

# CERTIFICATE



ISO 14001:2015 CERTIFIED COMPANY

## AUDIT CERTIFICATE

PRESENTED TO

### CHITTARANJAN COLLEGE

8A, Beniatola Ln, College Row, College Street, Kolkata, West Bengal 700009

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

## GREEN AUDIT

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.



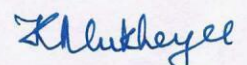
AUDITOR SIGNATURE



23.06.2023

DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001



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Chittaranjan College  
Kolkata - 700009

EHS Alliance Services would like to thank the management of Chittaranjan College for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

We would also like to thank Dr. Sukhada Gangopadhyay – Coordinator, IQAC, for her continuous support and guidance, without which the completion of the project have not been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

- Dr. Kana Mani Mukherjee
- Dr. Sukhada Gangopadhyay
- Dr. Jayasree Das
- Mr. Supriyo Das – Site Engineer

Last but not the least, we would like to thank Dr. Kana Mani Mukherjee(Principal), Chittaranjan College for giving us an opportunity to evaluate the environmental performance of the campus.

Thanks & Regards

Dr. Uday Pratap (Certified IGBC AP and ASSOCHEM)



*K. Mukherjee*

Chittaranjan College  
Kolkata - 700009

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## DISCLAIMER

EHS Alliance Services Audit Team has prepared this report for Chittaranjan College based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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## CONCEPT and CONTEXT

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the College campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of College/college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution. The concepts, structure, objectives, methodology, tools of analysis, objectives of the audit are discussed below

## INTRODUCTION

Now a days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to make them sustainable and eco-friendly. To preserve the environment within the institution, a number of viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the saving the energy, waste recycle, water consumption reduction, water harvesting and many more...

The activities carried out by the institution can also create adverse environmental impacts. Green audit is defined as an official inspection of the effects a College has on the environment. Green Audit is conducted to evaluate the actual scenario at the institution campus. Green audit can be a useful tool for a College/college to determine how and where they are using the most of the energy or water or resources; the College can then decide how to implement changes and make savings. It can also be used to determine the nature and volume of waste, which can be used for a recycling project or to improve waste minimization plan.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the Green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of College/college including the assessment of policies, activities,

## GOALS FOR GREEN AUDIT


### Goals For Green Audit

- The objective of carrying out Green Audit is to secure the environment and cut down the threats posed to human health.
- To make sure that all rules and regulations concerning the environment are taken care of
- To assess the quality of the water and soil in the Chittaranjan College campus.
- To monitor the energy consumption pattern of the college.
- To quantify the liquid and solid waste generation and management plans on the campus.
- Providing a database for corrective actions and future plans.
- To avoid the interruptions in the environment that are more difficult to handle and their correction requires high cost
- To suggest the best protocols for adding to sustainable development

### Benefits for Green Audit

- Would help to prepare a plan to protect the environment.
- Recognize the cost-saving methods through waste minimization and management. Point out the prevailing and fourth-coming impacts on the environment.
- Ensures conformity with the applicable laws.
- Empower the organizations to frame a better environmental performance.
- It portrays a good image of an institution which helps build better relationships with the group of interested parties.

Promotes the alertness for environmental guidelines and duties



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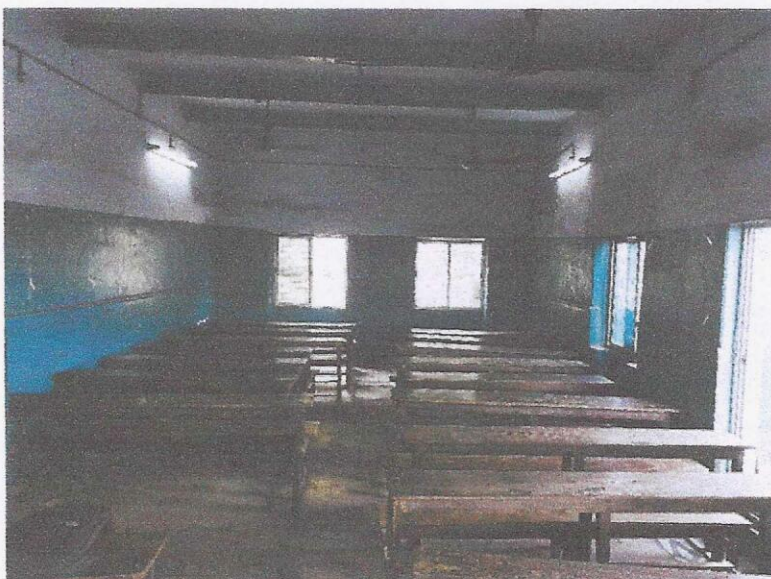
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Promotes the alertness for environmental guidelines and duties Physical powers in Sports and Games



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**3 Audit Participant**

On behalf of College

- Dr. KanaMani Mukherjee – Principal
- Dr. Sukhada Bandopadhyay-IQAC Member
- Dr. Jayasree Das- NAAC Co ordinator
- Supriyo Das- Engineer

On Behalf of EHS Alliance Services

- Dr. Uday Pratap-Lead Auditor Phd.,PDIS,QCI-IGBC,Lead Auditor ISO 14001:2015
- Ms. Pooja Kaushik Co Auditor – MSC Field Expert
- Ms. Pooja Kaushik Co Auditor – MSC Field Expert

**Executive Summary**

Green auditing is an essential step to identify and determine whether the institutions practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert it in to green and sustainable. Green audit provides an approach for it. It also increases overall awareness among the folks working in institution towards the eco-friendly environment.

