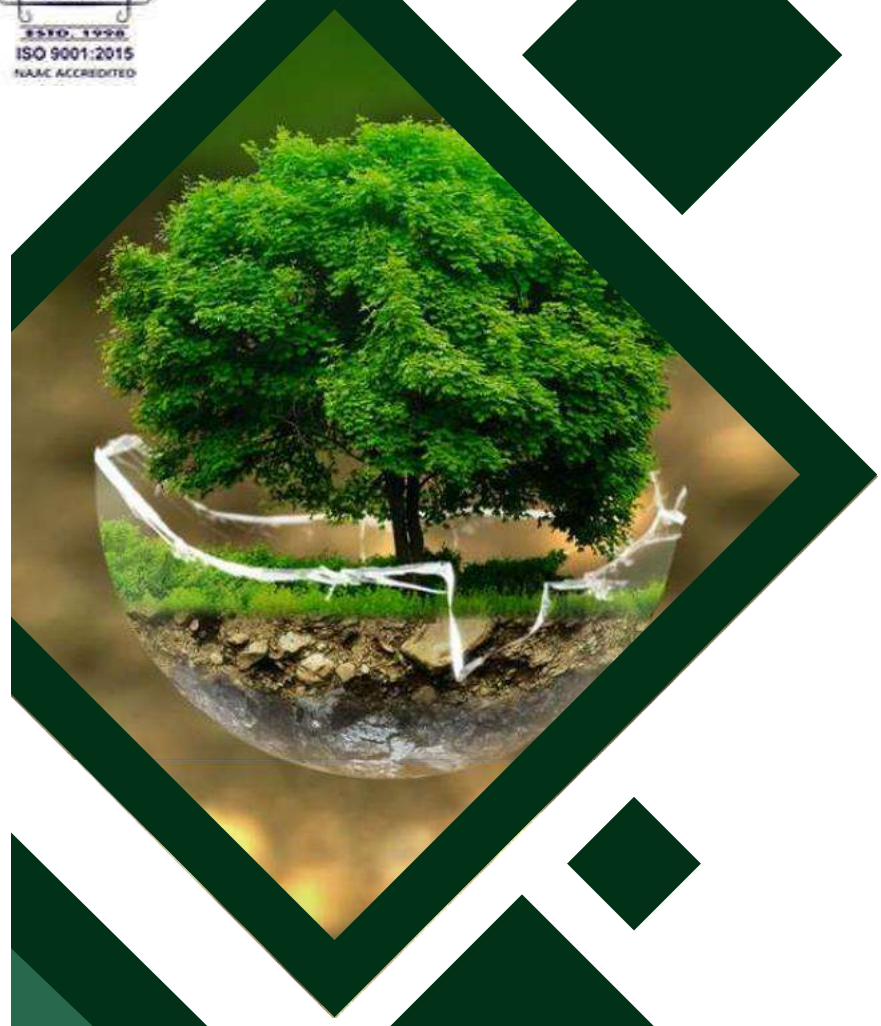
Surya Sen Mahavidyalay

Surya Sen Colony, Block B, Siliguri

Dist.: Jalpaiguri, West Bengal (India)-734004

ISO 9001:2015
NAAC ACCREDITED



GREEN AUDIT REPORT

2024-2025

Audited By

Dr. Indranil Ghosh

Lead Auditor
Environmental Management System
(ISO 14001:2015)
IRCA - CQI Registered

ISO 14001:2015

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 : 02/11/2025
Date of Expiry : 01/12/2026
Date of Re-Certification : 01/12/2026

Director

EGAC Accredited
EMS Certification
CAB #011805

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Magnitude Management Services Pvt. Ltd.

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GA/SSM/2024-25/02

GREEN AUDIT, ENVIRONMENT & ENERGY AUDIT CERTIFICATE

Is awarded for 2024-2025 to the Esteemed Institution

SURYA SEN MAHAVIDYALAYA

Surya Sen Colony, Block B, Siliguri, Dist.: Jalpaiguri, West Bengal (India)-734004.

This is to certify that SURYA SEN MAHAVIDYALAYA, Siliguri, Jalpaiguri, has conducted detailed Environmental Green Audit including Energy Audit for 2024-25 for their campus and submitted necessary data and credentials for scrutiny. The activity and measure carried out by the college was found satisfactory. The efforts taken by the students, faculty members and the college authority towards Environment and Sustainability is highly appreciated and commendable.

Issued on 5th November, 2025 and valid till 4th November, 2026.

Dr. Indranil Ghosh
Lead Auditor, Environmental Management System (ISO 14001:2015)
IRCA - CQI Registered &
Professor in Environmental Science

Executive Summary

In alignment with the **Environmental Policy of** Surya Sen Mahavidyalaya, Siliguri, the **Green Audit for the Academic Year 2024–25** was conducted in **November 2025**. This audit reaffirms the college's commitment to environmental sustainability, ecological responsibility, and adherence to national and institutional green policies within the framework of Higher Education.

The primary aim of the audit was to evaluate the college's compliance with environmental standards and to assess the effectiveness of its **Environmental Management System (EMS)**. The process focused on identifying strengths, detecting gaps, and recommending improvements to enhance sustainability performance across the campus.

A strategic pre-audit analysis was undertaken to **identify, prioritize, and evaluate key sustainability parameters**. This involved reviewing policy documents, operational manuals, and environmental data, along with **stakeholder consultations** to gauge awareness and the effectiveness of existing practices.

The audit employed a **multi-pronged methodology** consisting of:

- **Physical inspection** of campus infrastructure and environmental assets.
- **Review of documentation** related to water, energy, and waste management.
- **Stakeholder interviews** with administrative staff, faculty, and student representatives.

The audit covered several thematic areas:

- **Water Management**: The institution is making steady progress in conserving water through efficient usage and infrastructure. With the upcoming implementation of rainwater harvesting and system monitoring, the college aligns with **SDG 6 (Clean Water and Sanitation)** and **SDG 12 (Responsible Consumption and Production)**.
- **Energy Management**: Surya Sen Mahavidyalaya, Siliguri has adopted energy-efficient technologies such as LED lighting and solar energy. Behavioural practices like switch-off drills further reduce consumption. These efforts support **SDG 7 (Affordable and Clean Energy)** and **SDG 13 (Climate Action)**. Continued tracking and investment in energy-efficient appliances are recommended.

- **Waste Management**: With around 16 kg of daily solid waste, the college practices systematic waste segregation, recycling, and reuse. These efforts align with **SDG 12** and contribute to creating a low-carbon, paperless administrative culture. Further initiatives like decentralized composting and awareness drives can strengthen the system.
- **E-Waste Management**: Though e-waste generation is minimal, the college ensures secure storage and disposal via authorized vendors. Plans for an **E-waste Buyback Policy** and improved awareness reflect responsible environmental governance.
- **Biodiversity and Green Cover**: The College maintains over 2,400 square meters of green space and supports diverse flora and fauna. Ongoing plantation drives, a garden, and active student engagement make a model for campus biodiversity. These initiatives contribute to **carbon sequestration and climate resilience**.
- **Green Practices**: The institution promotes digital workflows, restricts vehicular access, uses eco- friendly products, and maintains a plastic-free campus. These practices are supported by infrastructure, community gardening, and sustainability campaigns.

Surya Sen Mahavidyalaya, Siliguri has demonstrated an institutional culture rooted in **environmental stewardship**. Its integrated approach to water, energy, waste, e-waste, biodiversity, and green practices reflects a commitment to continuous improvement. With ongoing policy development, education, and stakeholder participation, the college is well-positioned to serve as a **regional leader in sustainable academic governance**, equipping its students to be future custodians of the environment.

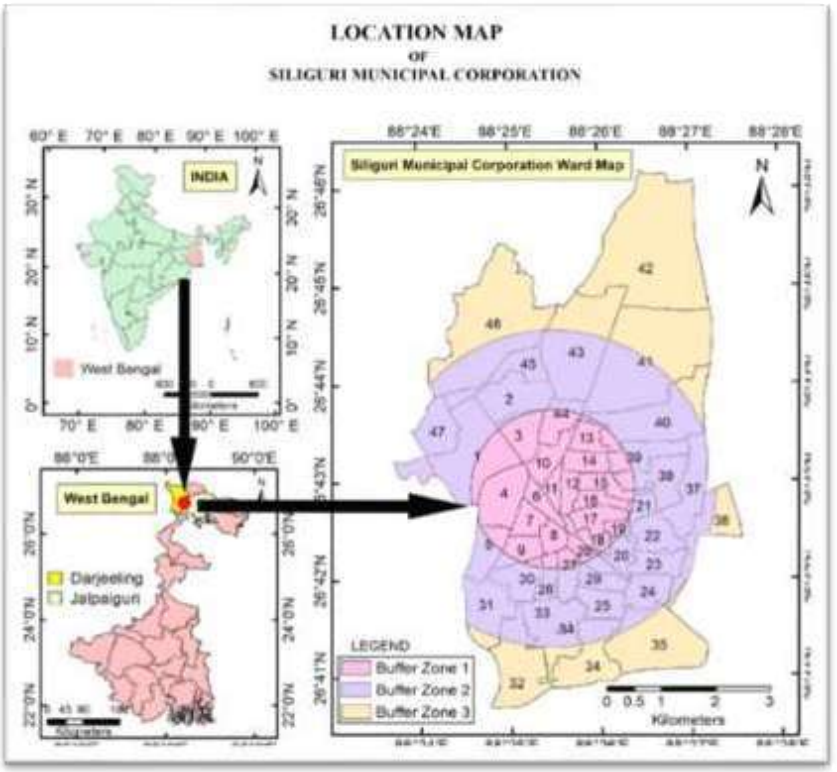
Acknowledgement

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 ofthe audit with the established criteria.



Address of Surya Sen Mahavidyalaya

1.0 Introduction

Global warming and climate change present profound and escalating challenges to our planet, necessitating urgent and collective action. The impacts are wide-ranging and severe—rising global temperatures, unpredictable rainfall patterns and an increased frequency of extreme weather events are significantly disrupting ecosystems, threatening biodiversity and undermining human livelihoods. These environmental changes also deepen existing social and economic inequalities, disproportionately affecting marginalized communities. Climate-induced displacement, resource scarcity and associated conflicts further contribute to social instability.

Moreover, climate change has critical public health implications. Altered weather patterns foster environments conducive to the spread of diseases, as seen during the COVID-19 pandemic, where changing ecological conditions influenced disease transmission dynamics.

Given the gravity of these issues, immediate and sustained efforts are essential. These must include reducing greenhouse gas emissions, transitioning to renewable energy sources, building resilience to climate-related risks and integrating sustainable practices across all sectors.

