

# RANI BIRLA GIRLS' COLLEGE

38, Shakespeare Sarani, Kolkata- 700017



## DVV

# CLARIFICATIONS

*Criterion Name:* **Institutional Values and Best Practices**

*Index No:* 7.1.3

*Subtitle:* **The Institutional Environment and Energy Initiatives:**

# AUDIT REPORTS

# **GREEN AUDIT REPORT**

**Link as hosted on the official  
website of the college:**

**[https://www.rbgc.ac.in/Audit-Reports/Green\\_Audit\\_Report\\_2022-23.pdf](https://www.rbgc.ac.in/Audit-Reports/Green_Audit_Report_2022-23.pdf)**



# RANI BIRLA GIRLS' COLLEGE

Affiliated to  
University of Calcutta

## GREEN AUDIT REPORT 2022-23

**Audited by:**

**Dr. Pranabes Sanyal (IFS Rtd.)**

Ex Chief Environment Officer,  
Govt. of West Bengal.  
Visiting Faculty, School of Oceanographic Studies,  
Jadavpur University, Kolkata 32



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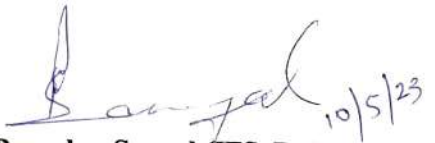
# CERTIFICATE

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## TO WHOM IT MAY CONCERN

This is to certify that Rani Birla Girls' College, 38, Shakespeare Sarani, Kolkata- 700017, has collected data and credentials as per requirement of Green Audit of the campus and submitted all relevant information to the Auditor. The green infrastructure of the college and, activities and measures adopted by the institution along with data submitted have been scrutinized, verified, and audited, and was found to be satisfactory with several scope of improvement, listed in the recommendations.

The efforts taken by the IQAC along with the faculty members and students of the Department of Geography of Rani Birla Girls' College, towards environment and sustainability is highly appreciated and commendable.



**Dr. Pranabes Sanyal (IFS, Rtd.)**

Ex Chief Environment Officer,  
Govt. of West Bengal.  
Visiting Faculty, School of Oceanographic Studies,  
Jadavpur University, Kolkata 32





## ACKNOWLEDGEMENT

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I, **Dr. Pranabes Sanyal**, would like to thank the management of Rani Birla Girls' College for assigning this important work of Green Audit. I appreciate the co-operation to the teams for completion of assessment.

I am thankful to the IQAC team and other staff members who were actively involved while collecting the data and conducting field measurements, especially the Department of Geography.

Last but not the least, we would like to thank **Dr. Srabanti Bhattacharya (Principal)**, Rani Birla Girls' College for giving us an opportunity to evaluate the environmental performance of the campus.



## DISCLAIMER

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I, **Dr. Pranabes Sanyal**, have prepared this report for Rani Birla Girls' College based on input data submitted by the representatives of college.

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 advised that the conclusions are based on the best estimates available, and that the auditor makes no express or implied representations, warranties, or undertakings. The auditor also disclaims all liability for any direct or indirect losses resulting from the use of the data, statements, or forecasts in this report.

I agree to maintain the confidentiality of all information pertaining to your organization and not share it with any other parties, unless it is in the public domain, required by law, or required by relevant accreditation organizations. I will only obtain confidential information when it is necessary.

**Signature**

**AUDITOR**

**Visiting faculty**  
**School of Geographical Studies**  
**Uttar Pradesh University, Allahabad- 22**





## CONCEPT AND CONTEXT

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Since the academic year 2019–20, all higher education institutions are required by the National Assessment and Accreditation Council, New Delhi (NAAC) to submit an annual Green, Environment, and Energy Audit Report. Green Audit falls under the purview of Criteria 7 of the National Assessment and Accreditation Council (NAAC), an autonomous body which accredited institutes of higher education. Furthermore, ensuring that higher education institutions take steps to reduce their carbon footprint and therefore help to mitigate global warming. The management of the college chose to have a qualified external professional auditor undertake an external environment assessment study in light of the NAAC circular about green auditing. Examining environmental behaviors that affect the atmosphere either directly or indirectly both inside and outside of the College campus is the goal of the green audit. The term "green audit" refers to the methodical identification, measurement, documentation, reporting, and analysis of college environment components. It was started with the goal of examining the actions taken by the institutions whose operations could endanger the environment's and the people's health. The green audit can provide guidance on how to enhance the environment's structure and incorporate various elements that can safeguard the environment. This audit focuses on the institution's implementation of the Green Campus, Waste Management, Energy Management, and Carbon Footprint, among other things. Below is a discussion of the principles, organization, goals, analysis tools, methodology, and audit objectives.