**Water Management Scenario**

SL No	Parameter	Response
1	Total Number of Tank	2
2	Total intake water	15000 ltrs
3	Water users on the campus	Students, Teachers, Admiinistrative staff
4	Wastewater sources	Labs, R.O (Reverse Osmosis) etc.
5	Rainwater harvest available?	No
6	Any leaky taps	No
7	Any water management plan used?	Internal Water management audit conducted
8	Any water-saving techniques followed?	Conventional methods for example Put signsnear the basins to remind students to turn oftaps as soon as they wash their hands, Detect and repair leaks so that wastage of water will get reduce. Avoid flushing the toiletunnecessarily, Dispose of tissues, insects and other similar waste in the dustbins ratherthan the toilet. etc. are followed.

9	Are there any signs reminding people to turn off the water?	Yes with the help of poster
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**WATER CONSUMPTION IN DIFFERENT ACTIVITIES ON COLLEGE CAMPUS**

Activity	Water used per activity (in Litter)	No. of times Activity performed in a day	Average water used Person/Day	No. of people using water (On an average)	Total water consumption per Day
Hand and face wash	0.5–1 L	2	1-2 L	200	200L
Drinking Water	0.2-0.4L	3	0.9L	200	180L
Toilet Flush	8-10L	1	10L	200	2000L
Cleaning Job	30-40Ltrs	2	80L		80L

**2 Air Pollution Management**

The College has been continuously conducting awareness programs for staff, students, and society for protecting and maintaining the environment. The awareness is also done by arranging programmes, and rallies on various issues related to the environment and health. The college students and faculty members are involved in the activities, but the audit team did not find any display board regarding air pollution on the college premises. It was observed and revealed from data that the only possible sources of pollution in the college campus are as use of diesel/petrol vehicles, power generators, and other biodegradable waste from the canteen, use of electronic appliances and others. There is a very low chance of air pollution from outside as no commercial industrial activities are running near the campus, as the campus is rich in greenery. All the parameter of air pollution recorded below the average limit prescribed by the CPCB or WBPCB.

**3 NOISE POLLUTION MANAGEMENT**

**A SILENCE ZONES IN THE COLLEGE**

Various display boards have been placed in the library and other places for awareness to maintain silence in the college.

**B NOISE CONTROL IN THE COLLEGE**

The college adopts a honking policy and prevents the use of any honking and noise on campus. Certain areas like the library and classrooms are declared as Silence Zone, and noise pollution is kept to a minimum on college campuses.

**C Diesel Generator SET FOR POWER BACK-UP**

The college had Diesel Generator set as power backup and used it whenever there is a

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power cut-off due to load shading or maintenance of electricity on the college campus. It is observed that acoustics is not done on DG Set for noise pollution reduction. The exhaust gases are not monitored, tested, and analyzed to know the pollution load.

**AUDIT ANALYSIS**

1. General Information

1.1 Does any Green Audit conducted earlier?

Ans : No

1.2 What is the total strength (people count) of the Institute

	Male	Female	Total
Students	301	288	589
Teachers	7	15	22
Non Teaching Staff	4	2	6
Total	312	305	617

1.3 What is the total number of working days of your campus in a year?

There are One Hundred and Eighty working days in a year (approx.)

1.4 Where is the campus located?

8A, Beniatola Lane , College Street, Kolkata, West Bengal 700009

1.5 Which of the following are available in your institute?

Garden area	Not Available
Playground	Not Available
Kitchen	Not Available
Toilets	Available
Garbage Or Waste Store Place	Available
Computer Laboratory	Available
Canteen	Not Available
Hostel Facility	Not Available
Guest House	Not Available

1.6 Which of the following are found near your institute?

Municipal dump yard	Not in vicinity of the institute
Garbage heap	No Garbage Heap.
Public convenience	Sealdah Railway Station and Sealdah Metro (around 1km), Howrah Railway and Metro Station (around 3 kms)
Sewer Line	Approximate 2 km
Stagnant Water	No
Open drainage	No
Industry	No
Bus/Railway Station	Metro/ Bus/ Local Train connected

2. Waste management and Recycling :

2.1 Does your institute generate any waste? If so, what are they?

Yes, solid waste, paper, plastic, laboratories waste, e-waste, etc.