Institutions—particularly those in the education sector—have a pivotal role to play in this global effort. One of the key tools in promoting environmental responsibility is the implementation of **green auditing**. Recognizing its importance, the **National Assessment and Accreditation Council (NAAC)** has mandated that all higher education institutions in India conduct a green audit. This initiative not only fosters environmental stewardship but also contributes to the institution‘s overall NAAC assessment, which evaluates academic quality, infrastructure, research and now, environmental sustainability.

Through green audits, institutions demonstrate their commitment to environmental responsibility, setting a standard for sustainable practices and contributing meaningfully to the global fight against climate change.

A **Green Audit** is a systematic, documented, periodic and objective assessment of an institution‘s environmental performance. It involves evaluating operational practices and compliance with environmental standards, with the goal of enhancing eco-friendly measures and reducing ecological footprints. This process not only ensures regulatory compliance but also serves as a proactive approach to identifying areas for environmental improvement within and around the institution.

The primary objective of a Green Audit is to critically analyze environmental practices across the college campus. It assesses key domains such as energy and water consumption, waste management, resource utilization and pollution control. Initiated with the intent to inspect activities that may pose risks to the environment and human health, the Green Audit provides actionable insights and strategic direction for fostering a sustainable

campus environment.

Dual Role of Green Audits in Educational Institutions

Green audits in educational settings serve a dual purpose:

1. **Operational Sustainability**: They evaluate the institution's environmental impact and promote the adoption of sustainable practices across departments and functions. This includes improving energy efficiency, minimizing waste, conserving water and enhancing green infrastructure.
2. **Educational Enrichment**: Green audits also offer significant pedagogical value. By involving students and staff in the auditing process, institutions foster a culture of environmental responsibility. This hands-on exposure instils values of ecological stewardship, encouraging students to incorporate sustainable habits in their personal and professional lives.

The audit process contributes to the development of **―Green Campuses‖**—institutions that actively integrate sustainability into their physical environment and operational ethos. Such campuses are characterized by energy-efficient buildings, expansive green spaces, eco-friendly transportation options and comprehensive waste reduction strategies.

Extending the Green Mission beyond the Campus

The concept of green institutions should not remain confined within the campus boundaries. It must extend to surrounding rural, tribal and urban communities through both **in reach** (internal) and **outreach** programs. These initiatives can include environmental awareness campaigns, community- based green enterprise development and capacity-building programs aligned with biodiversity conservation and sustainable livelihoods.

Academic projects, dissertations and research activities should be aligned with these outreach goals, encouraging active participation from students and faculty. Integrating such initiatives with existing government schemes on biodiversity, sanitation and clean water access can enhance their effectiveness. In areas where public scepticism about government initiatives prevails—especially in rural regions—educational institutions can act as credible intermediaries to build trust and promote environmental literacy.

Green Audit and Sustainable Development: An Integrated Approach

There is a direct and strategic relationship between **Green Auditing** and the **Sustainable**

Development of organizations. A robust green audit process is foundational to achieving sustainability goals. This involves:

- Establishing a clear **Green Audit Policy**
- Developing a comprehensive **Green Audit Framework**
- Ensuring accurate and timely **Implementation**
- Conducting rigorous **Monitoring and Analysis** of results

When effectively implemented, green audits contribute to reducing environmental waste, optimizing resource usage, lowering operational costs and improving the overall quality of services and outputs. They play a vital role in aligning institutional practices with the principles of sustainable development.

In conclusion, green auditing not only enhances institutional accountability but also reinforces a long- term commitment to environmental sustainability. By embedding ecological consciousness into campus operations and community engagement, educational institutions can play a transformative role in shaping a greener, more sustainable future.

1.1 About the College

Surya Sen Mahavidyalaya, affiliated with the University of North Bengal, began its journey on September 15, 1998, offering undergraduate degree courses in Arts, Science, and Commerce. The institution is situated on a scenic 1.9-acre campus near New Jalpaiguri Junction railway station, with the Mahananda and Sahu rivers located not far away. The main road lies approximately 750 meters from the college premises. The campus consists of five buildings, each with three floors, and no industrial area exists within a 5 km radius, ensuring a clean and conducive academic environment.

The college operates in a single shift from 9:00 a.m. to 5:00 p.m. and currently accommodates 8,336 students across its B.Sc, B.A., and B.Com programmes. For Science students, the institution maintains nine well-equipped laboratories.

The college is now planning to adopt a ‗Green Campus' system aimed at promoting environmental conservation and sustainability. This initiative is based on three key pillars: achieving a zero carbon footprint, enhancing occupational health and institutional performance, and ensuring that all graduates demonstrate environmental literacy. The overarching objectives include reducing CO_2 emissions, and minimizing energy and water consumption, while fostering a healthy and sustainable learning environment.

To achieve these goals, the administration is actively working on several components of the Green Campus framework, including water conservation, tree plantation, waste management, paperless administration, promotion of alternative energy sources, and biodiversity mapping.

Commitment to Sustainability: Towards a Green Campus

Surya Sen Mahavidyalaya, Siliguri is actively pursuing the implementation of a ―Green Campus‖ model to promote environmental conservation and sustainability. The institution's green vision is anchored in three core pillars:

- **Achieving Zero Environmental Footprint (Carbon Footprint)**
- **Creating a Positive Impact on Occupational Health and Safety**
- **Ensuring 100% Environmental Literacy Among Graduates**

The college aims to reduce its carbon footprint and minimize energy and water usage, while simultaneously cultivating a learning environment that supports student well-being and ecological awareness.

To achieve these goals, the college has initiated and integrated various green practices across its operations, including:

- **Water Conservation Measures**
- **Tree Plantation Drives**
- **Solid and Liquid Waste Management**
- **Promotion of Paperless Workflows**
- **Use of Alternative and Renewable Energy Sources**
- **Mapping and Preservation of Campus Biodiversity**

Through these initiatives, the College is making meaningful progress toward becoming a sustainable and environmentally responsible institution. Its commitment to green auditing reflects a broader dedication to environmental stewardship and serves as a model for other institutions striving toward sustainable development.

1.2 Objectives of the Study

Green auditing in educational institutions is a critical instrument for advancing sustainable development, fostering environmental stewardship and optimizing resource utilization. It provides a structured and methodical framework for evaluating the institution's environmental performance, identifying areas of improvement and implementing corrective

and preventive actions to ensure on- going environmental enhancement.

The **primary objective** of a Green Audit is to assess, strengthen and institutionalize environmental management and conservation practices within the campus. The audit process involves the identification, quantification, analysis and prioritization of various environmental sustainability parameters, ensuring compliance with applicable environmental laws, institutional policies and national and international sustainability standards.

Key Objectives of a Green Audit

1. **Verification of Compliance**
   Evaluate the institution's adherence to relevant environmental laws, standards and best practices to ensure regulatory conformity.
2. **Identification of Environmental Issues**
   Detect inefficiencies and environmental risks such as energy losses, water leakages, chemical spills, or other operational lapses that may negatively impact the ecosystem.
3. **Policy Development and Support**
   Assist in formulating or refining the institution's environmental policy, especially where no formal framework currently exists.
4. **Assessment of Environmental Impact**
   Analyze the direct and indirect environmental effects of institutional activities on air, water, soil, biodiversity, public health and the surrounding community.
5. **Performance Benchmarking**
   Measure the institution's environmental performance against established benchmarks and industry best practices.
6. **Evaluation of Environmental Management System (EMS)**
   Assess the effectiveness of the existing EMS and recommend enhancements to improve operational sustainability.
7. **Establishment of Environmental Data Repository**
   Create a comprehensive and reliable environmental data inventory to support evidence-based decision-making, corrective measures and strategic planning.

8. **Strategic Planning and Development**

Facilitate the development of long-term sustainability strategies that integrate environmental responsibility into institutional planning and governance.

9. **Stakeholder Engagement and Communication**

Ensure transparent communication of the institution's environmental initiatives and performance to internal and external stakeholders, reinforcing credibility and institutional accountability.

By addressing these core objectives, Green Auditing empowers institutions like *Surya Sen Mahavidyalaya, Siliguri* to align their operations with environmental sustainability goals. It plays a pivotal role in building climate resilience, fostering a culture of ecological responsibility and contributing to the global vision for a more sustainable future.

1.3 General steps of Audit

Green auditing serves as an essential mechanism for institutionalizing environmental responsibility and enhancing sustainability within educational campuses. The following components outline the strategic approach and core objectives that underpin an effective Green Audit process:

1. **Comprehensive Environmental Assessment**

   Undertake a detailed evaluation of the institution's environmental performance, encompassing areas such as energy and water consumption, waste management practices, emissions control and compliance with environmental legislation.

2. **Structured and Systematic Methodology**

   Implement a methodical approach that includes planning, data collection, analysis, risk assessment and the formulation of strategic recommendations for continuous improvement.

3. **Data-Driven Audit Objectives**

   Define green audit goals using standardized and measurable criteria that align with institutional objectives and regulatory requirements, while addressing challenges related to data accessibility, quality and reliability.

4. **Regulatory Compliance and Best Practices**

   Assess the institution's adherence to applicable environmental laws, guidelines and

standards, ensuring its operations reflect responsible and sustainable environmental practices.

5. **Independent and Objective Evaluation**

Encourage the engagement of external auditors or third-party experts with specialized environmental auditing skills to ensure impartiality, objectivity and credibility in the audit findings.

6. **Commitment to Long-Term Sustainability**

Acknowledge that green auditing is a continuous and evolving process aimed at achieving sustained environmental improvements over time, with recognition that impactful change requires strategic implementation and institutional commitment.

7. **Documentation and Verification Protocols**

Base findings on substantiated evidence and verifiable records to ensure transparency and accountability in meeting regulatory and institutional sustainability goals.

8. **Integration with Institutional Management Systems**

Embed green auditing practices within the institution's broader governance and management systems, recognizing it as a core tool for monitoring and enhancing environmental performance.

9. **Alignment with Environmental Policies and Goals**

Ensure audit activities are consistent with the institution's environmental policy, goals and performance objectives, fostering alignment with recognized standards and sustainability benchmarks.

10. **Environmental Education and Stakeholder Engagement**

Promote environmental awareness across the campus community by disseminating relevant information, organizing training sessions and encouraging active participation through initiatives such as green clubs, sustainability competitions and recognition programs.

11. **Continuous Improvement and Sustainability Planning**

Identify current gaps and inefficiencies and develop targeted strategies to enhance sustainability outcomes in areas such as energy conservation, water management, pollution prevention and waste reduction.

By adopting these principles and practices, educational institutions can leverage Green

Auditing as a transformative tool that not only ensures environmental compliance but also cultivates a culture of sustainability, accountability and active environmental stewardship among students, faculty and staff.

1.4 The audit process

The Green Audit process was carried out in three key phases: **pre-audit**, **onsite audit** and **post-audit activities**, each designed to ensure a comprehensive evaluation of the institution's environmental performance.