# INTRODUCTION

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Educational institutions are becoming more environmentally conscious these days, and as a result, fresh ideas are being presented to make them eco-friendly and sustainable. Many educational institutions use a variety of approaches to address their environmental challenges in order to protect the environment within the building. These approaches include encouraging energy conservation, recycling garbage, reducing water use, water harvesting, and many more.

The institution's operations may have a negative influence on the environment. A green audit is an official assessment of the environmental impact of a college. The purpose of the Green Audit is to assess the real-world situation on the campus of the organization. A college can utilize a green audit to find out where and how they are using the most water, energy, or other resources. From there, the institution can decide how to make adjustments and save money. In order to improve waste minimization plans or for recycling projects, it can also be used to ascertain the type and volume of garbage.

The implementation of mitigation measures and green auditing benefits all institutions, students, and the environment. Additionally, it can raise knowledge of health issues and advance environmental awareness as well as values and ideas. It gives employees and students a greater awareness of the institution's green impact. Green auditing maintains cost savings by utilizing less resources. It provides a chance for educators and learners to grow in taking responsibility for their own personal and social responsibilities. Primary data gathering, a site visit with the college team, and an evaluation of the policies, programs, papers, and records are all part of the audit process.



## OVERVIEW OF THE COLLEGE

RANI BIRLA GIRLS' COLLEGE, Kolkata was established in July 1961 as an undergraduate arts college affiliated to the University of Calcutta by the Hindustan Charity Trust in the memory of Rani Jogeshwari Devi Birla to serve as a women's educational institution and to impart a comprehensive learning programme to its students within an enlightened, liberal and progressive milieu. Undergoing a remarkable transformation, this college departed from its initial apparatus of governance (by a private Trust) to function as an aided institution under the Government of West Bengal.

The institution holds the distinction of being the bearer of a teaching and learning legacy of more than six decades and has been relentless in its pursuit of excellence. This college has maintained good academic performance with consistency. Co-curricular training and value-orientation have been equally prioritized within the institutional agenda. The college is very conveniently located on Shakespeare Sarani and is easily accessible from both the A.J.C. Bose Road and Jawaharlal Nehru Road intersections of Shakespeare Sarani.



Figure 1: Front view of the College from Main Road side



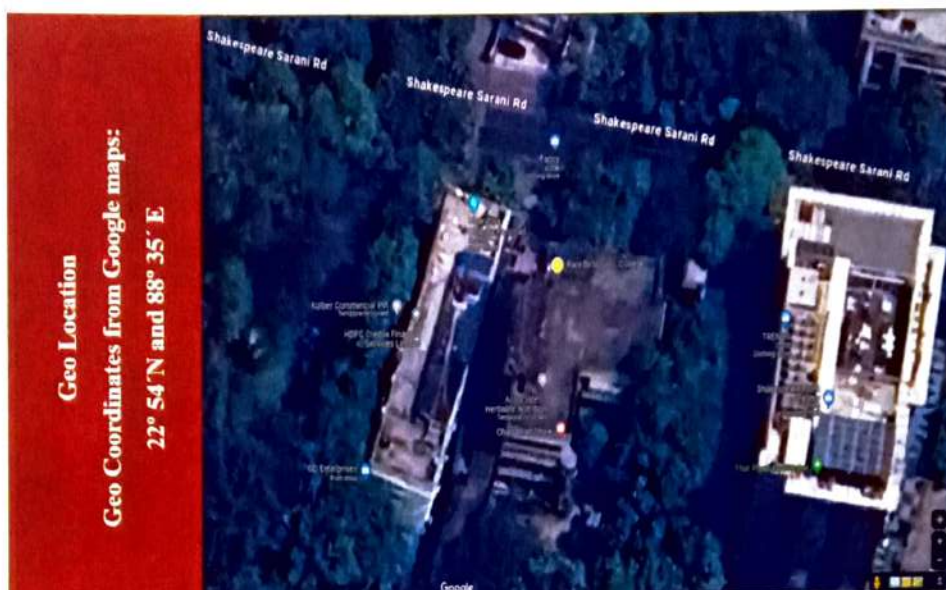
Figure 2: View of the College from inside the campus

