



Green Audit and Environmental Footprint Report

BIJOY KRISHNA GIRLS' COLLEGE

5/3 Mahatma Gandhi Road, Howrah, West Bengal - 733101

Submitted by
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Kolkata
India



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CERTIFICATE

PRESENTED TO

Bijoy Krishna Girls' College

Affiliated to University of Calcutta

5/3 Mahatma Gandhi Road, Howrah, West Bengal - 733101

Has been assessed for AY 2024-25 by S.S. Solutions for the comprehensive study of environmental impacts on the institutional working framework to fulfill the requirement of

GREEN AUDIT

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

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

For S.S. Solutions, Kolkata

(Dr. Himadri Guha)

Date: 29th January 2026

S.S. Solutions, Kolkata, West Bengal, India

Executive Summary

Bijoy Krishna Girls' College (BKGC), founded in 1947, is one of the most renowned colleges of the state, located at 5/3 Mahatma Gandhi Road, Howrah, West Bengal - 733101, spanning a total campus area of 11128 m² with a built-up area of 8377.22 m². In addition to providing high-quality education, the institution recognizes its environmental responsibilities and has undertaken multiple initiatives to establish itself as an eco-friendly, sustainable educational entity. These efforts are documented through a Green Audit, which assesses the institution's energy, water, and carbon footprints for two consecutive academic years from 2023-24 through 2024-25.

Section 1 provides a general overview of the institution, emphasizing the growing importance of environmental awareness in recent decades, focusing on issues such as ozone depletion, greenhouse gases, global warming, and air pollution. Section 2 provides an overview of the green audit process. Section 3 details the findings of the green audit detailing the institution's proactive approach to raising awareness and mitigating environmental impact, including pollution reduction measures.

Section 4 reports the institute's energy footprint, calculated from monthly electricity bills and fuel consumption data, revealing a total annual energy footprint of 568.12 GJ (0.20 GJ/Capita, 0.0678 GJ/m²) for 2024-25. Section 5 discusses the water footprint estimated using 'ISO 14046' standards, resulting in a total water footprint of 283147.72 m³/Year (99.70 m³/Capita, 33.80 m³/m²) for the same period, combining direct and indirect water usage.

Section 6 presents the institution's carbon footprint for 2023-24 through 2024-25, evaluated using 'The Greenhouse Gas Protocol' by the World Resources Institute. The footprint comes out to be 1719.5251 tonnes of CO₂e for the current academic year 2024-25. The per capita emission is found to be 0.6055 tonnes of CO₂e/ Capita. The unit area emission considering the total built-up area (8377.22 m²) of the institution is found to be 0.2053 tonnes of CO₂e/ m².

In summary, Bijoy Krishna Girls' College not only excels in higher education but also demonstrates a strong commitment to environmental sustainability through comprehensive green initiatives and meticulous monitoring of its ecological impacts.

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1. Introduction

In recent days, educational institutions have increasingly prioritized environmental considerations, introducing new and innovative concepts aimed at sustainability and eco-friendliness. To maintain environmental integrity on campus, educational institutes implement various approaches to address environmental challenges such as energy conservation, waste recycling, reducing water consumption, implementing water harvesting, and more.

Institutions can inadvertently generate adverse environmental impacts through their activities. A green audit, which involves an official assessment of an institution's environmental footprint, is conducted to evaluate the current environmental practices on campus. This audit serves as a valuable tool for colleges to identify areas where energy, water, or resources are most heavily utilized, enabling them to strategize for efficiency improvements and cost savings. It also helps assess waste generation and informs recycling initiatives or waste reduction plans.

Implementing green audits and subsequent mitigation measures benefits institutions, learners, and the environment alike. It fosters health and environmental awareness, promoting values and beliefs conducive to sustainability. By gaining insights into their environmental footprint, both staff and students develop a deeper understanding of their institution's environmental impact. Moreover, green auditing supports financial savings through reduced resource consumption and provides opportunities for personal and social responsibility among students and teachers. The audit process typically involves collecting primary data, conducting site inspections with college teams, and assessing policies, activities, documents, and records.

1.1 The Concept

The National Assessment and Accreditation Council (NAAC) mandated in the academic year 2016 that all Higher Educational Institutions must submit an Annual Green or Environment Report. Green Audit is integral to Criteria 7 of NAAC, an autonomous body in India that categorizes institutions as Grade A, Grade B, or Grade C based on accreditation scores. Additionally, it falls under the Corporate Social Responsibility (CSR) of Higher Educational

Institutions to actively contribute to reducing global warming through measures to decrease Carbon Footprint.

Responding to the NAAC directive, the authority of Bijoy Krishna Girls' College decided to conduct an environmental assessment by an auditor team. The green audit aims to evaluate both direct and indirect environmental impacts of practices within and around the college campus. It involves systematically identifying, quantifying, documenting, reporting, and analyzing various aspects of the college environment. The audit was initiated to assess activities within the college that may pose risks to human health and the environment.

The green audit provides guidance on enhancing environmental infrastructure and integrating measures to protect the environment, aligning with broader environmental goals.

1.2 The Context

In India, the concept of environmental audit was initially introduced under the Environment Protection Act of 1986 by the Ministry of Environment, Forest and Climate Change (MOEFCC) on March 13, 1992. According to this act, individuals owning industries or undertaking operations must obtain legal consent and submit an environmental report or statement.

In response to the NAAC circular regarding environmental auditing, the College Authority of Bijoy Krishna Girls' College decided to conduct an internal environmental assessment by a competent external agency. The college began the green audit process in 2022-23. The present audit is carried out for AY 2024-25.

The terms 'Environmental Audit' or 'Green Audit' can have varying interpretations. Some use terms like 'assessment', 'survey', or 'review' interchangeably. Different organizations also have differing views on whether an 'environmental audit' encompasses only environmental aspects or includes health, safety, and environmental matters. While there isn't a universal definition, many prominent organizations adhere to the fundamental principles outlined by the International Chambers of Commerce (ICC) in their Environmental Auditing publication of 1989.

According to the ICC, Environmental Auditing is defined as: "A management tool that involves a systematic, documented, periodic, and objective evaluation of how well

environmental organization, management, and equipment are performing, aimed at protecting the environment and natural resources in its operations/projects."

The audit outcomes should provide concrete evidence that the measures and facilities implemented by the college are aligned with green auditing principles. This audit specifically focuses on areas such as Green Campus initiatives, Waste Management, Water Management, Air Pollution Control, Energy Management, and assessing Environmental Footprints (including Energy, Water, and Carbon Footprint).

1.3 Bijoy Krishna Girls' College: History and Overview

Established in 1947 Bijoy Krishna Girls' College is one of the most renowned colleges of the state under the aegis of College of Calcutta. The founder Principal of the college Sri Bijoy Krishna Bhattacharya, a visionary, started the college with only a handful of girl students in the premises of Bhavani Girls' School and the college was then known as Howrah Girls' College. On his demise the college was renamed after its founder Principal. With its humble beginning the college flourished through its journey of more than 70 years and at present boasts a basket of 27 departments which is perhaps the largest in terms of academic discipline in a college under CU. There is no doubt that Bijoy Krishna Girls' College Howrah has successfully enlightened generations of women to such a degree that they have emerged as triumphant empowered individuals both at home and in the world.

The college obtained its affiliation from the Calcutta College in January 1948 and got recognition from UGC on 10.7.1965 under 2f. The college offers UG programs in the faculties of Science, Commerce, and Arts and Social Science. The Number of students enrolled in the college under the above faculties in the current academic session is 3162.

The achievements of our students speak for themselves. Many of our students have topped College examinations; some have been awarded medals and prizes in sports and other competitions. The students are also involved in social activities through the National Service Scheme befitting their social responsibilities.

Bijoy Krishna Girls' College Howrah has always prioritized the pursuit of knowledge, which is not confined to the pages of a textbook. Our illustrious alumnae from various spheres of life testify to this fact and have shown their brilliance in diverse spheres of life.

The College has reached its high level of excellence due to the dedicated team work of the teaching, administrative and assisting staff members and also support and

encouragement from the Governing Body and above all administrative and financial support from the Higher Education Department, Government of West Bengal.

During its long journey of 70 years, the College has nurtured the vision of excellence through continuous modernisation of the teaching learning process aided by research and all other academic pursuits. Awarded the Grade 'B++' twice, in 2005 & 2016, by the National Assessment and Accreditation Council (NAAC), the College was granted the status of College with Potential for Excellence by the UGC. A considerable amount of funds under the Rashtriya Uchchar Shiksha Abhiyan (RUSA 2.0) for infrastructural and IT development have also been sanctioned.

The synergy between teachers and students is one of our greatest strengths. The teachers are committed to the cause of students motivating them to do their best in their chosen fields.

It is perhaps no exaggeration to state that Bijoy Krishna Girls' College Howrah has played a pivotal role in the emancipation of women of the state and the country as well. The College has celebrated 70 long years of tireless striving for knowledge which enriches the mind and ennobles the soul.

1.3.1 Location of the College

This college is located in the heart of the city and near Howrah Junction railway station. Howrah known as the twin city of Kolkata, is located on the west bank of the holy Ganges river. The Bhāgirathi-Hooghly river, called 'Ganga' or Ganges traditionally, is very close to the college. Nabanna (building), the new State Secretariat of West Bengal is situated in Howrah and also close to the college.