During the **pre-audit phase**, key sites were selected, the audit team was constituted and the scope was defined. Background information regarding the institution's operations, historical usage and applicable environmental regulations was gathered. A structured audit plan was developed and a pre-audit questionnaire was shared with the auditee to facilitate initial engagement.

The **onsite audit phase** involved a formal opening meeting with institutional authorities to communicate the audit's purpose and schedule. The audit team conducted site inspections, gathered data and evidence, assessed environmental risks and controls and evaluated existing practices, including any Environmental Management Systems (EMS). An exit meeting was held to present preliminary findings.

The **post-audit phase** included the preparation and distribution of the draft and final audit reports. An action plan was developed based on audit findings, with set timelines for implementation. Follow-up activities ensured that corrective actions were taken and improvements were verified.

Overall, the Green Audit aimed to promote environmental compliance, enhance sustainability practices and embed environmental accountability within the institutional framework.

1.4.1 Pre-Audit Activities

The pre-audit phase involved a series of preparatory steps to ensure a comprehensive and effective audit process:

1. **Site Selection:** Identification and selection of specific sites, areas, or divisions within the institution to be audited.
2. **Audit Team Notification:** The audit team was informed of the audit schedule well in advance, enabling them to familiarize themselves with the audit framework and objectives.
3. **Definition of Audit Scope:** The scope of the audit was clearly defined in consultation with the audit team to ensure relevance and alignment with institutional goals.
4. **Audit Planning:** A flexible audit plan was developed, allowing for adjustments based on findings encountered during the audit and to ensure optimal resource utilization.
5. **Team Formation and Role Assignment:** An audit team was constituted, with responsibilities clearly assigned to each member.
6. **Collection of Working Documents:** Essential documents and working papers were gathered to support the audit team's investigations at various sites.
7. **Background Information Compilation:** Information regarding the facility's organizational structure, layout, operational processes and applicable environmental regulations and standards was collected.
8. **Site Historical Review:** Historical data concerning the site's prior usage and any known issues related to soil and groundwater contamination were compiled.
9. **Pre-Audit Questionnaire:** A pre-audit questionnaire was communicated to the auditee to facilitate initial data collection and engagement.

1.4.2 Onsite Audit Activities

The onsite phase involved direct engagement with the auditee and physical inspection of the selected sites:

1. **Opening Meeting:** An introductory meeting was conducted between the audit team and college authorities to outline the audit's purpose, methodology and schedule.

2. **Site Inspection:** The audit team conducted physical inspections to identify environmental aspects that were not evident during the planning phase.
3. **Facility Assessment:** The team developed a comprehensive understanding of the institution's environmental practices and, where applicable, the functioning of any Environmental Management System (EMS).
4. **Risk and Control Evaluation:** Strengths and weaknesses of current practices were assessed and associated environmental risks and existing controls were analyzed.
5. **Evidence Collection:** Data and supporting information were gathered using standardized audit protocols.
6. **Team Communication:** Regular communication within the audit team was maintained to ensure efficient information exchange and analysis.
7. **Evaluation of Findings:** Collected evidence was assessed in relation to the defined audit objectives and scope.
8. **Exit Meeting:** A concluding meeting was held to present preliminary findings, discuss observations and clarify any immediate concerns.

1.4.3 Post-Audit Activities

The post-audit phase focused on reporting, corrective action planning and follow-up:

1. **Draft Report Issuance:**
    - Preparation and internal review of the draft audit report.
    - Determination of the report distribution list.
    - Circulation of the draft report to relevant stakeholders.
    - Provision of a defined period for feedback and necessary corrections.
2. **Final Report Issuance:**
    - Incorporation of corrections and finalization of the report.
    - Distribution of the final audit report to designated recipients.
    - Identification of areas requiring corrective actions.
    - Setting deadlines for action plan development.
    - Facilitation of action plan preparation and implementation based on audit findings.
    -

3. **Follow-Up Activities:**
    - Monitoring and review of the action plan execution.
    - Verification of improvements made in response to audit recommendations.
    - Documentation of progress and adjustments to ensure long-term environmental performance.

This structured audit process enables educational institutions to embed sustainability into their operations, promote continuous improvement and ensure compliance with environmental standards.

1.5 Methodology

To effectively conduct the Green Audit, a structured and multi-faceted methodology was adopted. The approach integrated a variety of tools and techniques to ensure a comprehensive assessment of the institution's environmental performance. These included the development of a detailed audit questionnaire, physical inspection of the campus, direct observation, review of relevant documentation, interviews with key personnel, data collection

and analysis, on-site measurements and the formulation of evidence-based recommendations.

The audit focused on the following key areas to evaluate and summarize the current status of environmental management practices within the campus:

- **Water Management:** Assessment of water usage patterns, conservation measures and efficiency of water systems.
- **Energy Conservation:** Evaluation of energy consumption, use of renewable sources and implementation of energy-saving practices.
- **Waste Management:** Review of solid waste generation, segregation, disposal methods and recycling initiatives.
- **E-Waste Management:** Analysis of electronic waste handling procedures, disposal practices and compliance with e-waste regulations.
- **Green Area Management:** Examination of green cover, plantation activities, landscaping and biodiversity preservation efforts.
- **Green Practices:** Identification of sustainable practices adopted by the institution, including awareness programs, eco-friendly initiatives and community engagement in environmental stewardship.

This methodological framework enabled a thorough understanding of the institution's environmental footprint and supported the development of actionable strategies to enhance sustainability on campus.

2.0 Water Management system Audit

A **Water Audit** is a systematic and comprehensive evaluation of water usage patterns, infrastructure efficiency and potential areas of water wastage within a facility. In the context of **educational institutions**, it serves as a critical tool to promote **sustainable water management**, reduce operational costs and align with environmental conservation goals. As centers of knowledge and social responsibility, educational campuses have the unique opportunity—and obligation—to lead by example in resource stewardship.

The audit involves an **on-site assessment** of all water-consuming components, including fixtures, equipment, landscaping and operational practices. It aims to analyze both the **quantity and quality** of water consumed and to develop actionable recommendations for enhancing **water-use efficiency**.

Depending on the nature of the facility, a water audit can vary in scope:

- For **public utilities**, the audit includes tracking the entire water distribution cycle—from source to consumer—to minimize losses and inefficiencies.
- For **institutional or commercial buildings** (e.g., schools, offices), the audit assesses water use in sanitation, drinking, cooling and irrigation systems.
- In **residential settings**, the audit focuses on potable and sanitatio uses such as hygiene, cleaning, laundry and gardening.

2.1 Purpose of Conducting a Water Audit in Educational Institutions

The primary objectives of a water audit in academic settings include:

- **Resource Optimization**
  Large campuses often feature multiple buildings, canteens and sports facilities, all of which contribute to a substantial water footprint. The audit identifies inefficient usage and proposes targeted solutions for conservation.
- **Cost Efficiency**
  By detecting leaks, malfunctions, or wasteful practices, institutions can significantly reduce their water consumption, translating into long-term financial savings on water bills.

- **Environmental Responsibility**

Efficient water management supports broader sustainability objectives by lessening the pressure on local water sources, reducing wastage and minimizing ecological impact.

Benefits and Outcomes of Water Auditing

- **Water Conservation**

Reduced water consumption leads to preservation of natural resources and supports sustainable campus operations.

- **Financial Savings**

Lower utility expenses provide institutions with more financial flexibility to invest in academic or infrastructural development.

- **Awareness and Education**

The audit process itself serves as an educational tool, fostering awareness and behavioural change among students, staff and faculty regarding water conservation.

- **Enhanced Institutional Reputation**

Demonstrating environmental accountability improves the institution's public image and appeal to sustainability-minded stakeholders.

- **Regulatory Compliance**

Ensures adherence to applicable local and national water management standards, helping avoid legal or regulatory complications.

In summary, conducting a water audit empowers educational institutions to adopt a **proactive, data-driven approach** to water management—enhancing sustainability, operational efficiency and environmental consciousness across the campus community.

2.2 Water Use

This indicator evaluates the institution's approach to water consumption, sourcing, irrigation practices, storm water management and the efficiency of appliances and fixtures. As part of the Green Audit, a comprehensive **water audit** was conducted, involving an on-site survey and assessment to analyze current water usage patterns and identify opportunities to enhance

efficiency.

Water is utilized across the campus for a variety of functions, broadly categorized into **drinking** and **non-drinking** purposes. Drinking water is primarily used in administrative and academic buildings, and canteens. Non-drinking water usage includes laboratory operations, sanitation facilities (toilets and washrooms), cleaning and garden irrigation.

The campus infrastructure comprises an administrative office, academic and laboratory blocks, student canteen facilities and dedicated spaces for cultural and conference activities—all of which contribute to the overall water demand. The audit aimed to assess water use across these segments and evaluate the adequacy and efficiency of the systems in place, ensuring alignment with sustainable water management practices.

2.3 Observations

The study found that the primary sources of water for the institution are the Boring Well, Siliguri Municipal Corporation (SMC), and the Public Health Engineering (PHE) supply. Water is utilized for drinking, sanitation, laboratory activities, and gardening. During the survey, no water loss was detected—there were no leaks, nor was there any overflow from the overhead tanks.

All data collected from various departments was thoroughly examined and verified. The average daily water consumption of the college is 5,500 liters, comprising 4,500 liters for potable and saniatation use, 200 liters for gardening, and 800 liters for laboratory activities.

The institution has also implemented rainwater harvesting, with two storage tanks of 20,000 liters each. Rainwater is primarily used to meet the gardening requirements.