## VISION

The college was established with an inspirational vision to serve as an ideal seat of learning aimed at promoting higher education and holistic development of young women learners of diverse social and economic background within a liberal, progressive and enlightened milieu.

## MISSION

As a premier and reputed institution committed to the goal of women's empowerment through higher education, the institutional mission is oriented to motivating learners to achieve distinction in academic, administrative and cultural spheres and to venture into self-employment or entrepreneurship.



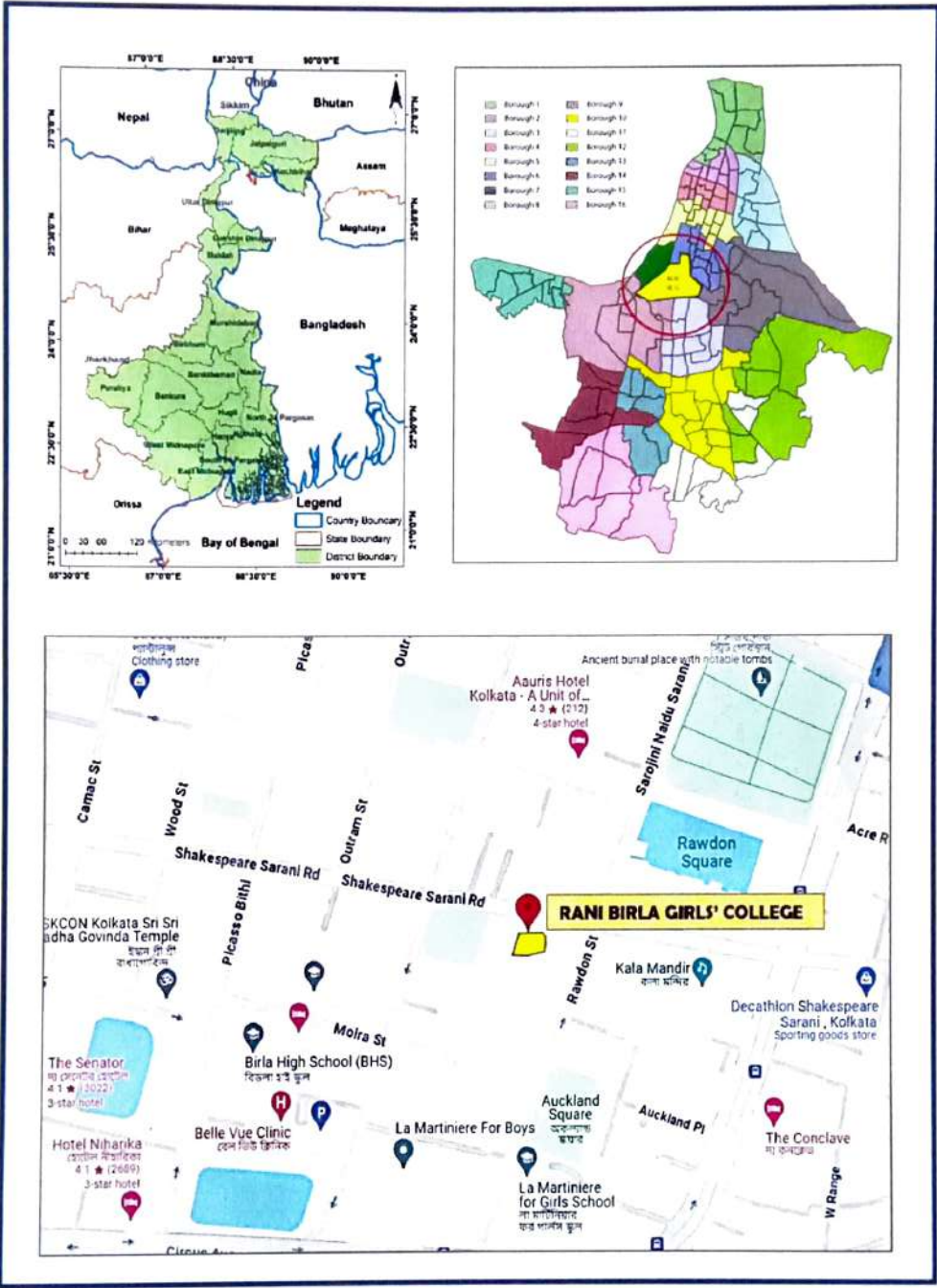
## INFRASTRUCTURE OF THE COLLEGE:

### GEOGRAPHICAL LOCATION:

Located within the University of Calcutta, Rani Birla College was founded in 1961 with the goal of providing advanced arts education. It is situated in a rented building in Shakespeare Sarani, Kolkata, at 22° 54' N and 88° 35' E, at the center of West Bengal's capital. The college occupies a rented space measuring 1 Bigha 4 Katha and 2 Chatak, or roughly 32,535 square feet. 11,330 square feet, or 35% of the total area, are built up. The premise has a playground of 8020 sq. ft area. The College admits students from all social milieus and empowers them through intensive mentoring and counselling to face the challenges of life and become responsible and sensitized citizens of the country. Rani Birla Girls' College provides a caring and nurturing environment where students come into their own, blossoming into confident young women ready to face the world. The college accepts students from all socioeconomic backgrounds and apart from academic training the college through rigorous mentoring and counselling, equips them to meet life's obstacles and develop into responsible, aware citizens of the nation. Students of Rani Birla Girls' College thrive in a supportive and nurturing atmosphere where they develop into self-assured, world-ready young ladies.



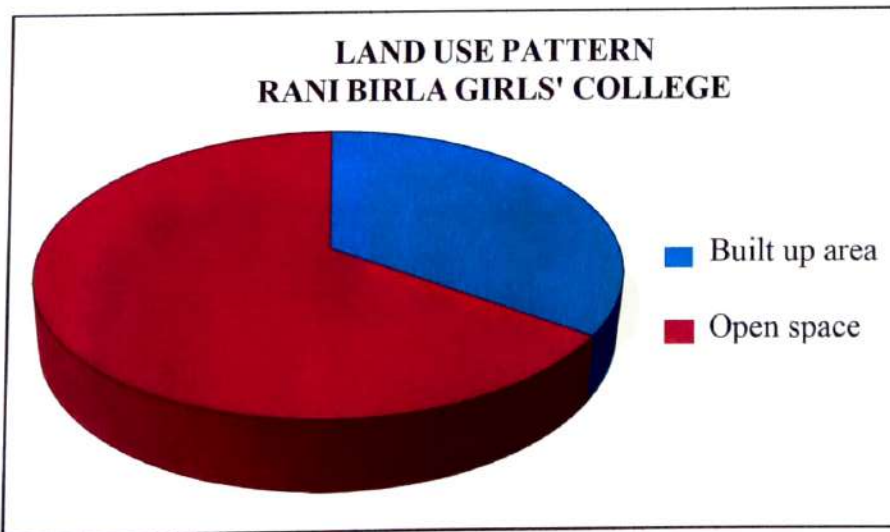
# COLLEGE LOCATION MAP





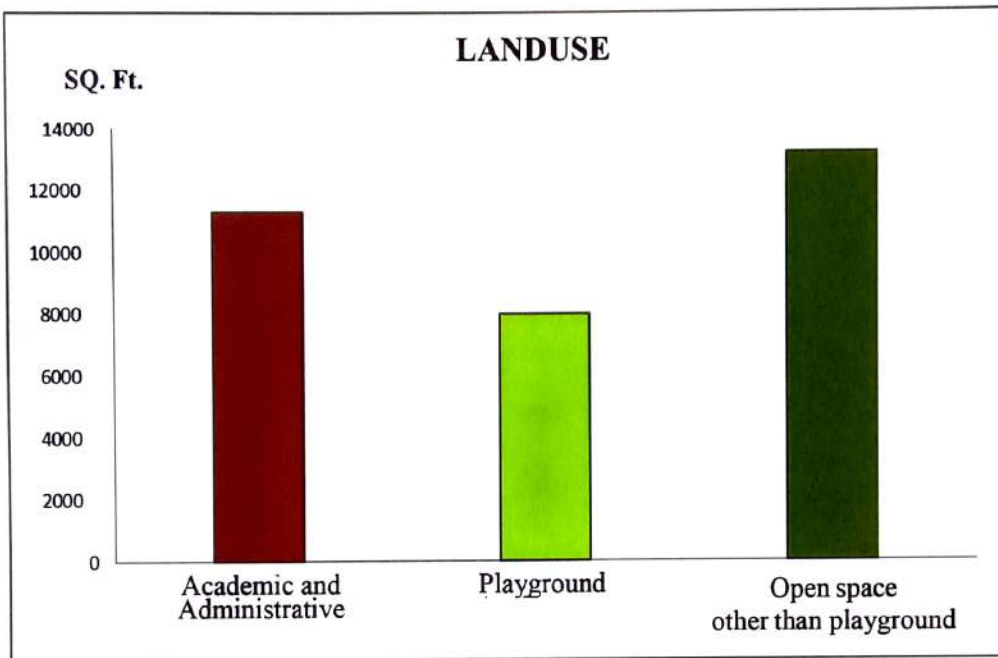