1.3.2 Communication and Transportation

This college is well-communicated with Kolkata city and other parts of the State through railways and roads. It is also well communicated with the launch service from Howrah Ferry Ghat. The nearest railway station is Howrah Junction railway station. It is also easily accessible from Sealdah Railway Station, Santragachi Junction railway station, and Kolkata Railway Station. The Kolkata Metro Line 2 or East-West Metro Corridor, which is under construction, is within walking distance from the college. The nearest international and

domestic airport is Netaji Subhas Chandra Bose International Airport. Howrah Maidan bus depot is just a walking distance.

1.4 Vision, Missions, and Objectives of the College

Our commitments to the overall development of our students have helped us formulate our mission along the following lines:

- To enlighten and impart proper education to our students so that they can find their own niche in society.
- To generate social, economic, and political awareness among the students to enable them to take up a leading role in the overall socio-economic development of the country at large.
- To promote the cause of girl students, emerging from socially and economically backward strata of the society and assist them in establishing their individual entity.

1.4.1 Institutional Distinctiveness

Bijoy Krishna Girls' College, Howrah, is known for transforming and empowering the girl students who come from diverse backgrounds ranging from underprivileged sections to affluent ones and both urban and rural. This college was established by a wise visionary, Sri Bijoy Krishna Bhattacharya with a mission to empower the girls' students and to help them to find their place in this diverse world. The college believes that growing within is the way to uplift oneself. Nurturing the potential of students, enabling them, and empowering them to carve their unique paths is the motto behind all the activities performed within the campus. Every cocurricular and extracurricular activity carried out for the students helps to facilitate self-growth, self-worth, and actualization of potential through myriad ways of empowerment and competence building.

Over the years there has been a conscious effort on the part of all involved to attain an outlook that is an ideal mix of tradition and modernity, discipline and freedom, acceptance and resistance that is essential for the holistic development of the girl students. Following this trend, the college has organized some outstanding programs that it believes will act as props

for the students in their path of development. Nowadays along with regular education women need to learn how to be intellectually simulative, assertive, and socially mature. Considering the need of the hour the governing authorities of the college have opened a Women Study Centre in collaboration with WSRC, University of Calcutta. This is a skill development course as it equips the learners to achieve skills in the job market, such as NGOs, further studies in the fields of social work, developmental studies in several research organizations, human rights, law, cybercrime, clinical counselors, etc. In addition to this, a few selective students were sent for a Workshop to recruit women undergraduates to pursue studies in STEM, organized by the U.S. Department of State at the US Consulate in Kolkata. These trained girls in turn interacted with all the girls of the Science Stream of the college to make them aware of the concept of STEM. A workshop on Women's safety in collaboration with Infidea is organized by the college. Teachers and students attended the Workshop on Self-Defence in collaboration with the US Consulate General, Kolkata, in Association with the Kolkata Police and Academy of Aikido. World Yoga Day was celebrated. All these programs were organized to bolster Women's Empowerment.

1.4.2 Aims and Objectives

Established in 1947 on the eve of independence, with this vision, we have started following the mentioned Mission and Objectives for our institution:

- Long cherished goal of socio-economic independence with special emphasis on the education of girls
- Development of responsible and independent citizenship in the context of the 21st Century.
- Empowerment of the girls through expansion of knowledge.
- Achievement of academic excellence.
- Development of a participatory model of education with a larger involvement of the stakeholders.
- Making provision for affordable education.
- Holistic and humanitarian education.
- Quality upgradation of faculty members by encouraging research and introducing them to technology-based newer methods for imparting education.

- Encouraging an integrated approach to the development of the institution involving teaching, non-teaching, and student members.
- To continue with our much coveted CPE status with sustained effort and to move beyond it.
- Symbiotic approach in education for a better tomorrow

1.5 Campus Infrastructure and Facilities

Bijoy Krishna Girls' College is ragging free Green Campus with a free internet facility. It has a very good and systematic building infrastructure. All the classrooms are spacious, well-ventilated, and comfortable. The following facilities are available on the campus.

- Well-equipped Library with e-library resources
- Internet Facilities for the students
- Medical and Health services
- Computer lab
- Gymnasium
- Students' Canteen
- Sports and Games
- WiFi Enabled Campus
- Auditorium

1.6 Courses Offered by the College

The courses offered by the college are presented in Table 1.1.

Table 1.1: Courses Offered by Bijoy Krishna Girls' College

ENGLISH	BENGALI	SANSKRIT	EDUCATION	HISTORY
PHILOSOPHY	POLITICAL Sc	SOCIOLOGY	JOURNALISM & MASS COMM.	BOTANY
CHEMISTRY	ECONOMICS	GEOGRAPHY	MATHEMATICS	PSYCHOLOGY
ZOOLOGY	COMPUTER SCIENCE	MICROBIOLOGY	STATISTICS	PHYSICS
ELECTRONICS	HINDI	URDU	MUSIC	COMMERCE
B.ED				

1.7 The Green Audit Cell

On behalf of the College

Name	Position
Dr Ruma Bhattacharyya	Principal
Dr. Tanbir Nasim	Convenor
Dr. Sweta Guha	IQAC Co-Ordinator
Dr. Debjani Mitra	Assistant Professor (Department of Economics)
Dr. Shyamal Kumar Pal	Assistant Professor (Department of Physics)
Dr. Souvik Das	Assistant Professor (Department of History)
Dr. Papiya Ghosh	Associate Professor (Department of Zoology)
Dr. Pamela Saha	SACT (Department of Botany)
Dr. Amrita Mukherjee	SACT (Department of Zoology)
Sukhamoy Chowdhury	SACT (Department of Environmental Science)
Koushik Roy	Non-Teaching Staff Member
Tustuni Mosha	Non-Teaching Staff Member

On behalf of S.S. Solutions

Name	Position	Qualification
Dr. Himadri Guha	Lead-Auditor	BE, ME, MS, MBA, PhD, LEED AP, IGBC AP, GRIHA Trainer
Dr. Biswajit Thakur	Co-Auditor	BE, ME, PhD, LEED AP, GRIHA Trainer

2. Green Audit: An Overview

An environmental or Green Audit is a systematic, documented, periodic, and objective review by regulated entities of facility operations and practices adopted to meet environmental requirements (EPA, 2003). In other words, it is a management tool, comprising of systematic, documented, periodic, and objective evaluation of how well environmental organization, management, and equipment are performing to help to safeguard the environment by facilitating management control of practices and assessing compliance with Institutional policies, which would include regulatory requirements and standards applicable.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audits. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modi has declared the Mission of Swachh Bharat Abhiyan. Also, the University Grants Commission has mentioned the "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in environmental sustainability is more prevalent.

2.1 Why Green Audit

- To ensure that the performance of the institution concerning environmental activities complies with existing laws and regulations.
- To check the functionality and their operating success including water supply, energy-related matters, and other similar matters that are related to green operations in the campus.
- To formulate or update the institution's environmental policy, if warranted.

- To measure the environmental impact of operational processes related to green activities on the campus.
- To measure the performance of each green-related operation and actions on the campus.
- To generate a database of green activities for continuous monitoring to assess the success of each of them.
- To identify future potential liabilities.
- To align the institution's developmental and day-to-day activities with the stated vision, mission, and strategies.
- To identify possible ways to reduce expenditure and running costs on equipment, appliances, etc., or try to enhance revenue income.
- To improve process and materials efficiency, and in response to stakeholder requests for increased closure.

2.2 Goals of Green Audit

The college has conducted a green audit with specific goals as follows:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by the university.
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.
- The long-term goal of the environmental audit program is to collect baseline data on environmental parameters and resolve environmental issues.
- To motivate staff for optimized sustainable use of available resources.

2.3 General Objectives of Green Audit

The general objective of the green audit is to prepare a baseline report on biodiversity and other resources, measures to mitigate resource wastage and improve resource quality and sustainable practices. The specific objectives are:

- To prepare a checklist of flora and fauna diversity in and around the college campus.
- To suggest measures to improve biodiversity within the college campus.
- To monitor the energy consumption pattern of the college.
- To assess the quantity of water usage within the college campus.
- To suggest sustainable energy usage and water conservation practices.
- To find out various sources of organic and solid waste generation and mitigation possibilities.
- To inculcate values of sustainable development practices through green audit mechanisms.

2.4 Specific Objectives of Green Audit Study for the College Campus

The basic objective of green audits is to promote environment management and conservation on the college campus. The purpose of the audit is to identify, quantify, describe, and prioritize the framework of environmental sustainability in compliance with the applicable regulations, policies, and standards. The major objectives of carrying out green audits are:

- To introduce an awareness among the students regarding real concerns about the environment and its sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish baseline data to assess future sustainability by avoiding interruptions in environments that are more difficult to handle and their corrections require high cost.
- To bring out a present status report on environmental compliance.

2.5 Criteria 7 of NAAC

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendly.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, no vehicle day, Rainwater harvesting, etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

2.6 Benefits of Green Audit to An Educational Institute

There are many advantages of green audit to an Educational Institute:

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management.
- To create a green campus.
- To create plastic-free campus and evolve health consciousness among the Stakeholder.
- Recognize the cost-saving methods through waste minimizing and managing.
- Authenticate conformity with the implemented laws.

- Empower the organizations to frame a better environmental performance.
- Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental management approach and improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the College and its environment.
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the College.
- Finally, it will help to build a positive impression through green initiatives for the upcoming NAAC visit.