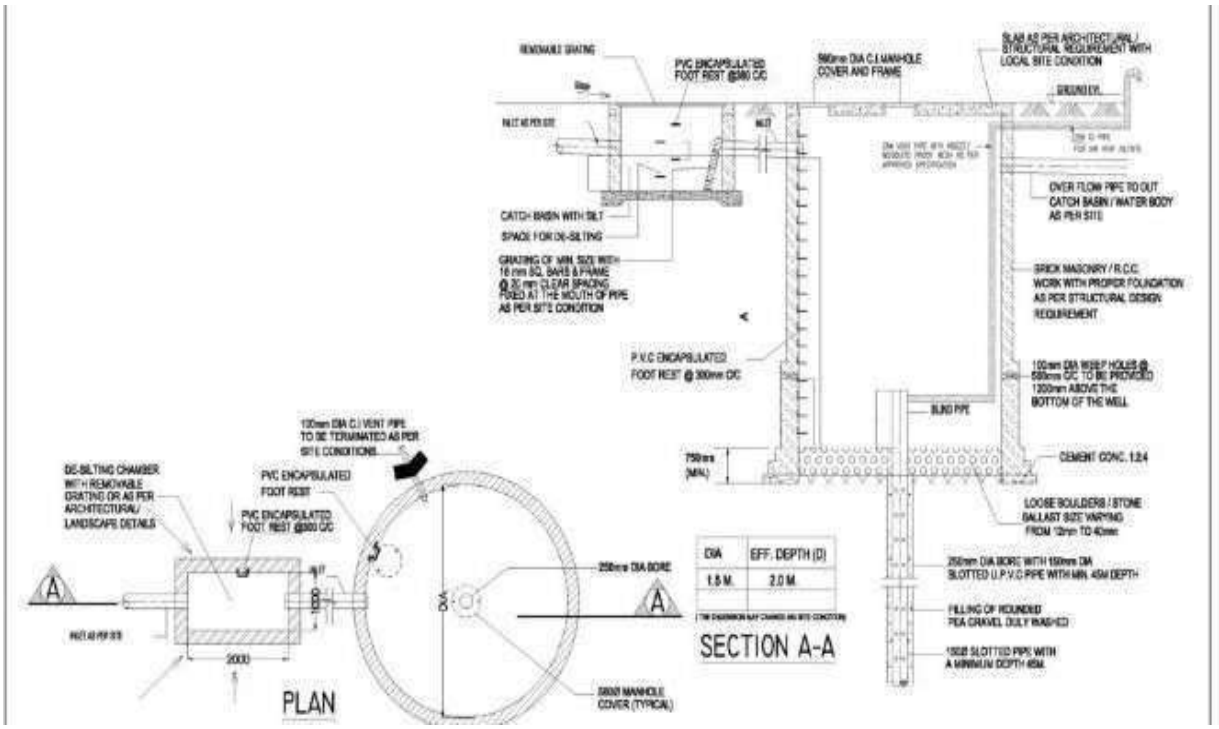
2.4 Recommendations

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



Rainwater harvesting (RWH) is the process of collecting, storing, and using rainwater for various purposes. The importance of RWH can be understood from the following points:

Environmental Benefits

1. *Conservation of Groundwater*: RWH helps reduce the demand on groundwater, allowing aquifers to recharge and maintaining the water table.
2. *Reduced Storm water Runoff*: By harvesting rainwater, the amount of storm water runoff is decreased, which in turn reduces the risk of flooding and erosion.
3. *Decreased Water Pollution*: RWH reduces the amount of pollutants and sediments entering waterways, improving water quality.

Economic Benefits

1. *Water Savings*: RWH reduces the demand on municipal water supplies, leading to cost savings for households and businesses.
2. *Reduced Energy Consumption*: By using rainwater for non-potable purposes, the energy required to treat and pump water is reduced.
3. *Increased Property Value*: Implementing RWH systems can increase property value and appeal.

Social Benefits

1. *Improved Water Security*: RWH provides a reliable source of water during times of drought or water scarcity.
2. *Community Engagement*: RWH projects can foster community engagement and education on water conservation.
3. *Enhanced Food Security*: RWH can provide water for irrigation, improving crop yields and food security.

Other Benefits

1. *Reduced Dependence on Municipal Water*: RWH reduces reliance on municipal water supplies, providing a backup source during emergencies.
2. *Improved Water Quality*: RWH can provide a natural, chemical-free source of water for non-potable uses.
3. *Aesthetic Value*: RWH systems can be integrated into building design, providing a unique architectural feature.

In summary, rainwater harvesting is essential for:

- Conserving groundwater and reducing stormwater runoff
- Saving water, energy, and money
- Improving water security, community engagement, and food security
- Reducing dependen ce on municipal water and improving water quality

Pic : Rain water Harvesting at the college campus

2.5 Audit Framework and detailed findings: Water management

Control objective	Control(s)	Audit Observation	Conformity
Minimize consumption of water.	Repair sources of water leakage, such as dripping taps and showers asquickly as possible.	Regular checking and maintenance of pipelines are done to control water wastage.	YES
	Install appliances which reducewater consumption	Practiced as much as possible.	YES
	Encourage a decrease in water usage among staff, students and conference guests	College encourages to decrease in water usage among staff,students and conference guests because water consumption isminimal.	YES
	Purchase the most efficient washing machines and dishwashers available which have an economy setting as default	College does not purchase the most efficient washing machinesand dishwashers as these are not requiredby the college.	YES
	Use an efficient and hygienic water storage mechanism is to minimize the loss of water during storage	College uses an efficient and hygienic water storage mechanism to minimize the loss of water during storage as stored water is provided by the PHE Supply and also own boring Supply	YES
	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.	YES
	Install Water recycling mechanism,such as rain water harvesting system	College has constructed two tanks for rain water harvesting.	YES

Water Supply from PHE





Different points of Purified drinking water

Flow Chart: Water Management System Audit

START

▼

1. IDENTIFICATION OF WATER SOURCES
(e.g., Municipal Supply, Borewell, Rainwater Harvesting)

▼

2. WATER CONSUMPTION MAPPING
- Campus-Wide Water Usage Survey
- Department-Wise Consumption
- Utility Areas (Toilets, Labs, Gardens, etc.)

▼

3. WATER QUALITY ANALYSIS
- Testing for pH, TDS, Hardness, Microbial Load
- Potability and Suitability for Use

▼

4. INFRASTRUCTURE ASSESSMENT
- Storage Tanks, Pipelines, Taps, Fixtures
- Leakages or Systemic Losses

▼

5. EXISTING WATER CONSERVATION MEASURES
- Low-flow Fixtures, Sensor-based Taps
- Rainwater Harvesting Units
- Reuse of Treated Water (if applicable)

▼

6. WASTEWATER GENERATION & MANAGEMENT
- Identification of Sources (Labs, Toilets, Canteens)
- Treatment System (STP/ETP, if present)
- Disposal or Reuse Practices

▼

7. COMPLIANCE WITH REGULATIONS
- National/State Guidelines on Water Quality & Usage
- CPCB/State PCB norms for effluent discharge

▼

8. AUDIT FINDINGS & GAP ANALYSIS
- Efficiency, Loss Points, Conservation Potential
- Risk Assessment

▼

9. RECOMMENDATIONS
- Infrastructure Improvements
- Policy Changes
- Awareness Campaigns

▼

10. REPORTING AND MONITORING PLAN
- Audit Report Generation
- Monitoring Indicators and Periodic Review

▼

END

3.0 Energy Management System Audit

An **Energy Management System (EnMS) Audit**, in accordance with ISO 50002:2014, involves a comprehensive and systematic assessment of an organization's energy performance. This encompasses the evaluation of energy use, consumption patterns, efficiency levels and opportunities for improvement across various systems, processes and equipment. The audit process is grounded in accurate measurement, monitoring and analysis of energy data to determine areas of inefficiency and potential for optimization.

The core objectives of the energy audit include:

- Identifying significant energy-consuming systems.
- Evaluating current energy usage patterns.
- Recommending actionable strategies to enhance energy efficiency.
- Reducing unnecessary energy consumption and associated environmental impacts.
- Promoting sustainable practices and long-term cost savings.

The outcome of such audits typically includes detailed insights into energy usage and efficiency, along with prioritized recommendations for interventions based on technical feasibility, financial viability and expected environmental benefits. The ultimate aim is to support the institution in adopting responsible energy practices, minimizing its carbon footprint and aligning with broader sustainability goals.

3.1 Energy Conservation Measures

This indicator encompasses multiple dimensions of energy management, including:

- Total energy consumption.
- Types and sources of energy used.
- Energy monitoring and control mechanisms.
- Efficiency of lighting and appliances.
- Utilization of alternative energy sources such as solar energy.
- Transportation and mobility-related energy usage.

Energy conservation is a key pillar of environmental sustainability in educational institutions. It not only contributes to reducing operational costs but also reinforces the institution's commitment to responsible environmental stewardship.

3.2 Observations

Total energy consumption is determined as 41428 KWH major energy consuming equipment. All the departments and common facility centres are equipped with CFL lamps. Approximately 36 CFLs (Capacity) and 725 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 (210 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. Total 153 numbers of CCTVs have been installed across the campus. There are 05 water pumps are in use to lift water from the under ground reservoirs.

Along with this, college has installed 50 KVA 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.

Appliances	No.of Appliances	Units of Current
Computers and Laptops	210	10500
Air conditioners	12	12000
CFL bulbs	36	324
Photocopiers	02	2000
LED lights	725	6525
Incandescent bulbs	0	0
Fans	228	13600
Tubelights	49	980
Heaters	0	0
CCTV DVR	153	765
Water pumps	5	11250
Refrigerators	2	600
Other appliances	10	900
Total Energy usage per month (KWh)		**3777***

- **Monthly Energy Consumption by Appliances in the Institution**

- Considering all appliances are running for 6hrs per day in a month. During winter months AC s were not in used. During the vacations, all the appliances were switched off., the total consumption of energy supposed to be 51420 KWH per year (approximately).
- Rest of the required energy electricity was consumed from the photo voltaic cells installed in the campus.

3.1Recommendations

Recommendations for Enhancing Renewable Energy Integration and Energy Efficiency

As part of its on-going commitment to sustainability and climate action, the College is encouraged to adopt the following strategic measures to further align its energy management practices with global environmental standards and national energy policies:

1. Transition to Renewable and Carbon-Neutral Electricity Sources

To significantly reduce the institution's carbon footprint and promote environmental stewardship, it is recommended that the College:

- **Actively participate in energy purchasing consortia** that offer access to renewable and carbon- neutral electricity sources. Priority should be given to suppliers that guarantee traceable renewable energy—such as wind, solar and small-scale hydroelectric—certified through recognized schemes (e.g., Renewable Energy Certificates or Guarantees of Origin).
- **Pursue a long-term goal of powering 100% of the College's electricity consumption** with energy that is either renewable or carbon-neutral. This transition will not only reduce greenhouse gas emissions but also support the national agenda for a low-carbon economy.

2. Preference for Suppliers Investing in New Renewable Infrastructure

- The College should **prioritize electricity procurement from providers that actively invest in the development of new renewable and carbon-neutral energy infrastructure**. Supporting such suppliers contributes to the expansion of clean energy capacity and enhances the institution's indirect impact on the global transition to sustainable energy systems.
- This approach aligns with sustainable procurement principles, ensuring that financial decisions contribute to broader environmental benefits beyond campus boundaries.

3. Upgrading to High-Efficiency LED Lighting

- It is strongly recommended that the College **accelerate the phased replacement of Compact**

Fluorescent Lamps (CFLs) with high-efficiency Light Emitting Diode (LED) lamps across all facilities, including classrooms, administrative offices, corridors and outdoor lighting.

- **LED technology offers numerous advantages**, including:
  - Up to **80% reduction in energy consumption** compared to conventional CFLs.
  - **Longer operational lifespan**, resulting in reduced maintenance and replacement costs.
  - **Lower heat emission**, thereby contributing to better indoor temperature regulation and reduced cooling requirements.
- This measure will not only enhance energy efficiency but also contribute to cost savings and lower operational energy demand in the long run.