Building Name	Building Square Footage (m <sup>2</sup> )	Age of Building (years)	Purpose of building	Number of Floors	Daily Operational Hours	Days of Use per Week	Average number of occupants
Main Building (Total Campus)	11,330 sq. ft	Nearly 80 years	Academic	3	8	6	700
Anex-I Building		Nearly 80 years	Academic	2	8	6	120
Anex-II Building		Nearly 80 years	Academic	2	8	6	50

LANDUSE	AREA IN SQ. FT
BUILT UP AREA	11330 sq. ft.
OPEN SPACE	21205 sq. ft.
TOTAL AREA	32535 sq. ft.





LANDUSE (SPECIFIED)	AREA IN SQ. FT
Academic and Administrative (sq. ft.)	11330
Playground (sq. ft.)	8020
Open space other than playground (sq. ft.)	13185



### WEATHER DATA OF KOLKATA AND RANI BIRLA GIRLS' COLLEGE:

Kolkata, the capital of West Bengal, has a tropical wet-and-dry climate (Köppen climatic classification Aw), which is shared by Rani Birla Girls' College in Kolkata. Although monthly average temperatures vary from 15 °C to 30 °C (59 °F to 86 °F), the annual mean temperature is 26.8 °C (80 °F). Summertime highs in the low 30s are hot and muggy. In May and June, maximum temperatures often get close to 40 °C (104 °F) during dry spells. With seasonal lows between December and January of 9 to 11 degrees Celsius (48.2 to 51.8 degrees Fahrenheit), winter lasts for around two and a half months on average. 5 °C (41 °F) was the lowest recorded temperature, and 43.9 °C (111 °F) was the highest.