2.7 Methodology

To perform a green audit, the methodology included different techniques such as physical inspection of the campuses, observation, and review of the documentation, interviewing key persons and data analysis, and measurement of the present status of environment management in the campuses:

- Land Use and Land Coverage
- Water Quality Assessment
- Air Quality Assessment
- Waste Management System
- Rainwater Harvesting System
- Electro-Mechanical Systems
- Renewable Energy System
- Biodiversity Status of the Campus
- Assessment of Campus Energy Footprint
- Assessment of Campus Water Footprint
- Assessment of Campus Carbon Footprint

3. Findings of the Green Audit

3.1 The Land Use Analysis

Land use refers to man's activities and the various uses that are carried on and derived from land. Viewing the earth from space is now very crucial in man's activities on natural resources. In situations of rapid changes in land use, observations of the Earth from space give information on human activities and utilization of the landscape. Three types of data that are GPS points, field survey data, and Google Earth data for Geo-referencing have been used in this study. A land use map of the study area has been prepared using a field survey.

Table 3.1: A Detailed Break-Up of the Built-Up Area for Bijoy Krishna Girls' College

Serial No.	Building Name	Floor	Built-Up Area BUA m ²
1	Duke Public Library	Ground Floor	289.3
		1st Floor	289.3
2	L. Building	Ground Floor	391.957
		1st Floor	391.957
		2nd Floor	391.957
3	N. Building	Ground Floor	212.097
		1st Floor	212.097
		2nd Floor	212.097
4	Progya Building	Ground Floor	124.675
		1st Floor	124.675
		2nd Floor	48.03
5	Science Building	Ground Floor	244.242
		1st Floor	244.242
		2nd Floor	244.242
		3rd Floor	244.242
6	M. Building	Ground Floor	682.558
		1st Floor	682.558
		2nd Floor	191.194
7	Upasana Building	Ground Floor	425.867
		1st Floor	425.867
		2nd Floor	425.867
		3rd Floor	425.867
8	New Building	Ground Floor	109.439
		1st Floor	109.428
		2nd Floor	95.411
		3rd Floor	95.411
		4th Floor	95.411
9	Hostel	Ground Floor	408.587
		1st Floor	408.587
10	Kitchen	Ground Floor	60.015
11	Canteen	Ground Floor	70.141

3.1.1 Findings of the Land Use Analysis

Bijoy Krishna Girls' College (BKGC) which was established in the year 1947, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, preservation, and maintenance. The total area of the campus is 11128 m². About 75.2% of the land area is covered by buildings (8368 m²). The remaining 24.8% of the total area (2790 m²) is occupied by open land and plantations that generate a better and sustainable campus environment. The detailed break-up of the built-up area is shown in Table 3.1.

3.2 Water Quality Assessment

Quality drinking water is an essential requirement for an institution. The drinking water quality of the BKGC is assessed by Envirotech East Private Limited, a renowned agency recognized by MoEF&CC, the Government of India, and WBPCB. The water quality report is shown subsequently in Figure 3.1.

Envirotech East Pvt. Limited

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

- Laboratory Accredited by NABL, as per ISO/IEC 17025 :2017
- Laboratory Recognized by WBPCB
- Accredited EIA Consultant by QCI-NABET



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☎ - + 91 33 2443 8127/8128 ; + 91 33 4063 5011; email: eeplkol@gmail.com; eeplkol2@gmail.com

CIN NO : U74210WB1989PTC047403

Test Report No.:2025-26/EEPL/MON/2316_1

Date: - 28.01.2026

DRINKING WATER ANALYSIS REPORT

Client's Name	M/s. Bijoy Krishna Girls College
Address	5/3, Mahatma Gandhi Road, Howrah Railway Station, Kadamtala, Howrah, West Bengal
Date of Sampling	14.01.2026
Sampling Location	RO Water
Sample Collected by	EEPL Representative

TEST RESULT(S) :


S. No.	Parameters	Unit	Reference Method	Concentration	Acceptable Limit*
1	pH	Hazen	4500-H+ B, APHA 24 th Ed.	6.91	6.5-8.5
2	Colour	-	2120 B, APHA 24 th Ed.	<5	5
3	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable
4	Turbidity	NTU	2130 B, APHA 24 th Ed.	<1	1
5	Total Dissolved Solids	mg/l	2540 C, APHA 24 th Ed.	215	500
6	Total Hardness (as CaCO ₃)	mg/l	2340 C, APHA 24 th Ed.	168	200
7	Calcium (as Ca)	mg/l	3500-Ca B., APHA 24 th Ed.	41	75
8	Magnesium (as Mg)	mg/l	3500-Mg B., APHA 24 th Ed.	16	30
9	Iron (as Fe)	mg/l	3111 B, APHA 24 th Ed.	0.15	1.0
10	Total Alkalinity (as CaCO ₃)	mg/l	2320 B, APHA 24 th Ed.	154	200
11	Chloride (as Cl)	mg/l	4500-Cl- B., APHA 24 th Ed.	41	250
12	Sulphate (as SO ₄)	mg/l	4500-SO ₄ ²⁻ E, APHA 24 th Ed.	8	200
13	Residual Free Chlorine (as	mg/l	4500-Cl G, APHA 24 th Ed.	<0.1	0.2
14	Arsenic (as As)	mg/l	3114 C, APHA 24 th Ed.	<0.002	0.01

Contents of this report are meant for your guidance and should not be used for advertisement, evidence or litigation.

*Acceptable Limit as per Drinking Water Specification IS 10500:2012



For ENVIROTECH EAST (P) LTD.



(Authorized Signatory)

Envirotech East Pvt. Limited

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CIN NO : U74210WB1989PTC047403

Test Report No.:2025-26/EEPL/MON/2316_2

Date: - 28.01.2026

DRINKING WATER ANALYSIS REPORT

Client's Name	M/s. Bijoy Krishna Girls College
Address	5/3, Mahatma Gandhi Road, Howrah Railway Station, Kadamtala, Howrah, West Bengal
Date of Sampling	14.01.2026
Sampling Location	RO Water
Sample Collected by	EEPL Representative

TEST RESULT(S) : (Microbiology)

S. No.	Parameters	Unit	Reference Method	Concentration	Acceptable Limit*
1	Total Coliform	Present/ Absent (100 ml)	IS 15185: 2002	Absent	Shall not be detectable in any 100 ml sample
2	Escherichia Coli	Present/ Absent (100 ml)	IS 15185: 2002	Absent	Shall not be detectable in any 100 ml sample

Contents of this report are meant for your guidance and should not be used for advertisement, evidence or litigation.

*Acceptable Limit as per Drinking Water Specification IS 10500:2012



For ENVIROTECH EAST (P) LTD.



(Authorized Signatory)

Figure 3.1: Drinking Water Quality Report for Bijoy Krishna Girls' College

3.3 Ambient Air Quality Monitoring

Maintaining healthy air quality in the institution's premises has been given prime importance. The ambient air quality was monitored in the premises on 21st November 2024, by Envirotech East Private Limited, a renowned agency recognized by MoEF&CC, the Government of India, and WBPCB. Four criteria air pollutants viz. PM₁₀, PM_{2.5}, SO₂, and NO₂ levels were monitored and found to be well within the standard limits prescribed by National Ambient Air Quality Standards (NAAQS, CPCB). The monitoring reports are shown subsequently in Figure 3.2.



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 • Laboratory Recognized by WBPCB
 • Accredited EIA Consultant by OCL-NABET




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 ☎ – + 91 33 2443 8127/8128 ; + 91 33 4063 5011; email: eeplko1@gmail.com; eeplko2@gmail.com
 CIN NO : U74210WB1989PTC047403

Test Report No.:2025-26/EEPL/MON/2315 Date: - 28.01.2026

AMBIENT AIR QUALITY MONITORING REPORT

Client's Name	M/s. Bijoy Krishna Girls College
Address	5/3, Mahatma Gandhi Road, Howrah Railway Station, Kadamtala, Howrah, West Bengal
Average Temperature (°C)	19
Weather Condition	Clear
Rainfall (mm)	Nil
Avg. Relative Humidity (%)	59
Barometric Pressure (mmHg)	764

AMBIENT AIR QUALITY MONITORING RESULT

Sl. No.	Location Name	Date of monitoring	Reference Method	Parameter	Unit	Result	Standard **
1	Near Main Gate	14.01.2026	IS 5182 (Part 23) : 2006 Reaffirmed 2022	PM ₁₀	µg/m ³	93	100
			IS 5182 (Part 24) :2019	PM _{2.5}	µg/m ³	44	60
			IS 5182 (Part 2) : 2001 Reaffirmed 2023	SO ₂	µg/m ³	11	80
			IS 5182 (Part 6) : 2006 Reaffirmed 2022	NO ₂	µg/m ³	35	80
			IS 5182 (Part 10) : 1999	CO	mg/m ³	0.7	2 (8 hr.)

Note: All above Meteorological conditions prevails at the time of monitoring
 **National AAQ Standards, CPCB



For ENVIROTECH EAST (P) LTD.


 (Authorized Signatory)

Figure 3.2: Ambient Air Quality Report for Bijoy Krishna Girls' College

3.4 Waste Management System

The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. To implement this mission, collective mass effort is necessary. For proper segregation and management, proper use of waste bins is the only solution for waste management purposes on college campuses.

3.4.1 Solid Waste

BKGC has set up separate bins to ensure proper segregation and collection of the biodegradable, non-biodegradable, and hazardous waste products generated in the campus. The responsibility of recyclable waste is however still not taken up due to devoid of recycling devices to carry on the procedure. However, several solid wastes such as glass, cans, used white and brown papers, batteries, print cartridges, cardboard, furniture, damaged pens, carbon papers, etc. are either sold to vendors for recycling or dispatched via municipality disposal van on a regular basis.