Strategic Outlook

Implementing these energy-related recommendations will substantially improve the environmental performance of Surya Sen Mahavidyalaya, Siliguri. By prioritizing renewable energy sourcing, supporting green suppliers and upgrading to efficient lighting systems, the institution will reinforce its role as a leader in sustainable education infrastructure. These actions are not only aligned with best practices in energy management but also reflect the values of environmental responsibility and intergenerational equity that underpin the Green Audit initiative.

3.3 Audit Framework and detailed findings: Energy management

Control objective	Control(s)	Audit Observation	CONFORMITY
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.	NA
	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 choiceother than *WEST BENGAL STATEELECTRICITY DISTRIBUTION COMPANY LIMITED*. The company is a PSU of govt of West Bengal. The company which invests Roof top Solar PV systems.	YES
	Look in to the possibility of on- site micro-generation of renewable electricity.	The College has installed Solar PV systems (50KV) at its roof.	YES
	Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs.	The College is using CFL/ LED as much as practicable.	YES
	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. Comprehensibleinstructions are available to staffand students on the use of heating controls.	No heater is used even in winter season.	YES

	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.	YES
	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 inthe overall consumption of energy.	Disconnect the supply of electricity when not required.(Specially during the month long vacation).	YES
	Conduct switch off drills at regular intervals.	College conducts switch off drills at regular intervals.	YES
	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.	YES
	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 standby mode.	YES

Annual energy savings if the college’s switch from CFL bulbs to LED lights

1. Power saved per LED = 24 W (CFL) - 11 W (LED) = 13 W
2. Expected power saving on shift from CFL to LED = 0.013kW for each CFL
3. Average use of CFL per year = 230 days/year x 6 hours/day = 1380 hours
4. Energy saved per year for each CFL = 0.013 kW x 1380 hours = 17.94 kWh
5. Saving of Rs per year for each CFL = 17.94 kWh x Rs. 9/kWh = Rs. 161.46/-






Installation of Solar Cell on the roof and Solar street lights

4.0 Waste Management Audit

Waste is generated through both **natural processes** and **anthropogenic (human-induced) activities**. Among these, anthropogenic waste forms pose a greater challenge due to their scale, complexity and environmental impact. Common categories of human-generated waste include **Municipal Solid Waste (MSW), Biomedical Waste (BMW), Construction and Demolition (C&D) Waste, Electronic Waste (E-Waste), Industrial Waste** and **Hazardous Waste**, each with distinct characteristics and management requirements.

The majority of solid and liquid waste arises from daily human activities and institutional operations. Therefore, **scientific, systematic and sustainable waste management practices** are essential for any organization seeking to align with environmental sustainability goals. Waste management is increasingly recognized as a **priority area for national and global environmental governance**, often demanding significant financial investment from governments and municipalities.

One critical concern is the high proportion of **biodegradable waste** in the total waste stream. Many innovative and sustainable methods—such as composting, biomethanation and decentralized organic waste processing—have been introduced and widely endorsed through **government subsidies and incentives**. Conversely, **non-biodegradable waste**, particularly **single-use plastics**, continues to be a serious environmental concern. The widespread use of plastics is exacerbated by the lack of economically viable and effective alternatives. On-going research is focused on developing **eco- friendly and biodegradable substitutes**.

This audit thoroughly addresses the **generation, categorization, disposal and recycling** of various waste types within Surya Sen Mahavidyalaya, Siliguri, including **paper, food, plastic, biodegradable materials, construction debris, dust and glass waste**. Solid waste management is not merely a logistical necessity but a crucial environmental concern, as improper or unscientific waste handling can pose significant health and ecological risks. Additionally, discarded solid waste often includes **valuable material resources** that could be repurposed through **recycling, repair, or reuse**, thus contributing to a circular economy.

4.1 Significance of Waste Management Audit

A **Waste Management Audit** is a structured process designed to evaluate the waste-handling practices of an institution or organization. It helps in identifying various waste streams, their quantities and current disposal or treatment methods. The audit not only assesses current waste generation and disposal practices but also identifies **gaps and inefficiencies** in the system, proposing scientifically viable and environmentally sustainable alternatives.

Key benefits of conducting a waste audit include:

- Identifying the impact of **improper waste handling** on campus ecology and public health.
- Understanding the **strengths and weaknesses** of current waste management systems.
- Promoting effective **waste minimization** strategies such as **reduce, reuse and recycle (3Rs)**.
- Enhancing institutional commitment to sustainability and environmental protection.
- Facilitating **long-term cost savings** through better resource utilization.

4.2 Objectives of the Waste Management Audit

The specific objectives of conducting this waste audit at Surya Sen Mahavidyalaya, Siliguri include:

- To **assess the current status** of solid and liquid waste generated within the campus premises.
- To analyze the **composition and quantity** of both **biodegradable** and **non-biodegradable** waste.
- To **evaluate the effectiveness** of existing waste segregation, collection and disposal mechanisms.
- To provide **recommendations for improvement** based on best practices and sustainability standards.
- To encourage the development of **campus-level waste reduction policies** and promote student/staff participation.

4.3 Waste Conservation and Sustainable Practices

Effective waste management is not just about waste removal—it also offers broader **social, environmental and economic benefits**. When implemented efficiently, waste management can:

- Contribute to **community development** through employment and awareness generation.
- Improve campus aesthetics and hygiene.
- Promote **resource recovery**, reducing the dependency on virgin materials.
- Minimize greenhouse gas emissions associated with improper disposal, particularly **open burning** or unregulated dumping.

The broader challenge lies in designing and institutionalizing **localized waste management systems** that are cost-effective, community-driven and environmentally sound.

4.4 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.

Solid waste from canteen like food wastes are stored in bins and later deposited in pits; these wastes and vegetables wastes are collected into pits for making manure. College has two pitsmeasuring 36m^3 each , this manure is utilized in college gardens ; liquid wastes are disposed carefully through well drainage system.

Types of Waste	Particulars	Disposal Method
Plastic waste	Pen, Refill, Plastic water bottles, Other plastic containers, Wrappers, etc.	**Collected by Municipality**
Solid waste	Damaged furniture, Paper waste, Paper plates, Food waste	**Non bio degradable wastes are collected by municipality and bio wastes are disposed in the campus itself.**
Waste water	Washing, Bathrooms	**To septic tank**
Sanitary napkin	Pads from washrooms	**Vending machines incinerate. The ash can be flushed or used as manure.**
Food Waste	From canteen	**Disposed and composted in campus itself**
Waste Paper	**Old Newspapers, Answer sheets, assignments note etc.**	**Sold to the local venders for recycling.**

4.3 Recommendations

To promote a cleaner, more sustainable and resource-efficient campus, the College is encouraged to implement the following strategic measures focused on minimizing waste generation and enhancing recycling practices. These initiatives align with national sustainability goals and support the college's commitment to environmental stewardship.

1. Reduction of Waste Generation in Administrative and Staff Offices

The college should undertake targeted actions to **significantly reduce the absolute volume of waste generated** in administrative and academic offices. This includes:

- **Encouraging digital communication and documentation** to reduce dependency on paper.
- Implementing **strict protocols for printing and photocopying**, such as default double-sided printing and using draft quality where appropriate.
- Promoting **awareness among staff and faculty** on the environmental impact of unnecessary paper usage, packaging and office supplies.
- Adopting **inventory control** measures to avoid over-purchasing of non-essential items that may eventually become waste.

By reducing the overall volume of office-generated waste, the institution can improve operational efficiency and reduce its environmental footprint.

2. Maximizing Utilization of Municipal and Private Recycling Facilities

The College should **optimize the use of all recycling facilities provided by Siliguri Municipality and authorized private vendors**. These include facilities for the collection and processing of:

- **Glass containers and jars**
- **Aluminium and tin cans**
- **Plastic bottles and packaging**
- **Used batteries and electronic waste**
- **Empty or used printer cartridges**
- **Cardboard and paperboard materials**
- **Old or damaged furniture and fixtures**

Establishing **formal partnerships** or **service agreements** with these agencies will ensure proper collection, transportation and processing of recyclable materials, preventing them from entering landfills and enabling resource recovery.

3. Deployment of Accessible and Well-Maintained Recycling Infrastructure

To facilitate active participation in recycling initiatives, the College should:

- **Install adequate recycling bins** across all key locations, including academic buildings, administrative blocks, staff rooms and common areas.
- Ensure that recycling bins are **color-coded, clearly labeled and strategically placed** for maximum accessibility and visibility.
- Assign **specific responsibilities to designated staff or eco-club volunteers** for maintaining the bins, monitoring their use and coordinating with recycling agencies.
- Conduct periodic **awareness campaigns, signage updates and training programs** to inform staff and students about what materials can be recycled and how to segregate them effectively.

This will enhance waste sorting at the source, reduce contamination of recyclables and improve the overall efficiency of the recycling system.

4. Reuse of Single-Sided Printed Paper

To reduce paper wastage, the College should institutionalize the **reuse of single-sided printed sheets**
for internal purposes such as:

- Draft document preparation
- Photocopying for temporary records
- Note-taking and rough work in administrative and academic departments

Dedicated collection trays or boxes can be placed in all departments and offices for collecting reusable paper. This simple yet effective practice supports resource conservation and cost reduction while reinforcing sustainability awareness among staff and students.

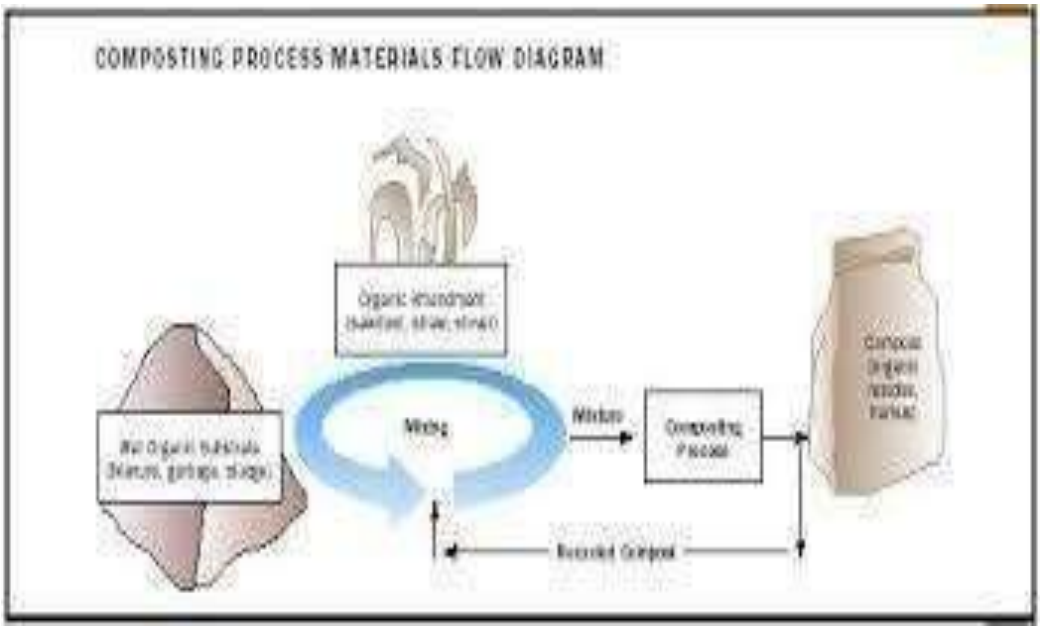
Implementing the above recommendations will significantly strengthen Surya Sen Mahavidyalaya, Siliguri's waste management framework. By reducing unnecessary waste generation, maximizing the use of recycling services, ensuring easy access to disposal infrastructure and promoting a culture of reuse, the college can minimize its environmental impact and enhance its role as a model green campus. These actions also align with the

principles of a circular economy, contributing to long-term ecological balance and institutional sustainability.