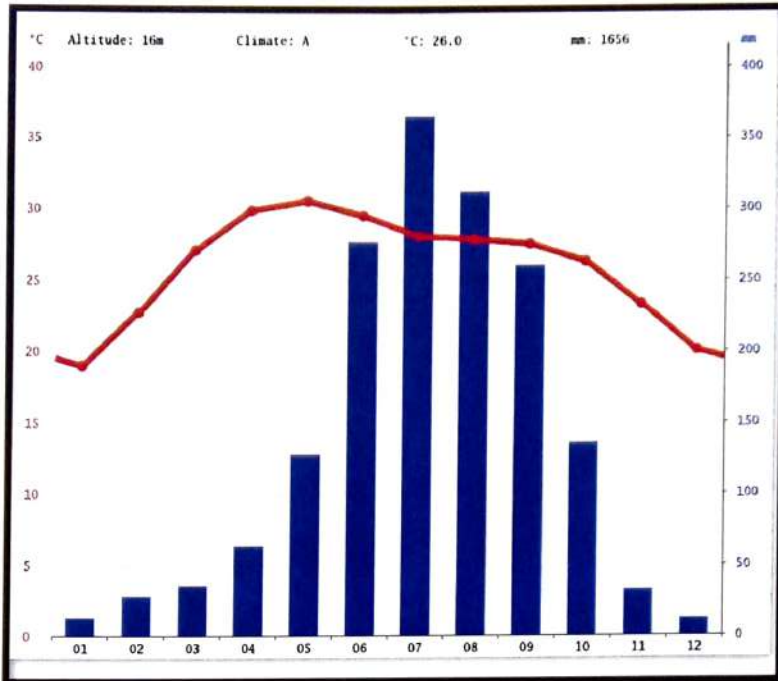
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUT	SEPT	OCT	NOV	DEC
Avg. Temperature °C (°F)	19 °C (66.2) °F	22.7 °C (72.9) °F	27.1 °C (80.8) °F	29.9 °C (85.8) °F	30.6 °C (87) °F	29.5 °C (85.2) °F	28.1 °C (82.6) °F	27.9 °C (82.2) °F	27.6 °C (81.6) °F	26.3 °C (79.4) °F	23.3 °C (74) °F	20.1 °C (68.1) °F
Min. Temperature °C (°F)	12.9 °C (55.3) °F	16.5 °C (61.7) °F	21.4 °C (70.5) °F	25.5 °C (77.8) °F	26.9 °C (80.5) °F	27 °C (80.5) °F	26.1 °C (78.9) °F	25.8 °C (78.4) °F	25.3 °C (77.5) °F	23 °C (73.4) °F	18.4 °C (65.1) °F	14.5 °C (58.1) °F
Max. Temperature °C (°F)	25.3 °C (77.5) °F	29 °C (84.1) °F	33.3 °C (91.9) °F	35.7 °C (96.2) °F	35.4 °C (95.7) °F	33.1 °C (91.6) °F	31.1 °C (87.9) °F	31 °C (87.7) °F	30.8 °C (87.5) °F	30.2 °C (86.3) °F	28.5 °C (83.3) °F	25.9 °C (78.6) °F
Precipitation / Rainfall mm (in)	12 (0)	27 (1)	35 (1)	63 (2)	127 (5)	277 (10)	365 (14)	312 (12)	260 (10)	135 (5)	32 (1)	11 (0)
Humidity (%)	64%	61%	59%	67%	73%	81%	85%	86%	87%	82%	70%	65%
Rainy days (d)	1	2	3	6	9	16	21	21	18	10	2	1
avg. Sun hours (hours)	9.1	9.3	9.7	9.7	8.9	8.7	8.2	7.8	7.8	8.3	8.9	8.8

Data: 1991 - 2023 Min. Temperature °C (°F), Max. Temperature °C (°F), Precipitation / Rainfall mm (in), Humidity, Rainy days. Data: 1999 - 2023: avg. Sun hours.

