tree, is a plant belonging to the Detarioideae subfamily of the legume family. It is an important tree in the cultural traditions of the Indian subcontinent and adjacent areas. It is sometimes incorrectly known as <i>Saraca indica</i>.</p>	
Debdaru	<i>Monoon longifolium</i>	<p><i>Monoon longifolium</i>, the false ashoka, also commonly known by its synonym <i>Polyalthia longifolia</i>, is an Asian small tree species in the family <b>Annonaceae</b>. It is native to southern India and Sri Lanka, but has been widely introduced elsewhere in tropical Asia.<sup>[1]</sup> This evergreen tree is known to grow over 20 m. in height and is commonly planted due to its effectiveness in alleviating <b>noise pollution</b>. It exhibits symmetrical pyramidal growth with willowy weeping pendulous branches and long narrow lanceolate leaves with undulate margins.</p>	

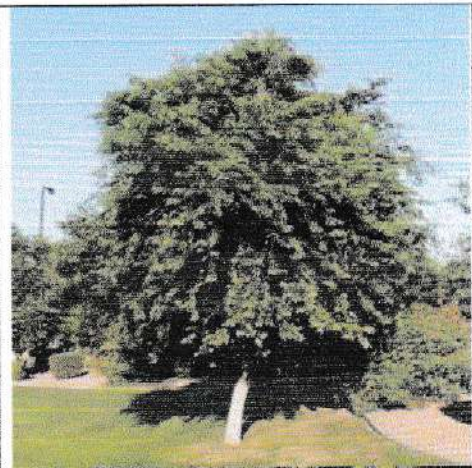

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)



<p>Indian rosewood</p>	<p><i>Dalbergia sissoo</i></p>	<p><i>Dalbergia sissoo</i>, known commonly as <b>North Indian rosewood</b> or <b>shisham</b>,<sup>[3]</sup> is a fast-growing, hardy, <b>deciduous rosewood</b> tree native to the Indian subcontinent and southern Iran. <i>D. sissoo</i> is a large, crooked tree with long, leathery leaves and whitish or pink flowers.</p>	
<p>Thuja</p>	<p><i>Thuja occidentalis</i></p>	<p><i>Thuja</i> are <b>evergreen trees</b> growing from 10 to 200 feet (3 to 61 metres) tall, with stringy-textured reddish-brown <b>bark</b>. The shoots are flat, with side shoots only in a single plane. The leaves are scale-like and 1 to 10 mm (0.039 to 0.394 in) long, except young seedlings in their first year, which have needle-like leaves. The scale leaves are arranged in alternating decussate pairs in four rows along the twigs. The male cones are small, inconspicuous, and are located at the tips of the twigs. The female <b>cones</b> start out similarly inconspicuous, but grow to about 1 to 2 cm (0.39 to 0.79 in) long at maturity when 6–8 months old; they have 6-12 overlapping, thin, leathery scales, each scale bearing 1–2 small <b>seeds</b> with a pair of narrow lateral wings.</p>	



**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

<p>Indian rosewood</p>	<p><i>Dalbergia sissoo</i></p>	<p><i>Dalbergia sissoo</i>, known commonly as <b>North Indian rosewood</b> or <b>shisham</b>,<sup>[3]</sup> is a fast-growing, hardy, <b>deciduous rosewood</b> tree native to the Indian subcontinent and southern Iran. <i>D. sissoo</i> is a large, crooked tree with long, leathery leaves and whitish or pink flowers.</p>	
<p>Thuja</p>	<p><i>Thuja occidentalis</i></p>	<p><i>Thuja</i> are <b>evergreen trees</b> growing from 10 to 200 feet (3 to 61 metres) tall, with stringy-textured reddish-brown <b>bark</b>. The shoots are flat, with side shoots only in a single plane. The leaves are scale-like and 1 to 10 mm (0.039 to 0.394 in) long, except young seedlings in their first year, which have needle-like leaves. The scale leaves are arranged in alternating decussate pairs in four rows along the twigs. The male cones are small, inconspicuous, and are located at the tips of the twigs. The female <b>cones</b> start out similarly inconspicuous, but grow to about 1 to 2 cm (0.39 to 0.79 in) long at maturity when 6–8 months old; they have 6-12 overlapping, thin, leathery scales, each scale bearing 1–2 small <b>seeds</b> with a pair of narrow lateral wings.</p>	