4.4.1 Audit Framework and detailed findings: Waste Management

Control objective	Control(s)	Audit Observation	Conformity
Maximize the Proportion of waste that is recycled & minimize the quantity of non-recyclable refuse	Reduce the absolute amount of waste that itproduces from college staff offices.	No, the college has not used anycontrols to reduce the absolute amount of waste that it produces from staff offices.	NO
	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 authorityto recycle the wastes.	YES
	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 organic waste generated in the campus.	YES
	Recycle or safely dispose of white goods,computers and electrical appliances.	Safe disposal through authorized agents for computers and electricalwastes.	YES
	Use reusable resources and containers and avoid unnecessary packaging where possible	College tries to use reusable resources and avoid unnecessary packaging where possible.	YES
	Always purchase recycled resources wherethese are both suitable and available.	College tries to purchase recycled resources where these are both suitable and available.	YES

	Provide sufficient, accessible and well- publicized collection points for recyclable waste, with responsibility for recycling clearly allocated	Yes. College has waste, with responsibility for recycling clearly allocated	YES
	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.	YES
	Promote reuse of items and waste recycling among staff, students and conference guests through training, posters and incentives	Yes!, the college has promotedreuse of items and waste recyclingamong staff, students and conference guests through training, posters and incentives	YES
	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 itis not released directly to the environment.	YES
	Adoption of paperless office to reducewaste.	Yes! College has implementedpaper less office partially.	YES



Biodegradable waste composting of Composting

5.0 E-waste Management Audit

With rapid technological advancement and widespread adoption of electronic devices in institutional operations, **electronic waste (e-waste)** has emerged as one of the fastest-growing and most hazardous waste streams globally. E-waste refers to **electrical and electronic equipment (EEE)** that has reached the end of its operational life or has become obsolete due to functional limitations, design upgrades, or expiry.

Although e-waste constitutes approximately **5% of global municipal solid waste**, its environmental and health implications are disproportionately high due to the **presence of hazardous materials**. Components often contain **heavy metals** and **toxic substances** such as **lead, mercury, cadmium, arsenic, polychlorinated biphenyls (PCBs), lithium, beryllium, and brominated flame retardants**, all of which can leach into the soil, air, and water systems if disposed of improperly. These substances pose serious threats to human health, ecosystems, and biodiversity even in trace quantities.

Conversely, e-waste also contains **valuable recoverable materials** like **copper, silver, gold, and platinum**, which, if processed through scientific and regulated methods, can contribute to resource conservation and economic gain.

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 riskto 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 platformfor linking the market facilitating a circular economy aim to encourage consumers to correctly disposetheir e-waste, with increased reuse and recycling rates, and adopt sustainable consumer habits.

5.2 Observation

E-waste generated in the college is very less. It is handled, treated and disposed in scientific way. There are 210 computers (with TFT monitors and laptops), 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.

5.1 Strategic Framework for E-Waste Reduction and Circularity

In alignment with national regulations and global best practices, the College encourages the adoption of the following guiding principles:

- **Extended Producer Responsibility (EPR):** Promoting partnerships with certified suppliers and manufacturers for take-back, recycling, and safe disposal services.
- **Design for Environment (DfE):** Encouraging the procurement of equipment designed for energy efficiency, durability, ease of repair, and recyclability.
- **Circular Economy Principles:** Fostering reuse, refurbishment, and responsible recycling to minimize environmental impacts and reduce the demand for raw material extraction.
    - **3Rs Principle (Reduce, Reuse and Recycle):** Actively promoting behavioral change among users to reduce unnecessary consumption, extend product life cycles, and

segregate waste properly.

Consumers and users, including faculty, staff, and students, play a critical role in achieving sustainable e-waste management by making informed choices, following proper disposal practices, and participating in institutional sustainability programs.

5.3 Recommendations

To strengthen the college's commitment to sustainable e-waste management, the following measures are recommended:

- **Ensure timely recycling or safe disposal** of white goods, IT hardware, and electrical appliances through licensed and environmentally compliant vendors.
- **Adopt reusable containers and durable products** to reduce packaging waste and avoid the purchase of disposable electronic accessories.
- **Prioritize procurement of refurbished or recycled resources** wherever quality and functionality standards are met.
- **Implement awareness programs and training workshops** on the hazards of e-waste and the importance of proper e-waste segregation and disposal.
- **Maintain detailed records** of e-waste generation, storage, handover, and disposal to ensure transparency, traceability, and audit readiness.

E-waste management at Surya Sen Mahavidyalaya, Siliguri, though presently limited in scope, reflects a commendable adherence to sustainable practices. With the implementation of recommended measures, especially those related to circularity, vendor responsibility, and consumer awareness, the college can further elevate its role as a responsible and environmentally conscious educational institution.

5.4 Audit Framework and detailed findings: E Waste Management

Control objective	Control(s)	Audit Observation	Conformity
Reduce generation the E waste	Adoption of Extended Producer Responsibility (EPR). The EPRis an environment protection strategy that makes the producer responsible for the entire life cycle of the product, especiallyfor take back, recycle and final disposal of the product.	College has no specific policy for E waste management as per govt rule. But college followed the slandered method of disposal of minimum e waste which was generated.	Yes

6.0 Green area Management Audit

Biodiversity—the variety of life forms at the genetic, species, and ecosystem levels—is the cornerstone of ecological resilience and sustainability. It underpins vital ecosystem functions such as soil fertility, pollination, water purification, climate regulation, and pest control, while also providing extensive economic, medicinal, cultural, and aesthetic benefits to human societies.

However, **biodiversity loss has accelerated globally** in recent decades, driven largely by anthropogenic activities including habitat fragmentation, unsustainable resource extraction, pollution, and climate change. These threats compromise ecological stability, diminish ecosystem services, and endanger countless species. Consequently, the conservation and assessment of biodiversity are now considered **critical priorities in global and institutional environmental governance**.

Biodiversity Audits: A Strategic Tool for Conservation

A **biodiversity audit** is a structured and scientific evaluation process aimed at assessing the richness, distribution, and health of flora and fauna within a defined spatial boundary—such as a campus, nature reserve, or administrative zone. It includes:

- **Inventory and classification** of plant and animal species
- Identification of **threatened or endemic species**
- Assessment of **habitat health** and ecosystem integrity
- Determination of **conservation priorities** and restoration opportunities

These audits are indispensable for long-term ecological planning, ensuring that **conservation strategies are data-driven, targeted, and adaptive**.

6.1 Green Area and Carbon Neutrality Initiatives

Green areas within institutional campuses serve as **ecological microhabitats** and function as important nodes in the urban biodiversity network. They support local flora and fauna, regulate temperature, purify the air, and contribute to the aesthetic and psychological

well-being of campus occupants.

Additionally, green spaces play a **significant role in carbon sequestration**, helping to absorb atmospheric carbon dioxide and thereby mitigating the impact of greenhouse gas emissions. This directly contributes to the goal of **carbon neutrality**, a vital policy objective in the fight against global warming and climate change.

Carbon neutrality refers to achieving a **net-zero carbon footprint**, which involves reducing emissions through sustainable practices and offsetting unavoidable emissions through afforestation, renewable energy adoption, and conservation programs.

6.0 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 withinthe 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.

6.2 Recommendations

To further strengthen biodiversity conservation, green space management, and sustainability practices on campus, the following strategic actions are recommended:

- **Periodic Biodiversity Review**:
  - Maintain an up-to-date **inventory of planted trees and species**.
  - Assign **unique identification numbers** and **scientific names** to trees.
  - Regularly assess the **growth, health, and ecological value** of planted species.
- **Integration into Curriculum and Research**:
  - Promote **environmental awareness and sustainability education** through curricular modules, student-led research, and experiential learning programs.

- Encourage **student participation in biodiversity documentation**, campus ecology projects, and conservation internships.

- **Sustainability Awareness Campaigns**:
  - Conduct **green awareness programs**, exhibitions, and workshops aimed at fostering a culture of environmental responsibility among students, faculty, and staff.
  - Promote the **3Rs (Reduce, Reuse, Recycle)** and nature-based solutions on campus.
- **Formation of a Campus Environmental Committee**:
  - Establish a formal **Environmental Committee** responsible for the **implementation, review, and enforcement of the Environmental Policy**.
  - This committee should act as an advisory body, offering **technical guidance and policy direction** on all campus environmental initiatives.
- **Annual Biodiversity and Green Audit**:
  - Conduct an **annual audit** focused on green cover, carbon sequestration potential, biodiversity health, and ecosystem service value.
  - Utilize audit findings to drive actionable improvements in **green space planning and biodiversity conservation**.

Surya Sen Mahavidyalaya, Siliguri has demonstrated noteworthy commitment towards **green campus initiatives and biodiversity conservation** through its structured plantation drives, species documentation, and participatory maintenance programs. Moving forward, institutionalizing periodic audits, curriculum integration, and policy-driven actions will enable the college to become a model for ecological sustainability in higher education. These actions not only preserve the natural heritage of the region but also equip students to become future custodians of the environment.