Figure 3.3: Different Colored Bins for Solid Waste Collection and Source Segregation

3.4.2 E-Waste

Substantial quality of e-waste is generated due to the extensive use of computers. All members particularly students have been advised not to throw used pendrives etc. anywhere,

but to keep them in designated bins. Waste thus collected is stored in a secured place. The usable parts of the outdated computer systems are reused and the unusable parts are resold to the computer junk dealers. Different electrical items like fans, and air conditioners are repaired by the college electrician if possible or otherwise, they are disposed of by the Howrah Municipal Corporation. As per the guidelines of the Pollution Control Board (PCB) e-waste is to be disposed of through approved vendors of the PCB.

3.4.3 Liquid Waste

The wastewater from the college canteen, hostel, and washrooms is safely disposed of through an internal sewage system connected to the Municipal Corporation sewage line. The liquid wastes produced mainly by the Chemistry department are collected in three different plastic containers. If possible, the organic solvents are reused after the fractional distillation process. Otherwise, the liquid waste is diluted, neutralized, and disposed of. Wastewater from Reverse Osmosis systems is collected and reused. Leaking taps and pipes if any are periodically checked and serviced.

3.5 Rain Water Harvesting System

We can take a few little steps to reduce our dependence on groundwater. To start with, we can save rainwater in our homes or buildings in an effective manner without spending too much money. By using rainwater, an average Indian family can easily harvest enough rainwater to meet its daily needs of water for washing, bathing and even drinking. Rainwater harvesting systems have been configured to supply landscape needs too. Tanks are placed below the rainwater pipes of the Institute's main Building. Every year before the onset of monsoon the tanks are cleaned to collect the water from the rainwater pipes. There are two rainwater tanks in the campus, which receives the rainwater drained from the roof. The tank is connected with pumps to supply the water for usage. The water collected is efficiently utilized for gardening and sometimes for cleaning and construction purposes too. The institute practices rainwater harvesting in a cost-effective manner to supply water for landscape irrigation and promotes both water and energy conservation. The harvested rainwater consistently reduces the water footprint of the institute. A detailed account of this

for two consecutive academic years viz. 2023-24 and 2024-25 are provided in Chapter 5 of this report.



Figure 3.4: Rain Water Harvesting Tanks installed in the Campus

3.6 Electrical Systems

The institute uses purchased electricity from West Bengal State Electricity Distribution Company Limited (WBSEDCL). The contract demand is 91.10 kVA with an average power factor (PF) of 0.97%. The annual consumptions for 2023-2024 and 2024-25 are 107818 kWh and 142365 kWh, respectively. Monthly details of electricity consumption are provided in Chapter 4 of this report while calculating the energy footprint of the college. Table 3.2 presents the details of the connected loads on the campus. The illumination levels in the campus buildings are presented in Table 3.3.

Table 3.2: Details of the Connected Loads in the Campus

Serial No.	Equipments	Details	Total Number	Total Connected Load
				kW
A1	Motors	(> 10kW)	0	0
A2	Motors	(< 10kW)	16	40
B	HAC Systems	Split/Window Room AC		148
C	Process Load			90
D	Lighting and Others	LED, CFL, TL etc.		70
Total Connected Load				348

Table 3.3: Illumination Levels in the Campus Buildings

Serial No.	Building Name	Floor	LUX Levels	Average	NBC Compliance
2	L. Building	Ground Floor	205, 195, 198, 194, 191, 199, 164, 172	182	Yes
		1st Floor	189, 192, 196, 196, 189, 181, 172, 175		Yes
		2nd Floor	181, 169, 162, 177, 176, 180, 171, 171		Yes
3	N. Building	Ground Floor	192, 174, 191, 174, 184, 173, 172, 188	165	Yes
		1st Floor	166, 177, 164, 162, 156, 164, 166, 171		Yes
		2nd Floor	148, 159, 145, 153, 149, 144, 145, 154		Yes
4	Progya Building	Ground Floor	151, 148, 157, 158, 158, 157, 154, 158, 151	152	Yes
		1st Floor	149, 154, 153, 148, 156, 152, 153, 148, 149		Yes
		2nd Floor	151, 157, 144, 136, 156, 152, 153, 157, 146		Yes

3.7 Renewable Energy Systems

The institute has taken an important step for a reduction in pollution levels by installation of solar panel and photo voltaic cell for generating electricity. About 28 solar panels are installed on the roof of the College building on the main campus. The combined generation capacity is 10KVA. To reduce carbon emissions, and dependence on fossil fuel, the institution has resorted to using green energy by harnessing solar power. To increase the generation of solar energy, the installation of solar panels in the open space around the building was considered. The installation of renewable energy systems consistently reduced the energy, water, and carbon footprint of the institute, the detailed account of which is presented in Chapter 4, Chapter 5, and Chapter 6.



Figure 3.5: Rooftop Solar PV Renewable Energy Generation System

3.8 Biodiversity Status of the College Campus

Bijoy Krishna Girls' College (BKGC) is very rich in biodiversity. To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to have an understanding of the biodiversity of an area so that the local people can be aware of the richness of the biodiversity in the place they are living in and their responsibility to maintain that richness.

3.8.1 Objectives

The main objective of this study is to get baseline data on the biodiversity of the area which will include:

- Documentation of the floral diversity of the area: its trees, herbs, shrubs, climbers, and aquatic vegetation.
- Documentation of the major faunal groups like mammals, reptiles, amphibians, birds among insects, butterflies, and dragonflies.
- Documentation of the specific interdependence of floral and faunal life.

3.8.2 Study Methodology

A brief methodology for the floral and faunal survey is given below:

- Sampling was done mostly in a random manner.
- Surveys were conducted for the maximum possible hours in the daytime.
- Tree species were documented through physical verification on foot and photographed each species as much as possible.
- The total area was surveyed by walking in the daytime.
- For faunal species we emphasized mainly on the direct sighting. Also, calls of various birds and amphibians and the nesting of some faunal species were considered as direct evidence.
- Observing mammals depends critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however,

are rare and difficult to detect. Small mammals like the field rats were found near their burrows, particularly during their entry or exit times in or out from their burrows respectively. In some cases, deposits and footprints were also observed that served as a potential clue for the presence and absence of the concerned species. These secondary evidence were all noted with time and space coordinates.

- Birds are often brightly colored, highly vocal at certain times of the year, and relatively easy to see. Sampling was done based on direct sighting, call determination, and from the nests of some bird species.
- Reptiles were found mostly by looking in potential shelter sites like crevices of buildings, logs, tree hollows, and leaf litter and also among and underneath the hedges. Sometimes some species, particularly the garden lizards were also observed in open spaces (on twigs and branches and even on brick constructions) while they were basking under direct and bright sunlight.
- Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near a pond, a road beside a wetland, and in other possible areas. Diurnal search operations are also successful.
- Active invertebrates like insects require more active search. For larger winged insects like butterflies, dragonflies, and damselflies, random samplings were carried and point sampling was also done.
- The easiest way to observe many of the invertebrates is simply looking for them in a suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, crevices in the walls and rocks, and also in leaf litter, dung, etc. slogs and snails are more conspicuous during wet weather and especially at night when they were found using a torch.

3.8.3 Plant Diversity in the College Campus

BKGC premises have unique plant diversities including some large trees, varieties of medicinal plants, and ferns and seasonal flowers as listed in Table 3.4, Table 3.5, and Table

3.6 respectively. Photographs of the same are presented in Figure 3.6, Figure 3.7, and Figure 3.8.

Table 3.4: List of Plants in the College Campus

SL. NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY
1	Debdaru	<i>Polyalthia longifolia</i> Sonn.	Annonaceae
2	Rose	<i>Rosa centifolia</i> L.	Rosaceae
3	Kamini	<i>Murraya paniculata</i> Jack.	Rutaceae
4	China Rose	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae
5	Nayantara	<i>Catharanthus roseus</i> L.	Apocyanaceae
6	Karabi	<i>Nerium oleander</i> Mill	Apocyanaceae
7	Tagar	<i>Tabernaemontana divaricata</i> R.Br.ex. Roem. & Schult.	Apocyanaceae
8	Chatim	<i>Alstonia scholaris</i> L.R.Br..	Apocyanaceae
9	Cape jasmine (Gandharaj)	<i>Gardenia jasminoides</i> J.Ellis	Rubiaceae
10	Betel Nut (Supari)	<i>Areca catechu</i> L.	Arecaceae
11	Red Silk Cotton	<i>Bombax ceiba</i> L.	Malvaceae
12	Palm	<i>Elaxis guinensis</i> Jacq.	Arecaceae
13	Guava	<i>Psidium guajava</i> L.	Myrtaceae
14	Neem	<i>Azadirachta indica</i> (A) Juss.	Meliaceae
15	Peepal Tree	<i>Ficus religiosa</i> L.	Moraceae
16	Kanchan	<i>Bauhinia acuminata</i> L.	Fabaceae