**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

## 7.0 Green Practices

"Going green" means to pursue knowledge and **practices** that can lead to more environmentally friendly and ecologically responsible decisions and lifestyles, which can help protect the environment and sustain its natural resources for current and future generations. Green Practice includes

1. Green purchasing
2. Green transportation
3. Treatment of chemical waste
4. Campaign for Go Green
5. Green Policy

## 7.1 Observation

### Major Green practice Initiatives in the campus

- Institute community Garden
  - Recycling bin for e-waste
  - Use of LED
  - Restricted entry of vehicles
  - Restricted Parking
  - Usage of bicycles and public transport
  - Pedestrian friendly Road
  - Paperless office
  - Plastic free campus

### 7.1.2 Recommendations

- College should formulate Environmental management policy/ Green policy to achieve the sustainable development.
- The Environmental Protection Committee should be empowered to look after all the green practices in the college.
- More Seminar/ workshop should be organized to create the awareness of Environmental conservation among the students and other stake holders.



**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

### 7.1 .3 Audit Framework and detailed findings: Green Practices

Control objective	Control(s)	Audit Observation
Ensure that improvements, purchases and developments are environmentally sound	Seek and act upon professional advice in order to minimize the adverse environmental impact of any new developments and exceed government regulatory requirements. This includes efficient heating and water systems, appropriate space for recycling, and the use of recycled and/or sustainable building materials where possible	No, the college have Not contacted for and act upon professional advice in order to minimize the adverse environmental impact of any new developments and exceed government regulatory requirements.
	Purchase efficient and environmentally sound appliances	College is positive About increasing greenery by planting in front of the college and maintaining potted plants scientifically as much possible.
	Purchase food that has been produced and delivered with minimal impact on the environment, this includes buying locally produced, organic and free range food wherever possible	No, college does not has to Purchase food stuff from t he outside as as the canteen is fully operational.
Minimize the use of unsustainable transport	Make available information about bicycle and pedestrian routes, public transport services and car share schemes to staff and students.	The college is well connected with good surface transport. Faculty members, Office staff and students attending the college by public
		transport or by own transport like Bicycle, motor cycle etc.

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)

	Reduce the proportion of travel on College business carried out in private transport and eliminate unnecessary and inefficient use of college vehicles	No, college has no vehicle. College uses hired vehicle whenever its required. Most of the time use Public transport for the official works.
	Promote car sharing / car pool among the students and faculty members	Both students and faculty members use either public transport or own vehicle.
Minimize the use of chemical pollutants	Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations	Negligible amount of washing liquids are used in the college and all the toilet cleaners are Eco friendly.
	Dispose the chemical waste generated from the laboratories in a scientific manner	Different routine experiments are conducted as per the curriculum of the University of North Bengal and there is no toxic chemical used in the chemistry laboratory which may lead to the generation of different chemical pollutants. The wastes which are generated are collected and disposed separately.  After collecting separately they are diluted and safely disposed to large water Bodies through normal sewerage system. (Usually make it more dilute by addition of water to avoid biomagnification).
	Reduce the practice of burning Plastic and other material that emits harmful gas on burning is prevented in the campus.	The college is plastic free zone.
	Establish a Garden in the campus	college has already maintained garden.
	Minimize the use of fertilizers and pesticides in college grounds, opting for the use of	Negligible amount of fertilizers and pesticides are used in the college.

	compost produced on site wherever possible	
	Encourage the faculties and students to plant trees in the garden.	Faculty members and students know the importance of the tree plantation.
	Reviews periodically the list of trees planted in the garden	No such review conducted.
Ensure that environmental awareness is created	Conduct environmental awareness workshops as a part of the program.	No such workshop has taken place.
	Conduct events such as plant trees to spread environmental awareness among the students	College students union usually does that.
	Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.	Seminars and awareness programmes are conducted on Nature and natural resources, wildlife for the conservation of Biodiversity.
	Reduce the rate of contributes to the depletion and degradation of natural resources	College does not directly or indirectly involve in depletion and degradation of natural resources.
	Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service	As per UGC guidelines the subject Environmental Studies has introduced in the curriculum of all the streams. Under this curriculum, students have to submit a project report based on the field study and the environmental data they have collected. The total marks allotted to this project/ field study report is 20. Students appear for the written test where 80 marks are allotted.
Ensure that the buildings conform to green standards.	Review architecture of existing buildings and reviews ways, in consultation with experts, to reduce usage of energy for such buildings, offering greatest efficiency for energy and water usage, and reducing carbon emission	New constructions are in compliance with green standard.
	Establish a College Environmental Committee that will hold responsibility for the	The college has Environment Protection and Campus beautification Committee which