6.1 Audit Framework and detailed findings: Green Area Management

Control objective	Control(s)	Audit Observation	Conformity
Development of green area to compensate CO_2.	Proper Land use pattern todevelop green area.	No. There is no proper land usepolicy of the college.	NO
	Proper Taxonomical identification of plants in thecampus.	There is taxonomical identification of the plants.	YES
	Conduct Environment Awarenessprogram.	Environment Awareness program regularly organized by thecollege authority.	YES





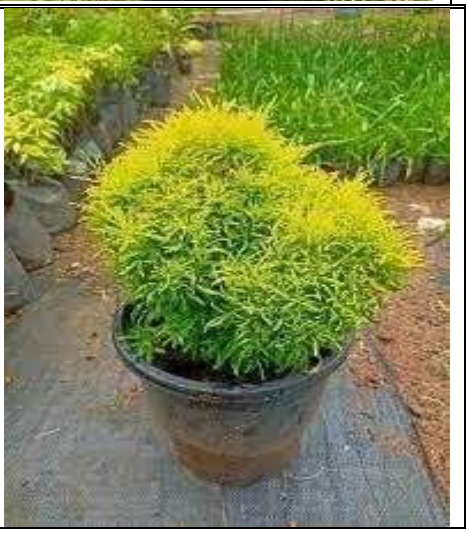

Pic4: Green area of the college

6.2 Taxonomical identification of plants in the campus

Name	Scientific name	Description	Picture
Morfolk Island Pine	*Araucaria heterophylla*	Araucaria heterophylla is a species of conifer. As its vernacular name Norfolk Islandpine implies, the tree is endemicto Norfolk Island, an external territory of Australia located in the Pacific Ocean between New Zealand and New Caledonia.	
Bongainvillea	*Bongainvillea glabra*	Bougainvillea glabra, the lesser bougainvillea or paper flower, isthe most common species of bougainvillea used for bonsai. The epithet 'glabra' comes fromLatin and means "bald".	
Lucky bamboo plant	*Dracaena sanderiana*	Dracaena sanderiana is a speciesof 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	*Philodendron hederaceum (Jacq.)*	***Philodendron hederaceum***, the **heartleaf philodendron** (***Philodendron scandens***) is a species of flowering plant in the family Araceae, native to Central America and the Caribbean which is common inthe houseplant trade. ***Philodendron hederaceum* var. *hederaceum***,the "**velvet philodendron,**" is a subspecies which is in the houseplant trade under its previous name of *Philodendronmicans*. While toxic under certain conditions, it is also under current review for numerous health benefits.	

Ficus cristina	*Syzygium Campanulatum*	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	Arancaria Columnaries D	Araucaria columnaris is known as the Cook pine or Hawaiian Norfolk is a medium evergreen tree. A columnar tree with a straight trunk and numerous lateral branches and with time they loose there lower branches. It has dense foliage. Suitable for frontline coastal positions.	
Cacsaipinia coriaria	*Libidibia coriaria*	Libidibia coriaria, synonym Caesalpinia coriaria, is a leguminous tree or large shrub native to the Caribbean, Central America, Mexico, and northernand western South America. Common names include divi- divi, cascalote, guaracabuya, guatapana, nacascol, tan yong, and watapana.	

curry tree	*Murraya Koenigii*	The curry tree or Bergera koenigii, is a tropical and sub- tropical tree in the family Rutaceae, native to Asia. The plant is also sometimes called sweet neem, though M. koenigiiis in a different family to neem, Azadirachta indica, which is in the related family Meliaceae.	
Mango	*Mangifera indica*	Mangifera indica, commonly known as mango, is a species of flowering plant in the family Anacardiaceae. It is a large fruittree, capable of growing to a height of 30 metres. There are two distinct genetic populationsin modern mangoes – the "Indian type" and the "Southeast Asian type".	
Radhachura	*Peltophorum pterocarpum*	Peltophorum pterocarpum is a species of Peltophorum, native to tropical southeastern Asia anda popular ornamental tree grownaround the world.	
Silver Bismarck Palm	*Bismarckia nobilis*	**Bismarckia** is a monotypic genus of flowering plant in the palm family endemic to westernand northern Madagascar, whereit grows in open grassland.	

Panama rubber **tree**	*Castilla elastica*	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 amongthe Mesoamerican peoples in pre-Columbian times.	
Jelly Palm/ Cocos capitata /	*Butia capitata*	Butia capitata, also known as jelly palm, is a Butia palm native to the states of Minas Gerais and Goiás in Brazil. It isknown 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.	
Euodia	*Tetradium*	Euodia is a plant genus in the family Rutaceae. Euodia is sometimes misspelled as Evodia. The species now included in the genus Tetradiumwere previously included in Euodia, and may be commonly referred to as euodia.	

Aralia bush	***Aralia racemosa***	*Aralia* plants have large bipinnate (doubly compound) 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 *Aralia spinosa*. The flowers are whitish or greenish occurring in terminal panicles, and the spherical dark purple berry- like fruits are popular with birds.	
Sago palm	*Cycus revoluta*	Cycas revoluta 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 athick coat of fibers on its trunk.	
Weeping fig	***Ficus benjamina***	*Ficus benjamina* is a tree reaching 30 m (98 feet) tall in natural conditions, with gracefully drooping branchletsand glossy leaves 6–13 cm (2+3/8–5+1/8 inches), oval with an acuminate tip. The bark 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.	

Ashoka	*Saraca asoca*	Saraca asoca, commonly knownas 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 Saraca indica.	
Debdaru	*Monoon longifolium*	Monoon longifolium (false ashoka), also known as Polyalthia longifolia, is an evergreen tree native to southern India and Sri Lanka. Growing over 20 m tall, it has a pyramidal form with pendulous branches and narrow wavy-edged leaves, and is widely planted for its strong noise-reducing ability.	
Indian rosewood	*Dalbergia sissoo*	***Dalbergia sissoo***, known commonly as **North Indian rosewood** or **shisham**, is afast-growing, hardy, deciduous rosewood tree native to the Indian subcontinentand southern Iran. *D. sissoo* is a large, crooked tree with long, leathery leaves and whitish or pink flowers.	
Thuja	***Thuja occidentalis***	*Thuja* are evergreen trees growi ng from 10 to 200 feet (3 to 61 metres) tall, with stringy- textured reddish-brown bark. 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.	

6.3 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year –

   CO2 emission from Electricity (electricity used per year in kWh/1000) x 0.84

   = 41428 KWh/1000 x 0.84

   =34.79 ton

2. LPG/CNG used per year –

   CO2 emission from LPG/PNG (LPG/PNG used per year in KG)/1000 x 2.99

   = (234 x 2.99)/1000

   =0.69ton

3. Diesel used per year

   CO2 emission from HDS (Diesel) (Diesel used per year in litres)/1000 x 2.68

   = 100 (approx.) x 2.68/1000

   =100 x 2.68/1000

   =0.268 ton

4. Transportation per year (car)

   CO2 emission from transportation (Bus and Car) College doesn‘t own any vehicles, so emission because of the transportation is Zero.

   Total CO2 emission per year = 35.75 TPA

6.4 CARBON ABSORPTION BY FLORA IN THE COLLEGE

There are 33 (approx) full grown trees and 58 (approx) semi grown trees of different species, on the campus spread over 4acres.

Carbon absorption capacity of one full grown tree 22 kg CO2 per Year

Therefore, Carbon absorption capacity of 33 full-grown trees 33 x 22 kg CO2

=0.73 tons of CO_2 per Year

The carbon absorption capacity of 58 semi-grown trees is 50% of that of full-grown trees.

Hence the carbon absorption 58 x 11 kg of CO2 =0.63 tons of CO2 per Year

There are approximately Hedge Plants 500 of various species being raised in the gardens and grown in the areas where no buildings are built. Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO2 where as some others absorb very low level of CO2. In the absence of a detailed scientific study, 250g of CO_2, absorption is taken per bush per Year

Based on this, total carbon absorption of bushes is 500 x 250 g =0.125 tons of CO2

The lawns on the campus have grass and indigenous grass species and cover a total area of 23000

square ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day.
Therefore, carbon absorption by lawn area= 2300 gm per day = 0.23 kg per day
=0.083 ton per year

Grand total of carbon absorption capacity of the campus is 1.71 TPA

7.0 Green Practices: Promoting Sustainable Lifestyles and Institutional Responsibility

The concept of **"Going Green"** refers to the conscious adoption of knowledge, behaviors, and practices that promote environmental sustainability and ecological balance. It embodies a lifestyle and decision-making approach rooted in **environmental ethics**, with the goal of **minimizing ecological footprints** and safeguarding the planet's natural resources for both present and future generations.

In educational institutions, the adoption of green practices plays a pivotal role in shaping environmentally conscious individuals, setting institutional standards for sustainability, and reducing the overall environmental impact of daily operations. **Green practices** encompass a wide range of measures aimed at integrating sustainability into procurement, infrastructure, transportation, waste management, and community engagement.

Key Components of Green Practice Implementation

1. **Green Procurement (Eco-Friendly Purchasing):**
   Preference is given to products and services that have a reduced impact on human health and the environment, such as recycled paper, energy-efficient appliances, non-toxic cleaning agents, and biodegradable supplies.
2. **Sustainable Transportation:**
   Encouraging the use of public transport, bicycles, and pedestrian pathways while discouraging the use of fossil-fuel-based personal vehicles helps to lower greenhouse gas emissions and reduce traffic congestion.
3. **Chemical Waste Management:**
   Safe and scientific treatment and disposal of chemical waste generated from laboratories and other sources ensure compliance with environmental regulations and protection of soil and water resources.
4. **Environmental Awareness Campaigns:**
   Initiatives such as **"Go Green" campaigns**, workshops, and student-led drives help

build awareness, encourage participation, and foster a sense of responsibility among stakeholders.

5. **Green Policy Implementation:**
   The establishment of formal green policies or environmental charters reflects institutional commitment to sustainable development and provides a structured framework for decision- making and accountability.

7.0 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

Awareness camps, seminars, Workshop etc held regularly by NSS, NCC and ECO Club on issues related to environment. The college has observed the the Earth day, Environmental day and banomahatsov as like other years.

7.1 Recommendations

To further enhance and institutionalize green practices at Surya Sen Mahavidyalaya, Siliguri, the following strategic actions are recommended:

- **Strengthen the Role of the Environmental Protection Committee:**
  The existing or newly constituted **Environmental Protection Committee** should be formally empowered and resourced to oversee, coordinate, and monitor all green initiatives across departments and facilities. It should act as the central advisory body on environmental policy implementation and compliance.
- **Organize Regular Workshops and Seminars:**
  Conduct **environmental education programs**, seminars, and awareness workshops for students, faculty, and administrative staff to build a deeper understanding of

sustainability, climate change, and eco-conscious living.

- **Develop a Comprehensive Green Policy Document:**
  Formulate and circulate an official **Green Policy or Environmental Charter** outlining the institution's commitment, goals, and procedures for sustainability across operations.
- **Integrate Green Practices into Curricula and Co-Curricular Activities:**
  Encourage faculty to integrate sustainability themes into coursework and project-based learning. Support student-led green clubs and eco-initiatives.
- **Annual Green Audit Review:**
  Conduct a formal **Green Audit annually** to evaluate progress, measure impact, identify gaps, and revise strategies based on audit findings and evolving environmental standards.