Table 3.5: List of Medicinal Plants on the College Campus

SI No.	Common Name	Scientific Name	Family
1	Neem	<i>Azadirachta indica</i>	Meliaceae
2	Akashmoni	<i>Acacia auriculiformis</i>	Fabaceae
3	Krishnachura	<i>Caesalpinia pulcherrima</i>	Fabaceae
4	Yellow Oleander, Kolkey	<i>Thevetia peruviana</i>	Apocynaceae
5	Tagar plant	<i>Tabernaemontana divaricata</i>	Apocynaceae
6	Parijat, Shiuli	<i>Nyctanthes arbor-tristis</i>	Oleaceae
7	Aparajita	<i>Clitoria ternatea</i>	Fabaceae
8	Hibiscus	<i>Hibiscus rosa-sinensis</i>	Malvaceae
9	Nayantara, Periwinkle	<i>Catharanthes roseus</i>	Apocynaceae
10	Tulsi	<i>Ocimum sanctum</i>	Lamiaceae
11	Ghritakumari	<i>Aloe barbadensis</i>	Liliaceae
12	Curry plant	<i>Murraya koenigii</i>	Rutaceae
13	Papaya plant	<i>Carica papaya</i>	Caricaceae
14	Wild basil	<i>Clinopodium vulgare</i>	Lamiaceae

Table 3.6: List of Ferns and Seasonal Flowers on the College Campus

Sl. No.	Local Name	Common Name	Scientific Name
1.	Petunia	Petunia	<i>Petunia hybrid</i>
2.	Verbena	Verbena	<i>Verbena sp.</i>
3.	Jaba	China Rose	<i>Hibiscus rosasinensis L.</i>
4.	Aparajita	Aparajita	<i>Clitoria ternatea</i>
5.	Fern	Fern	<i>Pteris spp.</i>
6.	Gulab	Rose	<i>Rosa sp.</i>
7.	9 o' clock plant	9 o' clock plant	<i>Portulaca grandiflora</i>
8.	Marigold, Ganda	Marigold	<i>Tagetes erecta</i>
9.	Maiden Pink, China pink	Maiden Pink	<i>Dianthus chinensis</i>
10.	Sandhyamani	Four o clock flower,	<i>Mirabilis jalapa</i>
11.	Nayantara	Periwinkle	<i>Catharanthes roseus</i>
12.	Shiuli	Parijat	<i>Nyctanthes arbor-tristis</i>
13.	Sthalapadma	Confederate rose	<i>Hibiscus mutabilis</i>
14.	Tagar	Tagar	<i>Tabernaemontana divaricata</i>
15.	Madhabilata	Burma creeper	<i>Quisqualis indica</i>
16.	Maiden Pink	Maiden Pink	<i>Dianthus deltoids</i>
17.	Mike Ful	Amaryllis	<i>Hippeastrum sp.</i>

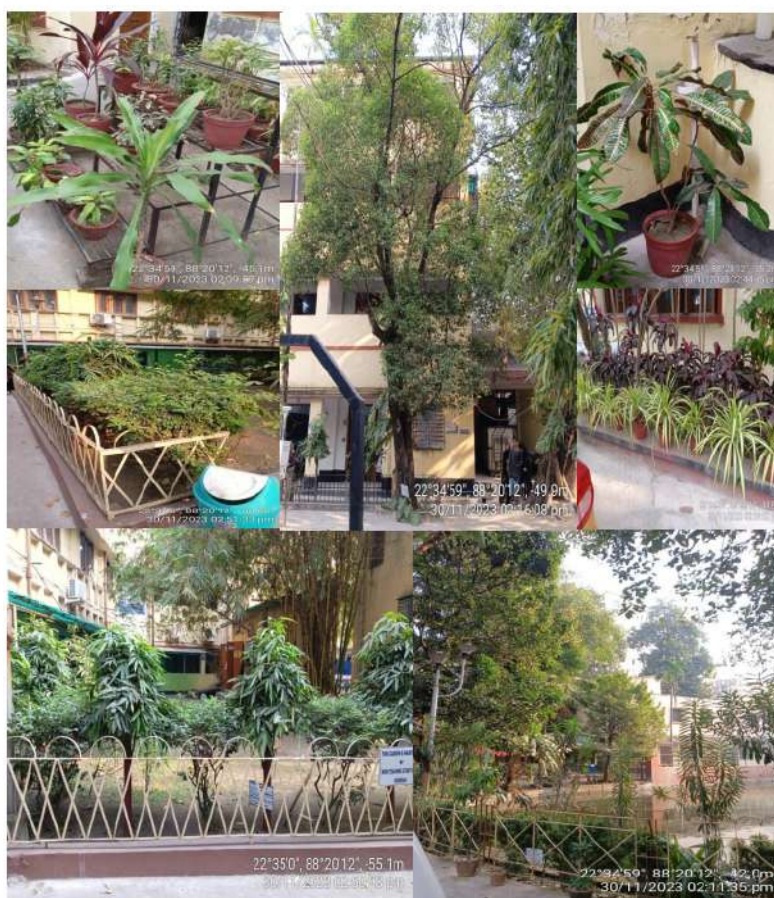


Figure 3.6: Plant Species on the College Campus



Figure 3.7: Medicinal Plant Species on the College Campus



Figure 3.8: Seasonal Flowers on the College Campus

3.8.4 Reptiles, Birds, and Mammals in the Campus

BKGC premises have significant animal diversities including reptiles, birds, and mammals as listed in Table 3.7, Table 3.8, and Table 3.9 respectively. Photographs of the same are presented in Figure 3.9, Figure 3.10, and Figure 3.11.

Table 3.7: List of Reptiles on the College Campus

Sl. No.	Common name	Scientific Name	Bengali Name
1	Checkered Keelback	Xenochrophis piscator	Joldhora
2	Buff Striped Keelback	Amphiesma stolatum	Hele
3	Rat Snake	Zamenis longissimus	Darash
4	Skink	Lampropholis sp.	Anjani
5	Oriental Garden Lizard	Colotes versicolor	Girgiti
6	Common House Gecko/Gekko	Hemidactylus frenotus	Tiktiki

Table 3.8: List of Birds on the College Campus

Sl. No.	Name of Bird	Scientific Name
1	Owl	Strigiformes
2	Sparrow	Passeridae
3	Crow	Corvus
4	Myna	Acridotheres tristis
5	Parrot	Psittacula eupatria
6	Bulbul	Molpastes cafer
7	Koel	Eudynamis scolopaccus
8	Pigeon	Columba livia
9	Indian Vulture	Gyps indicus
10	Indian Cuckoo	Cuculus micropterus
11	Dodo	Raphidae columbiformes
12	Dove	Columbidae columbiformes
13	Duck	Anatidae anseriformes
14	Eagle	Aquila accipitridae
15	Hummingbird	Tricolilidae apodiformes
16	Kiwi	Apteryx apterygiformes
17	Ostrich	Struthio camelus
18	Peacock	Pava cristatus
19	Penguin	Pentagonica sphenisciformes
20	Swan	Cygnus coscoroba

Table 3.9: List of Mammals on the College Campus

Sl. No.	Common name	Scientific name	Bengali name
1	Indian palm squirrel	<i>Funumbulus sp.</i>	Kathberali
2	Frugivorous bat	Suborder Megachiroptera	Badur
3	Insectivorous bat	Suborder Microchiroptera	Chamchike
4	House mouse	<i>Mus musculus</i>	Indur
5	Rat	<i>Rattus norvegicus</i>	Dhere indur
6	Dog	<i>Canis lupurs familiaris</i>	Kukur
7	Cat	<i>Felis catus</i>	Biral



Figure 3.9: Reptiles on the College Campus



Figure 3.10: Birds on the College Campus



Figure 3.11: Mammals on the College Campus

3.9 Green Initiatives by Bijoy Krishna Girls' College

BKGC aims to protect and conserve its biodiversity, and fresh and clean ambiance through the following green initiatives to protect and conserve nature.

3.9.1 Plantation Program

The plantation program of Bijoy Krishna Girls' College promotes environment management and conservation on the college campus with the following objectives:



Figure 3.12: TreePlantation on the Colege Campus (Organised by IQAC in Collaboration with Inner Wheel Club of Calcutta Mega City)

- To motivate the students to keep their surroundings green and clean by undertaking the plantation of trees.
- Promote the ethos of conservation of water by minimizing the use of water.
- Motivate students to imbibe habits and lifestyle for minimum waste generation, source separation of waste, and disposal of the waste to the nearest storage points.
- To create awareness amongst public and sanitary workers, to stop the indiscriminate burning of waste which causes respiratory diseases.

- To minimize the use of plastic bags, do not throw them in public places as they choke drains and sewers, cause water logging, and provide a breeding ground for mosquitoes.
- Organize tree plantation programs, and awareness programs such as quizzes, essays, painting competitions, rallies, nukkad natak etc. regarding various environmental issues and educate children about the re-use of waste material & preparation of products out of waste.
- Organize Nature Trails in Wild Life Sanctuaries/Parks/Forest are as to know about the Bio-diversity.

3.9.2 Green Computing Practices

Being an academic institution, papers are used for various purposes like exam answer sheets, circulars, notices, office work, document printing, and Xeroxing. Since the trees are cut for paper manufacturing, the sequestration of carbon is reduced increasing the carbon footprint. To cut down the carbon footprint, the university administration and various departments follow paperless methods of communication by using emails, online form submission, etc. The paperless work helped reduce tons of CO₂. The tons of biomass are saved by this green computing practice.