2.2 What is the approximate amount of waste generated per day? (in KG approx.)

- Biodegradable waste – 5-8 Kg

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- Non-biodegradable waste – 1.8 Kg
- Hazardous Waste < 2 Kg
- Others - 2 Kg

**2.3 How is the waste managed in the institute? By Composting, Reusing, Others (specify)**

- Diluted solutions are used instead of concentrated solutions in other laboratories for nearby colleges
  - One side printed Paper is re-used for internal communication.
  - Solid waste is taken by Municipal Corporation after collecting the Kolkata Municipal Corporation separately
  - Single use plastic is banned in the campus
- Online Exam held in 2020 and 2021

**2.4 How would you spread the message of recycling to others in the community?**

- Poster competition activities
- Campaigns
- Rally

**2.5 Can you achieve zero garbage in your institute? If yes, how?**

Not yet achieved. Possible through waste management policy and planning

### **3. Gardening in Campus**

**3.1 Is there a garden in your institute?**

As such there is no garden in this institute . But they have some plants inside college premises

**3.2 Total number of Plants in Campus**

In bucket 28 nos

**3.3 How many Tree Plantation Drives organized by campus per annum?**

Total 38 trees and 100 hedge plants planted in this Financial Year with more than 85% survival rate

**3.4 Is there any Plant Distribution Program for Students and Community**

Yes, college has a practice where all guests are given a planter as a gift rather than bouquet of flowers



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## 4. Water and Waste Water Management :

### 4.1 List uses of water in your institute

- Basic use of water in campus:
- Drinking – 78.67 KL/month
- Toilets – 176.81 KL/month
- Others – 228.49 KL/month
- Total = 483.97 KL/Month

### 4.2 How does your institute store water? Are there any water saving techniques followed in your institute

SL No	Storage Type	Capacity (Liters)	Quantity	Total(In Liters)
1	Overhead Tank	5,000	1	5,000
2	Underground Tank	10,000	1	10,000

#### Saving Techniques

- Avoid overflow of water controlled valves are provided in water supply system.
- Close supervision for water supply system.
- Water Conservation awareness for new students
- Roof garden .

### 4.3 Locate the point of entry of water and point of exit of waste water in your institute.

- Entry - Water comes from Kolkata Municipal Corporation (KMC)
- Exit- From Toilets, bathrooms through covered drainage which is connected to sewage

### 4.4 Write down ways that could reduce the amount of water used in your institute

- Basic ways: Close the taps after usage
- Water Conservation awareness for new students
  - Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage

In new block, push tap are installed to save water

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5. Carbon Food Print : Emission and Absorption

5.1.1 **Electricity used per year - CO2 emission from Electricity**

(electricity used per year in kWh/1000) x 0.84

=581988.00 kWh/1000 x 0.84

=487.87 ton

5.2 **Diesel used per year CO2 emission from HDS (Diesel)**

(Diesel used per year in litres) x 2.68 212.14 x 2.68

=212.14 x 2.68 =0.57 ton

5.3 **Transportation per year (car) CO2 emission from transportation (Bus and Car)**

College doesn't have any owned vehicles, so emission because of the transportation is Zero.

Total CO2 emission per year cumulative by electricity usage + bus and car transportation(488.87 + 0.57 = 489.44 ton)

5.4 **CARBON ABSORPTION BY FLORA IN THE INSTITUTION**

There are 38 semi ground plants across the institute . Which is a tiny points for minimizationof carbon emission. So the CO2 emission is nearly 488 ton



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## Green Initiative in Campus :

### 1. Solid Waste Management

- There is ban on single use plastic and plastic crockery in the campus
- The institute have different bucket for segregation of bio degradable waste and non bio degradable waste

### 2 Tree Plantation Drives

Five plantation drives were carried out in the current year in the Campus in bucket

Plants survival rate is around 25%

### 3 Environment Committee Initiatives

- Poster Making (Handmade/Digital) and Essay Writing Competitions were organised on the topic 'One Plant Many Lives 'and our city Kolkata in August 2023
- College has establish a "Nature Club "in 2024, to create awareness program about importance of greenery for students

Colleges often favor online classes because of the healthier environment

### 4 Online Classes

## Recommendation :

- Environmental parameters should be included in purchase policy to achieve a cradle to grave approach for sustainability.
- College should go for water balancing / audit for monitoring the use and wastage of water.
- Flow rate of taps should be checked, it should not be more than 2.5 litres/minute.
- Increase plantation drives in nearby, local bodies, NGO and Kolkata Municipal Corporation.
- Arrange training programmers on environmental management system and natureconservation for schools and local people.
- Establish an E-waste collection center in campus.
- Green building guidelines for future expansion projects of the campus
- Installation solar system at roof



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## Conclusion :

This audit involves considerable team discussions and meetings with key staff members on a variety of environmental-related topics. The eco club of College promotes conservation of resources.

Due to shortage of space very small portions are covered by plants. The College makes a significant effort to act in an environmentally responsible manner and takes into account the environmental effects of the majority of its activities. The recommendations in this report suggests some more ways in which the College can work to improve its practices and develop into a more sustainable institution, despite the fact that it performs rather well overall. The college has established a "Nature Club" to create awareness among students about importance of greenery. The "Nature Club" will consider the recommendations mentioned in this report in future.

It's important to begin a few things, such rooftop solar and checking the water flow from the taps. Additionally, we strongly advise installing water meters in the building and derive a water balancing report .

## Reference :

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



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