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHA)

\_\_\_\_\_

enactment, enforcement and

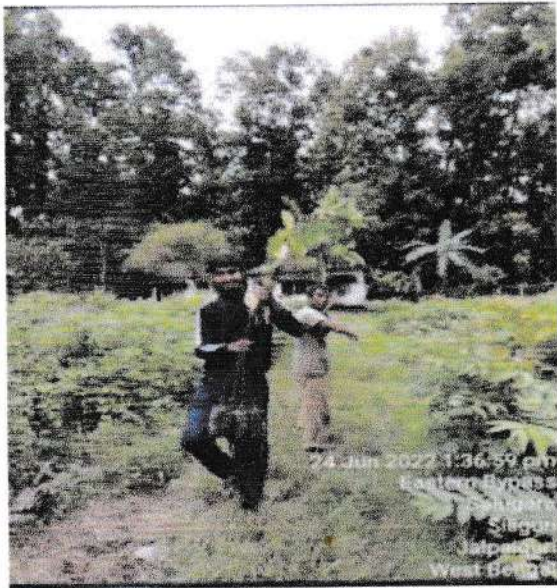
regularly monitors and

*[Handwritten signature]*

	review of the Environmental Policy. The Environmental	advice for environment protection measures and development of
Ensure that the Environmental Policy is enacted, enforced and reviewed	Committee shall be the source of advice and guidance to staff and students on how to implement this Policy	Green Area.
	Ensure that on the Nature Club there will be appropriate representatives of the relevant college departments and authorities – such as catering, gardening, maintenance, cleaning and finance	The college has a good connection with the <i>Paschim Banga Vigyan Mancha</i> , a leading scientific group of the state.
	Ensure that on the Environmental Committee there will be the Green Officer from an external agency who is engaged in the profession of providing guidance on environmental impact	The college has no such Green Officer.
	Ensure that the Environmental Committee will review the Environmental Policy on an annual basis, and will monitor progress and set measurable targets wherever possible	Environmental Protection Committee review periodically.
	Ensure that the Environmental Policy is enforced regardless of whether its requirements exceed the mandate of the law	Environmental policy of the college: No to water & Electricity misuse; Optimal waste management
	Require that every staff and student member recognizes their responsibility to ensure that the commitments in the Environmental Policy are properly put into practice	Every staff and student member recognizes their responsibility to ensure that the commitments to the Environment.
	Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings	Green audit is conducted annually.

  
**Dr. Indranil Ghosh**  
 Environment Safety Health  
 Audit Agency (ESHAA)





Pic 6: Green Campaigning

*Indrani Ghosh*  
**Dr. Indrani Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