3.10 Consolidation of the Audit Findings

Green Audit will create a greater appreciation and understanding of the impact of college actions on the environment. Bijoy Krishna Girls' College (BKGC) has successfully been able to identify the impacts on the environment through various auditing exercises. The green auditing exercise has brainstormed and provided insights on practical ways to reduce negative impacts on the environment. Participating in this green auditing procedure has gained knowledge about the need for sustainability of the college campus. It will create awareness around the use of the Earth's resources in your home, college, local community, and beyond. Bijoy Krishna Girls College (BKGC) should adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good-producing companies are

rapidly developing in the area of energy efficiency. Many computer hardware and electrical supply companies now cooperate with customers to reclaim old or damaged parts. Although over twice as expensive up front, LCD monitors are estimated to use 40-60% less energy overall than CRTs. All computers purchased by the college have an Energy Star rating, which is beginning to be a standard requirement for computers.

3.10.1 Preparation of Action Plan

Management's policies referring to the College and approach towards the use of resources need to be considered in the purview of the green audit report. An environmental policy should be formulated by the management of the college. The college should have a policy on green awareness raising or training programs for students and staff, seminars on environmental awareness are often organized by different departments of the institution, and green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, the college should have an action plan. The green auditing report will be a baseline for the action plan to be evolved.

3.10.2 Follow-Up Action Plans

Green Audit is an exercise that generates considerable quantities of valuable environment and resource management information. The time effort and cost involved in this exercise are often considerable and to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and action plans and implementation programs will be conducted on the basis of the audit findings.

3.10.3 Environmental Education

The following environmental education programs may be implemented in the college before the next green auditing: Training programs in solid waste management, liquid waste management setting up of biodiversity gardens, tree management, medicinal plant nursery, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Give priority to environmental clubs and their programs
- Set up a vegetable garden, medicinal plant garden, butterfly garden, etc.
- Conduct an exhibition on throw-away plastic danger, recyclable products, etc.
- Display various slogans and pictures to protect the environment.
- Display of environmental awareness board such as – Save water, save electricity, No wastage of food/water, no smoking, switch off light and fan after use, plastic-free campus, etc.

3.11 Conclusion and Recommendations

A Green Audit is the most efficient way to identify the strengths and weaknesses of environmentally sustainable practices and to find a way to solve problems. Green Audit is one kind of professional approach towards a responsible way of utilizing economic, financial, social, and environmental resources. Green audits can “add value” to the management approaches being taken by the college and are a way of identifying, evaluating, and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy, and water management. The college in recent years considered the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its activities and become a more sustainable institution.

3.11.1 Suggestions

- Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.
- Increase recycling education on campus.
- Increase awareness of Environmentally Sustainable Development – Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

- Collaborate for Interdisciplinary Approaches – Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula research initiatives, operations, and outreach activities that support an environmentally sustainable future.
- Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.
- Increase reduce, reuse, and recycle education on campus.

3.11.2 Recommendations

- Fire extinguishers are increasingly needed in College campus areas. At least two 10 kg capacity extinguishers is to be placed on each end of the floor. Regular refilling should be ensured and date of refilling should be clearly marked.
- Sensor light may be fixed in the toilets for conservation of energy.
- Replace LCD computer monitors with LED monitors.
- Noise level monitoring shall be done as per the guideline of “Noise Pollution (Regulation and Control) Rules ‘2000’.
- The Biodiversity is to be maintained whole considering the plantation in future.
- More plants are needed in College campus area.
- Medicinal garden can be arranged behind the college.
- Fire safety audit to be required.
- All the fans, lights, and other electrical and electronic appliances are to be switched off when they are not in use.
- Regular checkups and maintenance of pipes, overhead tanks, and plumbing systems should be done by the engineering section to reduce overflow, leakages, and corrosion.

4. Estimation of the Energy Footprint for Bijoy Krishna Girls' College

The annual energy footprint is estimated for Bijoy Krishna Girls' College for two consecutive academic years 2023-24, and 2024-25 on account of electricity and fuel usage as presented in Table 4.1 through Table 4.4. The electricity generated from the rooftop Solar PV Plant (10 kVA Capacity) is subtracted from the electricity consumption to obtain the net energy footprint on account of electricity. The LPG used in the canteen for food preparation and laboratory classes is considered while calculating the energy footprint on account of direct fuel usage on the campus. The total annual energy footprint of the campus for the current academic year 2024-25 is estimated to be 568.12 GJ (0.20 GJ/Capita).

Table 4.1: Monthly and Annual Electricity Usage, Electricity Generation and Associated Energy Footprint of the Campus for 2023-24

Month	Year	Electricity Usage		Electricity Generation through Rooftop Solar PV		Energy Footprint for Electricity	
		$EU_{electricity}$		$EG_{electricity}$		$EF_{electricity}$	
		kWh	GJ	kWh	GJ	kWh	GJ
July	2023	11908	42.87	1194.00	4.30	10714.00	38.57
August	2023	13196	47.50	1776.00	6.39	11420.00	41.11
September	2023	12298	44.27	2744.00	9.88	9554.00	34.39
October	2023	7086	25.51	1419.00	5.11	5667.00	20.40
November	2023	4380	15.77	2082.00	7.49	2298.00	8.27
December	2023	4936	17.77	4654.00	16.75	282.00	1.02
January	2024	4424	15.93	3911.00	14.08	513.00	1.85
February	2024	5186	18.67	2333.00	8.40	2853.00	10.27
March	2024	8040	28.94	3143.00	11.31	4897.00	17.63
April	2024	13028	46.90	2506.00	9.02	10522.00	37.88
May	2024	9386	33.79	2504.00	9.01	6882.00	24.77
June	2024	13950	50.22	504.00	1.81	13446.00	48.40
Annual Total AY 2023-24		107818	388.11	28770.00	103.56	79048.00	284.55

Table 4.2: Monthly and Annual Electricity Usage, Electricity Generation and Associated Energy Footprint of the Campus for 2024-25

Month	Year	Electricity Usage		Electricity Generation through Rooftop Solar PV		Energy Footprint for Electricity	
		$EU_{electricity}$		$EG_{electricity}$		$EF_{electricity}$	
		kWh	GJ	kWh	GJ	kWh	GJ
July	2024	16899	60.83	193.00	0.69	16706.00	60.14
August	2024	17552	63.18	212.00	0.76	17340.00	62.42
September	2024	14421	51.91	168.00	0.60	14253.00	51.31
October	2024	16204	58.33	174.00	0.63	16030.00	57.70
November	2024	7275	26.19	608.00	2.19	6667.00	24.00
December	2024	8112	29.20	360.00	1.30	7752.00	27.90
January	2025	5819	20.95	440.00	1.58	5379.00	19.36
February	2025	5931	21.35	226.00	0.81	5705.00	20.54
March	2025	6813	24.52	240.00	0.86	6573.00	23.66
April	2025	11062	39.82	142.00	0.51	10920.00	39.31
May	2025	15991	57.56	454.00	1.63	15537.00	55.93
June	2025	16286	58.62	497.00	1.79	15789.00	56.84
Annual Total AY 2024-25		142365	512.47	3714.00	13.37	138651.00	499.10

Table 4.3: Annual Electricity Usage, Electricity Generation and Associated Energy Footprint of the Campus for 2023-24 through 2024-25

Academic Year	Electricity Usage		Electricity Generation through Rooftop Solar PV		Energy Footprint for Electricity	
	$EU_{electricity}$		$EG_{electricity}$		$EF_{electricity}$	
	kWh	TJ	kWh	TJ	kWh	TJ
2023-24	107818	0.3881	28770	0.1036	79048	0.2846
2024-25	142365	0.5125	3714	0.0134	138651	0.4991

Table 4.4: Annual Fuel Usage and Associated Energy Footprint of the Campus for 2023-24 through 2024-25

Academic Year	Fuel Type	Fuel Using Facility	Annual Fuel Usage			Energy Footprint for Fuel
						Total
			EU_{fuel}			EF_{fuel}
			L	m ³	kg	GJ
2023-24	Gasoline	College Owned Vehicle	0	0	0	0.00
	Diesel	DG Set	0	0	0.00	0.00
			Number of Cylinders			
	LPG	Main Canteen	31		589.00	29.72
		Staff Canteen	40		568.00	28.66
		Laboratory for Practical Classes	8		113.60	5.73
Annual Total for AY 2023-24						64.12
2024-25	Gasoline	College Owned Vehicle	0	0	0	0.00
	Diesel	DG Set	0	0	0.00	0.00
			Number of Cylinders			
	LPG	Main Canteen	25		475.00	23.97
		Staff Canteen	41		779.00	39.31
		Laboratory for Practical Classes	8		113.60	5.73
Annual Total for AY 2024-25						69.02

5. Estimation of the Water Footprint for Bijoy Krishna Girls' College

The water footprint of Bijoy Krishna Girls' College is assessed for two consecutive academic years from 2023-24 through 2024-25. The assessment is done following the 'ISO 14046: principles, requirements and guideline'.

5.1 Direct Water Footprint

The direct water footprint is the amount of freshwater consumed by the institute. For the current academic year 2024-25, the total annual consumption is 12721500 L/Year (12721.50 m³/Year), however, around 84000 L/Year (84.00 m³/Year) of water is generated from rainwater harvesting. Therefore, the direct water footprint of the institute campus is 12637500 L/Year (12,637.50 m³/year). The per capita annual direct water footprint for 2024-25 is 4449.8239 L/Capita (4.4498 m³/Year/Capita).