The existing green practices at Surya Sen Mahavidyalaya, Siliguri reflect a solid foundation for building a sustainable campus. Continued efforts to embed environmental consciousness in institutional culture, decision-making, and operations will not only reduce the college's ecological impact but also serve as an inspiration for students to adopt sustainable lifestyles. By institutionalizing green practices, Surya Sen Mahavidyalaya, Siliguri positions itself as a model educational institution committed to **environmental leadership, ecological integrity, and sustainable development.**

7.2 Audit Framework and detailed findings: Green Practice Audit

Control objective	Control(s)	Audit Observation	Conformity
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 does not contacted for and acts upon professional advice in order to minimize the adverse environmental impact of any new developments and exceed government regulatory requirements.	NO
	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.	YES
	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 purchase food stuff from the outside as thecanteen is fully operational. .	YES
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.	YES
	Reduce the proportion of travel onCollege 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.	YES
	Promote car sharing / car pool among the students and facultymembers	Both students and faculty members use either public transport or own vehicle.	YES

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.	YES
	Dispose the chemical waste generated from the laboratories ina 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.	YES
	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.	YES
	Establish a Garden in the campus	college has already maintained garden.	YES
	Minimize the use of fertilizers and pesticides in college grounds, opting for the use of compost produced on site wherever possible.	Negligible amount of fertilizers and pesticides are used in the college.	YES
	Encourage the faculties and students to plant trees in thegarden.	Faculty members and students know the importance of the tree plantation.	YES
	Reviews periodically the list of trees planted in the garden	No such review conducted.	NO
	Conduct environmental awareness workshops as a part of the program.	Such workshop has taken place.	YES
	Conduct events such as plant trees to spread environmental awareness among the students	College students union usually does that.	YES

Ensure that environmental awareness is created	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.	YES
	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.	YES
	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.	YES
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 suchbuildings, offering greatest efficiency for energy and water usage, and reducing carbon emission.	New constructions are in compliance with green standard.	YES
	Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.	The college has Environment Protection and Campus beautification Committee which regularly monitors and advices for environment protection measures and development of Green Area.	YES

Ensure that the Environmental Policy is enacted, enforced and Reviewed.			
	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 *PaschimBanga Vigyan Mancha*, a leading scientific group of the state.	YES
	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.	NO
	Ensure that the EnvironmentalCommittee will review the Environmental Policy on an annual basis, and will monitor progress and set measurable targets wherever possible	Environmental Protection Committeereview periodically.	YES
	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;o ptimalwaste management	YES
	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. Green audit is conducted annually.	YES
	Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings	Green Audit for the campus conducts every year.	YES

Pic 6: Green Campaigning

8.0 Conclusions

Given that Surya Sen Mahavidyalaya, Siliguri is predominantly an undergraduate institution, the commitment to environmental sustainability demonstrated by both faculty and students is particularly commendable. The campus community exhibits a growing consciousness about ecological conservation, which is evident through several proactive initiatives aimed at integrating sustainability into the academic and operational fabric of the institution.

Significant strides have been made in promoting green practices across the campus. Among these, the **installation of solar panels** as a renewable energy source stands out as a forward-thinking initiative contributing to the reduction of the college's carbon footprint. Similarly, the transition toward a **paperless administrative system** not only streamlines communication and record-keeping but also significantly reduces the consumption of paper and associated waste.

The **college administration has also taken a leadership role** in organizing regular environmental awareness programs, campaigns, and student-led drives that emphasize the importance of sustainable living. These efforts reflect a culture of environmental stewardship and a clear intention to promote the ideals of a green campus.

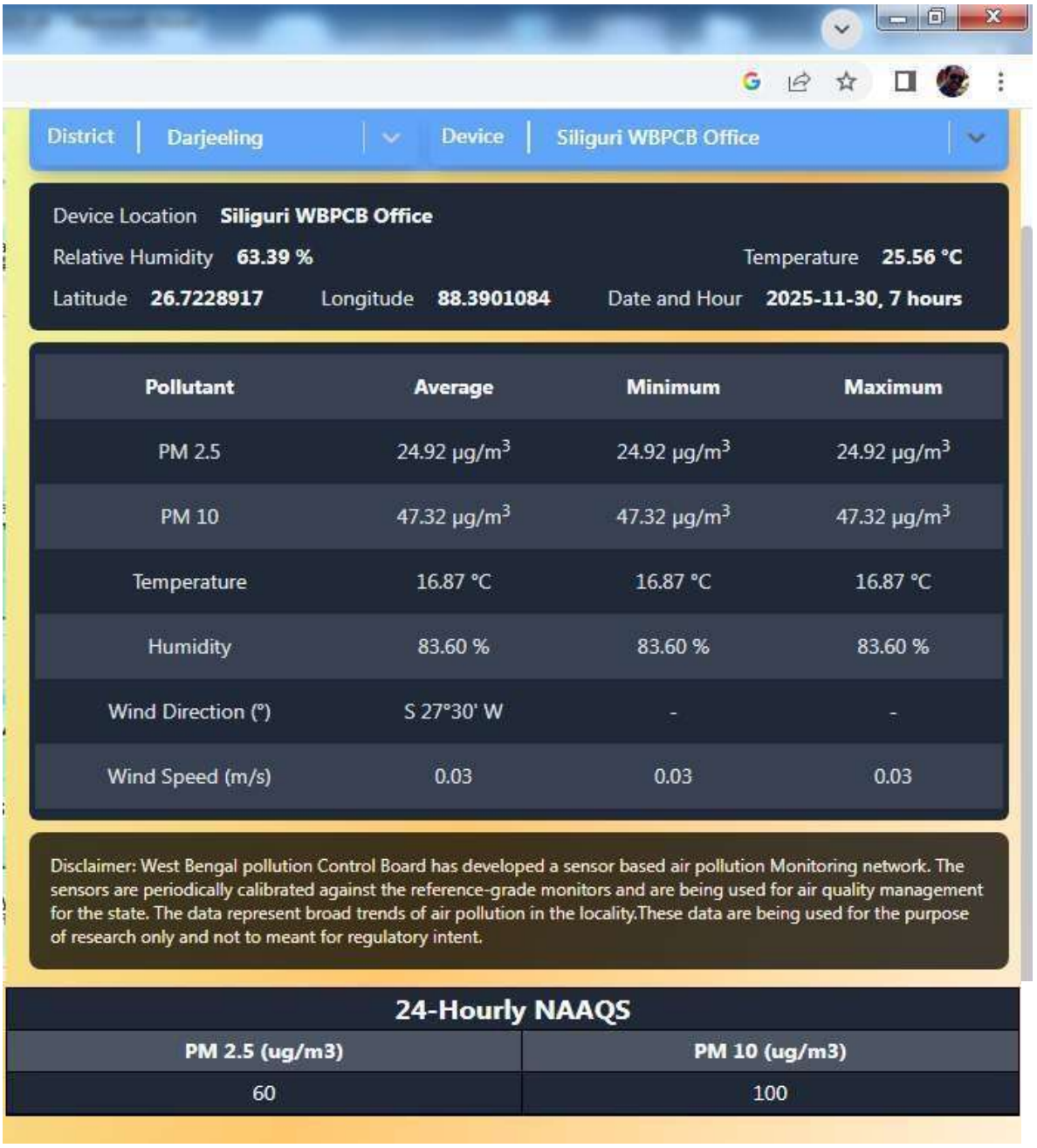
As part of the Green Audit, an **environmental monitoring assessment** was conducted to evaluate key indoor and outdoor environmental parameters. The assessment included **illumination levels, ambient noise levels, ventilation adequacy**, and **indoor air quality** in classrooms and academic spaces. The findings are encouraging:

- **Natural lighting and ventilation** across classrooms were found to be adequate, enhancing energy efficiency and comfort.
- **Noise levels within the campus** were recorded at less than **50 decibels during daytime hours**, which is well within permissible limits as per Central Pollution Control Board (CPCB) standards.

To further enhance sustainability, a set of targeted recommendations has been

proposed to improve **waste management** through **eco-friendly and scientifically sound techniques**. The adoption of these strategies can transform Surya Sen Mahavidyalaya, Siliguri into a model green campus, supporting long-term goals of **environmental protection, sustainable development, and community well-being**.

Appendix 1: Air Quality



District | Darjeeling | Device | Siliguri WBPCB Office

Device Location **Siliguri WBPCB Office**

Relative Humidity **63.39 %** Temperature **25.56 °C**

Latitude **26.7228917** Longitude **88.3901084** Date and Hour **2025-11-30, 7 hours**

Pollutant	Average	Minimum	Maximum
PM 2.5	24.92 µg/m^3	24.92 µg/m^3	24.92 µg/m^3
PM 10	47.32 µg/m^3	47.32 µg/m^3	47.32 µg/m^3
Temperature	16.87 °C	16.87 °C	16.87 °C
Humidity	83.60 %	83.60 %	83.60 %
Wind Direction (°)	S 27°30' W	-	-
Wind Speed (m/s)	0.03	0.03	0.03

Disclaimer: West Bengal pollution Control Board has developed a sensor based air pollution Monitoring network. The sensors are periodically calibrated against the reference-grade monitors and are being used for air quality management for the state. The data represent broad trends of air pollution in the locality.These data are being used for the purpose of research only and not to meant for regulatory intent.

24-Hourly NAAQS	
PM 2.5 (ug/m3)	PM 10 (ug/m3)
60	100

Source: West Bengal pollution Control Board

$PM_{2.5}$ **Unhealthy**	**Fine Particulate Matter** 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.	103 32 µg/m³
PM_{10} **Poor**	**Particulate Matter** 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.	80 66 µg/m³
NO_2 **Fair**	Breathing in high levels of **Nitrogen Dioxide** 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.	24 12 µg/m³
O_3 **Excellent**	Ground-level **Ozone** can aggravate existing respiratory diseases and also lead to throat irritation, headaches, and chest pain.	16 49 µg/m³
SO_2 **Excellent**	Exposure to Sulfur Dioxide can lead to throat and eye irritation and aggravate asthma as well as chronic bronchitis.	12 12 µg/m³
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	4 393 µg/m³

Appendix 2: Noise Quality

Noise Level 41.63 db(A)

Device **Siliguri WBPCB Office**

Zone **Commercial**

District **Darjeeling**

Timestamp **December 5th 2025, 11:13 am**

Parameter	Value
LAs	38.10
LCs	49.18
LZs	52.20
LAeqt	41.63
LCeqt	52.08
LZeqt	52.08
LApeakt	69.51
LCpeakt	76.65
LZpeakt	76.97

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

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^{+}	200	50
Mg^{2+}	30	30
Ca^{2+}	75	100
F^{-}	1	1.5
Cl^{-}	250	250
NO_3^{2-}	50	50
SO_4^{2-}	200	250

NA - Not Available