## 8.0 Conclusions

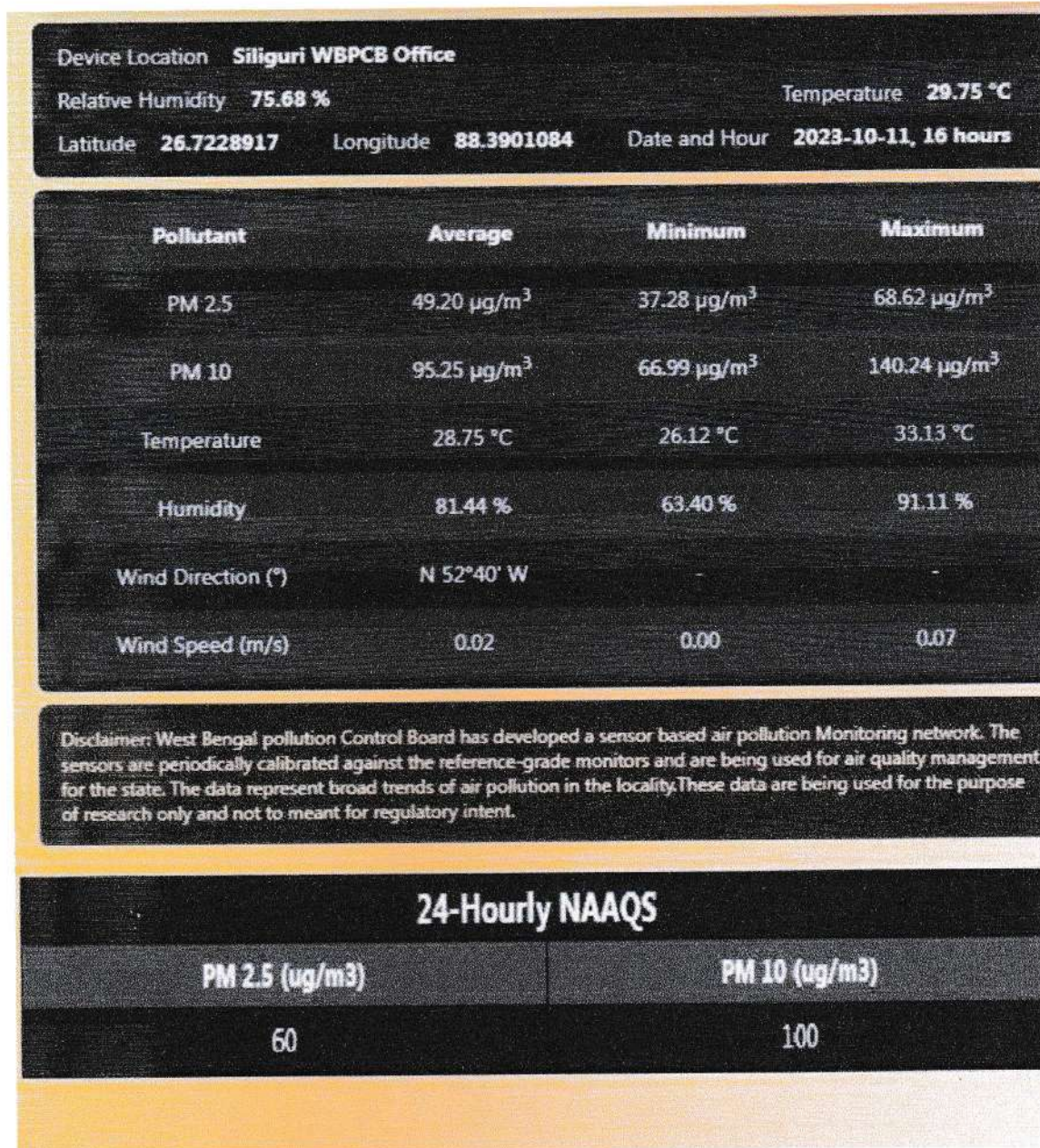
Considering the fact that the institution is predominantly an under-graduate college, there is significant concern over the environmental conservation both by faculty and students. The environmental awareness initiatives are substantial. The installation of solar panels and paperless work system are note worthy. Besides, environmental awareness programmes initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using Eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development.

As part of green audit of campus, we also carried out the environmental monitoring of campus includes Illumination, Noise level, Ventilation and Indoor Air quality of the class room. It was observed that Illumination and Ventilation is adequate considering natural light and air velocity present. Noise level in the campus is below 50 dB at day time which is well within the limit.