Table 5.1: Direct Water Footprint of Bijoy Krishna Girls' College for 2023-24 through 2024-25

Academic Year	Water Usage			Rain Water Harvested	Direct Water Footprint	
	WorkingDays	Non-WorkingDays	Annual	Annual	Annual	
	WU_{direct}			RWH_{direct}	WF_{direct}	
	L/Day	L/Day	L/Year	L/Year	L/Year	m ³ /Year
2023-24	49500.00	16500.00	12721500.00	84000.00	12637500.00	12637.50
2024-25	49500.00	16500.00	12721500.00	84000.00	12637500.00	12637.50

5.2 Indirect Water Footprint

The indirect water footprint has two components, one is calculated based on the food consumed in the canteen and the other is attributed to the annual energy consumption on account of electricity, LPG, and diesel. The indirect water footprint for the current academic year 2024-25 associated with food, electricity, and fuel is 270218.48 m³/Year, 284.61 m³/Year and 7.63 m³/Year respectively. The cumulative indirect water footprint for 2024-25 is around 270510.72 m³/Year. The per capita indirect water footprint is around 95.25

m³/Capita/Year. The total water footprint for the campus for the current academic year 2024-25 combining the direct and the indirect ones is estimated to be 283147.72 m³/Year. The per capita water footprint is found to be 99.70 m³/Capita/Year.

Table 5.2: Indirect Water Footprint Attributed to Food for Bijoy Krishna Girls’ College for 2023-24 through 2024-25

Food Item Category	Annual Consumption		Water Footprint for Food	
	2023-24		2024-25	
	FC		WF_{food}	
	kg		m ³	
Staples	9202.67		209767.58	
Lentils	1042.11		3999.25	
Poultry and Dairy	2706.96		10654.43	
Beverages	2915.68		45733.02	
Oil and Spices	2727.80		15450.43	
Fruits and Vegetables	8106.38		4564.12	
Total	26701.58		290168.83	

Table 5.3: Indirect Water Footprint Attributed to Electricity for Bijoy Krishna Girls’ College for 2023-24 through 2024-25

Academic Year	Electricity Usage		Electricity Generation through Rooftop Solar PV		Energy Footprint for Electricity		Water Footprint for Electricity
	$EU_{electricity}$		$EG_{electricity}$		$EF_{electricity}$		
	kWh	TJ	kWh	TJ	kWh	TJ	
2023-24	107818	0.3881	28770	0.1036	79048	0.2846	162.26
2024-25	142365	0.5125	3714	0.0134	138651	0.4991	284.61

Table 5.4: Indirect Water Footprint attributed to fuel consumption Bijoy Krishna Girls' College for 2023-24 through 2024-25

Academic Year	Fuel Type	Fuel Using Facility	Annual Fuel Usage			Water Footprint for Fuel
			EU_{fuel}			WF_{fuel}
			L	m ³	kg	m ³ /Year
2023-24	Gasoline	College Owned Vehicle	0	0	0	0.00
	Diesel	DG Set	0	0	0.00	0.00
	LPG	Number of Cylinders				
		Main Canteen	31	589.00	3.29	
		Staff Canteen	40	568.00	3.17	
	Laboratory for Practical Classes	8	113.60	0.63		
Annual Total for AY 2023-24						7.09
2024-25	Gasoline	College Owned Vehicle	0	0	0	0.00
	Diesel	DG Set	0	0	0.00	0.00
	LPG	Number of Cylinders				
		Main Canteen	25	475.00	2.65	
		Staff Canteen	41	779.00	4.35	
	Laboratory for Practical Classes	8	113.60	0.63		
Annual Total for AY 2024-25						7.63

6. Estimation of the Carbon Footprint for Bijoy Krishna Girls’ College

The carbon footprint of Bijoy Krishna Girls’ College is assessed for two consecutive academic years from 2023-24 through 2024-25 following ‘The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)’ by the World Resources Institute (WRI).

6.1 Defining the Organizational Boundary

An organizational boundary defines the facilities/entities that will be included in the CO₂ inventory of the organization. Bijoy Krishna Girls’ College has its campus situated at 5/3 Mahatma Gandhi Road, Howrah, West Bengal – 733101 with a total built-up area of 8377.32 m². It has an adequate number of classrooms, laboratories, Faculty rooms, office rooms, libraries, toilets, gymnasium, canteen, medical unit, and store area. These facilities define the organizational boundary for Bijoy Krishna Girls’ College for carbon footprint estimation.

6.2 Defining the Operational Boundary

Emissions result from a variety of activities undertaken by an institution. The operational boundary of the carbon footprint calculation process is defined by selecting the activities to be considered for preparing the GHG emission inventory. Table 6.1 lists such activities of Techno International New Town and defines the operational boundary.

Table 6.1: GHG Emission Sources for Bijoy Krishna Girls’ College

Scope	Emission Type	Activities	Inventory Data Source
Scope 1	Direct	Generation of power in DG sets	Record of annual diesel consumption
		LPG burning in canteen for food preparation	Record of annual LPG consumption
Scope 2	Indirect	Generation of purchased electricity	Monthly electricity bills for the assessment years
Scope 3	Indirect	Teachers, staffs and students commuting in vehicles not owned by the Institute	Commuting profile survey

6.3 Inventory Preparation and Estimation of the GHG Emissions

Once the organizational and operational boundaries are defined, the emission inventory is prepared. For each type of emission source, the activity data is prepared and GHG emissions are estimated as described in subsequent sections.

6.3.1 Direct GHG Emissions (Scope 1)

Direct emissions are emissions from sources owned by the Institution. Accounting for and reporting on direct emissions is required under the framework of the GHG Protocol. For reporting purposes, direct emissions are called ‘Scope 1’ emissions.

For Bijoy Krishna Girls’ College, LPG burning in the canteens for food preparation and LPG burning in laboratory classes are identified as Scope 1 direct emission sources. The annual consumption of LPG for the said purposes for two consecutive academic years from 2023-24 through 2024-25 is reported in Table 6.2.

Table 6.2: Annual Fuel Consumption for Direct GHG Emission Sources for Bijoy Krishna Girls’ College

Academic Year	Fuel Type	Fuel Using Facility	Annual Fuel Usage		
			EU_{fuel}		
			L	m ³	kg
2023-24	Gasoline	College Owned Vehicle	0	0	0
	Diesel	DG Set	0	0	0.00
	LPG	Main Canteen	Number of Cylinders		
			31	@ 19 kg each	589.00
			Staff Canteen	40	@ 14.2 kg each
	Laboratory for Practical Classes	8	@ 14.2 kg each	113.60	
Annual Total for AY 2023-24					
2024-25	Gasoline	College Owned Vehicle	0	0	0
	Diesel	DG Set	0	0	0.00
	LPG	Main Canteen	Number of Cylinders		
			25	@ 19 kg each	475.00
			Staff Canteen	41	@ 19 kg each
	Laboratory for Practical Classes	8	@ 14.2 kg each	113.60	
Annual Total for AY 2024-25					

Once the activity data for direct emissions sources as listed under ‘Scope 1’ of ‘The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)’ by World Resources Institute (WRI) is collected, the appropriate emission factors are chosen from the same standard for emission estimation. Emissions factors convert activity data to emissions values. The emission is calculated using the ‘World Resources Institute (2008). GHG Protocol Tool for Stationary Combustion. Version 4.0’ and the results are reported in Table 6.3.

Table 6.3: Summary of the Direct GHG Emission (Scope 1)

Academic Year	Fuel Using Activities	GHG Emission			
		CO ₂ tonnes	CH ₄ tonnes	N ₂ O tonnes	Total GHG Emission tonnes CO ₂ e
2023-24	Diesel Burning for Generation of power in DG sets	0.000000	0.000000	0.000000	0.000000
	LPG burning in canteen for food preparation	3.750366	0.000182	0.000036	3.765134
	Total	3.750366	0.000182	0.000036	3.765134
2024-25	Diesel Burning for Generation of power in DG sets	0.000000	0.000000	0.000000	0.000000
	LPG burning in canteen for food preparation	4.036966	0.000196	0.000039	4.052862
	Total	4.036966	0.000196	0.000039	4.052862

6.3.2 Indirect GHG Emissions (Scope 2)

Indirect emissions are the consequences of the institution’s activities that occur from sources owned or controlled by another organization. For reporting purposes, indirect emissions are divided into ‘Scope 2’ emissions - those from the generation of purchased electricity, steam, or heat and ‘Scope 3’ emissions - a label that covers everything else. Accounting for and reporting on Scope 2 emissions is required under the GHG Protocol because these are likely to make up a significant percentage of any organization’s inventory and are relatively easy to quantify.

For Bijoy Krishna Girls’ College, electricity is purchased from West Bengal State Electricity Distribution Company Limited (WBSEDCL). To reduce electricity consumption and GHG emission the institute has taken a great initiative by installing a 10 kVA Solar Photovoltaic Power Station on the institute rooftop. This renewable energy source injects generated electricity into the main electricity supply line of the College from WBSEDCL.

Accounts for both of these are collected from the monthly electricity bills as listed in Table 6.4.

Once the activity data for purchased and generated electricity under ‘Scope 2’ of ‘The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)’ by the World Resources Institute (WRI) is gathered, the appropriate emission factors are chosen from the same standard for emission estimation. Emissions factors convert activity data to emissions values. The emission is calculated using the ‘World Resources Institute (2008). GHG Protocol Tool for Purchased Electricity. Version 4.8’ and the results are reported in Table 6.5.

Table 6.4: Electricity Usage Showing Electricity Purchase and Electricity Generation (Through Solar PV) for Bijoy Krishna Girls’ College

Academic Year	Electricity Usage		Electricity Generation through Rooftop Solar PV		Net Electricity Consumption	
	$EU_{electricity}$		$EG_{electricity}$		$EU_{Net_{electricity}}$	
	kWh	TJ	kWh	TJ	kWh	TJ
2023-24	107818	0.3881	28770	0.1036	79048	0.2846
2024-25	142365	0.5125	3714	0.0134	138651	0.4991

Table 6.5: Summary of the Indirect GHG Emission from Purchased Electricity (Scope2)

Academic Year	Electricity Consumed / Generated	GHG Emission			
		CO ₂	CH ₄	N ₂ O	Total GHG Emission
		tonnes	tonnes	tonnes	tonnes CO ₂ e
2023-24	Electricity Consumed through Purchased Electricity	24.402163	0.000460	0.000046	24.427225
	Electricity Generated through Rooftop Solar PV	6.511438	0.000123	0.000012	6.518126
	Net Electricity Consumed	17.890725	0.000337	0.000034	17.909100
2024-25	Electricity Consumed through Purchased Electricity	32.221094	0.000607	0.000061	32.254187
	Electricity Generated through Rooftop Solar PV	0.840580	0.000016	0.000002	0.841443
	Net Electricity Consumed	31.380514	0.000591	0.000059	31.412744

6.3.3 Indirect GHG Emissions (Scope 3)

Indirect emissions are the consequences of the institution’s activities that occur from sources owned or controlled by another organization. For reporting purposes, indirect emissions are divided into ‘Scope 2’ emissions - those from the generation of purchased electricity, steam, or heat and ‘Scope 3’ emissions - a label that covers everything else. Accounting for and reporting on relevant Scope 3 emissions is not mandatory in the GHG Protocol but is encouraged because it increases emissions reduction opportunities.

For Bijoy Krishna Girls’ College, commuting of teachers and staffs and students in non-institution owned vehicles is identified as the main Scope 3 emissions source. To prepare the activity data, a commuting profile survey has been conducted. A sample survey was run for 116 employees. The total activity is projected from the survey results and presented in Table 6.6 through Table 6.8.

Once the activity data for commuting of teachers and staff and students in non-institution owned vehicles under ‘Scope 3’ of ‘The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)’ by the World Resources Institute (WRI) is surveyed and projected, the appropriate emission factors are chosen from the same standard for emission estimation. Emissions factors convert activity data to emissions values. The emission is calculated using the ‘World Resources Institute (2008). GHG Protocol Tool for Mobile Combustion. Version 2.0’ and the results are reported in Table 6.9 through Table 6.10.

Table 6.6: Commuting Profile and Activity Data for Employees of the Institute

Mode of Transport	Total Weekly km for Surveyed Employees	No. of Working Week / Year	Total Annual km for Surveyed Employees	No. of Employees Surveyed	Total No. of Employees		Total Annual km for All Employee	
					2023-24	2024-25	2023-24	2024-25
Car	2623.50	41	107563.50	114	151	153	142474.46	144361.54
Auto	3241.50	41	132901.50	114	151	153	176036.20	178367.80
Bus	2422.50	41	99322.50	114	151	153	131558.75	133301.25
Metro	1986.50	41	81446.50	114	151	153	107880.89	109309.78
Train	5729.50	41	234909.50	114	151	153	311152.06	315273.28
Motorbike	1404.50	41	57584.50	114	151	153	76274.21	77284.46
Cycle/Rickshaw/Walk	425.00	41	17425.00	114	151	153	23080.48	23386.18

Table 6.7: Commuting Profile and Activity Data for Students of the Institute

Mode of Transport	Total Weekly km for Surveyed Students	No. of Working Week / Year	Total Annual km for Surveyed Students	No. of Students Surveyed	Total No. of Students		Total Annual km for All Students	
					2023-24	2024-25	2023-24	2024-25
Car	12635.00	41	518035.00	685	3162	2687	2391279.81	2032058.46
Auto	9480.50	41	388700.50	685	3162	2687	1794264.21	1524727.36
Bus	19217.81	41	787930.21	685	3162	2687	3637131.86	3090756.90
Metro	5803.00	41	237923.00	685	3162	2687	1098266.46	933283.36
Train	30162.50	41	1236662.50	685	3162	2687	5708506.31	4850966.62
Motorbike	15143.50	41	620883.50	685	3162	2687	2866034.49	2435494.84
Cycle/Rickshaw/Walk	14010.75	41	574440.75	685	3162	2687	2651652.05	2253317.22

Table 6.8: Summary of the Activity Data for Indirect GHG Emission from Employee and Student Transport (Scope 3)

Mode of Transport	Total Annual km	
	2023-24	2024-25
Car	2533754.27	2176420.00
Auto	1970300.40	1703095.17
Bus	3768690.61	3224058.15
Metro	1206147.35	1042593.14
Train	6019658.37	5166239.90
Motorbike	2942308.70	2512779.30
Cycle/Rickshaw/Walk	2674732.53	2276703.40

Table 6.9: Summary of the Indirect GHG Emission from Employee and Student Transport (Scope 3) for AY 2023-24

Mode of Transport	GHG Emissions			Total GHG Emissions (tonnes CO ₂ e)
	CO ₂	CH ₄	N ₂ O	
	(tonnes)	(tonnes)	(tonnes)	
Car	540.019856	0.029914	0.017318	545.446819
Auto	231.390415	0.085700	0.008570	236.061073
Bus	131.138324	0.003025	0.002030	131.761002
Metro	89.186361	0.001874	0.001274	89.576458
Train	602.211210	0.030298	0.011969	606.231437
Motorbike	345.542248	0.127979	0.012798	352.517083
Cycle/Rickshaw/Walk	0.000000	0.000000	0.000000	0.000000
Total for AY 2023-24	1939.488414	0.278789	0.053960	1961.593873

Table 6.10: Summary of the Indirect GHG Emission from Employee and Student Transport (Scope 3) for AY 2024-25

Mode of Transport	GHG Emissions			Total GHG Emissions (tonnes CO ₂ e)
	CO ₂	CH ₄	N ₂ O	
	(tonnes)	(tonnes)	(tonnes)	
Car	463.861089	0.025695	0.014876	468.522690
Auto	200.010058	0.074078	0.007408	204.047298
Bus	112.186864	0.002588	0.001737	112.719556
Metro	77.092643	0.001620	0.001101	77.429843
Train	516.834576	0.026002	0.010272	520.284848
Motorbike	295.098678	0.109296	0.010930	301.055300
Cycle/Rickshaw/Walk	0.000000	0.000000	0.000000	0.000000
Total for AY 2024-25	1665.083908	0.239278	0.046324	1684.059534

6.4 Carbon Footprint of Bijoy Krishna Girls' College

In the previous sections the GHG emission for Bijoy Krishna Girls' College from different direct (Scope 1) and indirect (Scope 2 and Scope 3) emission sources are estimated and reported as per 'The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)' by World Resources Institute (WRI). The total carbon footprint of the institute accounting all the three scopes is presented in Table 6.11 through Table 6.12. The footprint comes out to be **1719.5251 tonnes of CO₂e** for the current academic year 2024-25. The per capita emission is found to be **0.6055 tonnes of CO₂e/ Capita**. The unit area emission considering the total built-up area (8377.32 m²) of the institution is found to be **0.2053 tonnes of CO₂e/ m²**.

Table 6.11: Carbon Footprint of Bijoy Krishna Girls' College for AY 2023-24

Scope	Emission Type	Activities	GHG Emission			Total GHG Emission	Per Capita GHG Emission	Unit Area GHG Emission
			CO ₂	CH ₄	N ₂ O			
			tonnes	tonnes	tonnes	tonnes CO ₂ e / Capita	tonnes CO ₂ e / m ²	
Scope 1	Direct	Generation of power in DG sets, LPG burning in canteen for food preparation	3.750366	0.000182	0.000036	3.765134	0.001136	0.000449
Scope 2	Indirect	Generation of purchased electricity	17.890725	0.000337	0.000034	17.909100	0.005406	0.002138
Scope 3	Indirect	Teachers, staffs and students commuting in vehicles not owned by the Institute	1939.488414	0.278789	0.053960	1961.593873	0.592090	0.234155
Total Carbon Footprint for AY 2023-24			1961.129504	0.279308	0.054030	1983.268106	0.598632	0.236743

Table 5.12: Carbon Footprint of Bijoy Krishna Girls' College for AY 2024-25

Scope	Emission Type	Activities	GHG Emission			Total GHG Emission	Per Capita GHG Emission	Unit Area GHG Emission
			CO ₂	CH ₄	N ₂ O			
			tonnes	tonnes	tonnes	tonnes CO ₂ e / Capita	tonnes CO ₂ e / m ²	
Scope 1	Direct	Generation of power in DG sets, LPG burning in canteen for food preparation	4.036966	0.000196	0.000039	4.052862	0.001427	0.000484
Scope 2	Indirect	Generation of purchased electricity	31.380514	0.000591	0.000059	31.412744	0.011061	0.003750
Scope 3	Indirect	Teachers, staffs and students commuting in vehicles not owned by the Institute	1665.083908	0.239278	0.046324	1684.059534	0.592979	0.201026
Total Carbon Footprint for AY 2023-24			1700.501388	0.240066	0.046422	1719.525140	0.605467	0.205260

From the break-ups of the total GHG emission for different GHG gases viz. CO₂, CH₄ and N₂O, and for different emission sources under different scopes, CO₂ is found out to be the major GHG gas contributing more than 98% of the total share. Among different emission sources, employee and student commuting (under Scope 3) emerges as the major GHG emission source contributing more than 97% of the total share.