**Dr. Indranil Ghosh**  
Environment Safety Health  
Audit Agency (ESHAA)

## Appendix 1: Air Quality



Source: West Bengal pollution Control Board

  
**Dr. Indranil...**  
 Environment Safety Health  
 Audit Agency (ESHAA)

Day

10/12



31° Hi

RealFeel® 38°

RealFeel Shade® 35°

Partly sunny

Max UV Index

6 High Precipitation

0.5 mm

Wind

SSE 7 km/h Rain

0.5 mm

Wind Gusts

15 km/h Hours of Precipitation

• 0.5

Probability of Precipitation

46% Hours of Rain

0.5

Probability of Thunderstorms

13% Cloud Cover

24%

Night

10/12



20° Lo

RealFeel® 20°

Mainly clear

Wind

NNE 7 km/h Probability of Thunderstorms

4%

Wind Gusts

15 km/h Precipitation

0.0 mm

Probability of Precipitation

16% Cloud Cover

22%

**Dr. Indranil Ghose**  
Environment Safety Health  
Audit Agency (ESHAA)

CURRENT AIR QUALITY

TODAY  
10/13



**PM<sub>2.5</sub>**  
Poor

Fine Particulate Matter (PM<sub>2.5</sub>) are inhalable pollutant particles with a diameter less than 2.5 micrometers that can enter the lungs and bloodstream, resulting in serious health issues. The most severe impacts are on the lungs and heart. Exposure can result in coughing or difficulty breathing, aggravated asthma, and the development of chronic respiratory disease.

87  
20 ug/m<sup>3</sup>

**PM<sub>10</sub>**  
Poor

Particulate Matter (PM<sub>10</sub>) are inhalable pollutant particles with a diameter less than 10 micrometers. Particles that are larger than 2.5 micrometers can be deposited in airways, resulting in health issues. Exposure can result in eye and throat irritation, coughing or difficulty breathing, and aggravated asthma. More frequent and excessive exposure can result in more serious health effects.

60  
52 ug/m<sup>3</sup>

**O<sub>3</sub>**  
Excellent

Ground-level Ozone (O<sub>3</sub>) can aggravate existing respiratory diseases and also lead to throat irritation, headaches, and chest pain.

16  
48 ug/m<sup>3</sup>

**NO<sub>2</sub>**  
Excellent

Breathing in high levels of Nitrogen Dioxide (NO<sub>2</sub>) increases the risk of respiratory problems. Coughing and difficulty breathing are common and more serious health issues such as respiratory infections can occur with longer exposure.

10  
5 ug/m<sup>3</sup>

**CO**  
Excellent

Carbon Monoxide is a colorless and odorless gas and when inhaled at high levels can cause headache, nausea, dizziness, and vomiting. Repeated long-term exposure can lead to heart disease.

3  
30 ug/m<sup>3</sup>

**SO<sub>2</sub>**  
Excellent

Exposure to Sulfur Dioxide can lead to throat and eye irritation and aggravate asthma as well as chronic bronchitis.

3  
3 ug/m<sup>3</sup>

*[Signature]*  
Dr. Indrent Ghos, I  
Environment Safety Health  
Audit Agency (ESHAA)

## Appendix 2: Noise Quality

Device	Siliguri WBPCB Office	
Zone	Commercial	
District	Darjeeling	
Timestamp	October 11th 2023, 5:04 pm	
Parameter	Value	
LAs	53.37	
LCs	62.94	
LZs	65.90	
L <sub>A</sub> eqt	54.47	
L <sub>C</sub> eqt	62.54	
L <sub>Z</sub> eqt	62.54	
L <sub>A</sub> peakt	82.86	
L <sub>C</sub> peakt	87.50	
L <sub>Z</sub> peakt	87.65	
National Noise Standard		
Noise Limit	DAY (6 AM - 10 PM) in dB(A)	NIGHT (10 PM - 6 AM) in dB(A)
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence	50	40

Source: West Bengal pollution Control Board

**Dr. Indranil Ghose**  
Environment Safety Health  
Audit Agency (ESHAA)

### Appendix 3: Water Quality Parameter

Parameter	Bureau of Indian Standards (BIS 2009) acceptable limit	WHO standard 2011 desirable limit
pH	6.5 - 8.5	7.0 - 8.5
TDS	500	600
Alkalinity	200	300
DO	5	NA
EC	750	750
Salinity	100 PPT	100 PPT
Turbidity	1 NTU	1 NTU
Na <sup>+</sup>	200	50
Mg <sup>2+</sup>	30	30
Ca <sup>2+</sup>	75	100
F <sup>-</sup>	1	1.5
Cl <sup>-</sup>	250	250
NO <sub>3</sub> <sup>2-</sup>	50	50
SO <sub>4</sub> <sup>2-</sup>	200	250

NA - Not Available



**Dr. Indrani Ghosh**  
Environment Safety Health  
Audit Agency (ESHA)