Source: <https://en.climate-data.org/asia/india/west-bengal/kolkata-2826>

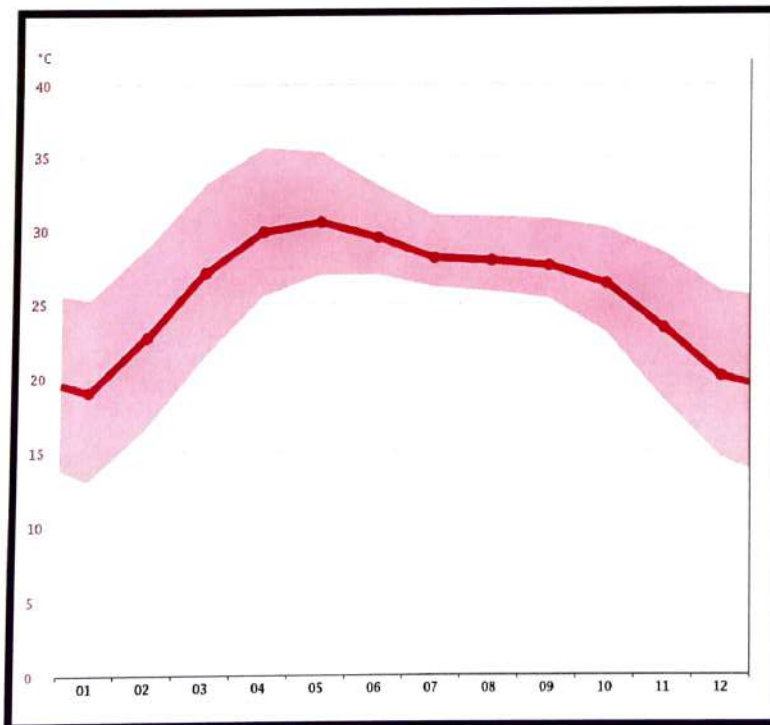


### RAINFALL-TEMPERATURE GRAPH OF KOLKATA



Data source: <https://en.climate-data.org/asia/india/west-bengal/kolkata-2826>

### AVERAGE TEMPERATURE BY MONTH IN KOLKATA



Data source: <https://en.climate-data.org/asia/india/west-bengal/kolkata-2826>



## INTERNAL QUALITY ASSESSMENT CELL (IQAC)

In order to advance long-term quality standards, recognized institutions must establish Internal Quality Assurance Cells (IQACs). The INTERNAL QUALITY ASSESSMENT CELL (IQAC), a crucial part of the college's administration, enhances the campus's quality culture. IQAC's adventure began on December 18, 2009. The IQAC works to ensure that all participants maintain high standards so they can assume leadership roles in the demanding future environment. It works in tandem with non-teaching personnel, teachers, administrators, and students to ensure quality maintenance and coordination.

The IQAC team evaluates the adequacy of the facilities provided to stakeholders. Any new ideas for improving postsecondary education research and instruction standards are warmly welcomed by the IQAC team. Every academic session, IQAC follows a predetermined plan of activity.

### PLAN OF ACTION:

A Green Campus is a place where environmentally friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social, and economic needs of the mankind. Keeping these facts in mind, the college's IQAC ensures to implement the Green Audit idea on campus as a regular activity, with the following goals in mind:

- To create and announce the college's green policy.
- To increase the stakeholders' knowledge and sensitivity of the various environmental issues and dangers that the college and its surroundings face.
- To establish a set of "green standards" that the college will always strive to meet.
- To have a professional third-party auditor provide expert advice on how to promote environmentally friendly operations.



# EXECUTIVE SUMMARY

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To discover and ascertain whether an institution's actions are ecologically sound and sustainable, green auditing is a crucial first step. We have always been honest and productive consumers of the environment. However, excessive use of resources such as petrol, electricity, and water has become ingrained in everyone over time, particularly in urban and semi-urban areas.

All these procedures are standardized by green audit, which also offers an effective method of using natural resources. It is vital to reevaluate the procedures and transform them into green and sustainable ones in the face of resource depletion and climate change. A method for it is provided by green audit. Additionally, it raises general understanding of environmental sustainability among those employed by the organization.

The primary focus of this audit was on greening indicators, such as the campus's carbon footprint, waste management procedures, soil and water quality, vegetation, and power and fossil fuel consumption. The Internal Quality Assessment Cell (IQAC) of Rani Birla Girl's College in Kolkata, West Bengal, on behalf of the Principal, requested that the auditor perform a Green Audit of the campus in compliance with the Green Campus Evaluation Plan.

On 8<sup>th</sup> December 2022, the auditor paid a visit to the college campus and carried out a field survey. The Principal's information and baseline data were examined and recorded as the study's backdrop. The team gathered field data on the campus's floristic variety in addition to other elements as required by the Green Audit. Physical inspection revealed that, while being a degree-granting institution, this college primarily focuses on providing high-quality education in the Arts and Geography streams. The college does not now have the necessary facilities for a science stream. Nevertheless, despite having very little funding, the college's administration, and Internal Quality Assessment Cell (IQAC) have organized and maintained several environmentally friendly activities on campus.

During the campus visit, it was also noted that certain departments have excellent instrumentation and development. Notably, the geography department offers excellent infrastructure for funded projects and is well-stocked with tools and maps. In the little space that it has, the library section is kept in good condition. The LED bulbs were found to be in use, which is a fantastic move to save electricity. In addition, work was underway to prepare the soil for the medicinal plant garden development on the vacant property, and the college



administration stated that the garden will be developed soon, if there are enough funds. Additionally, it has been noted that, should funding be available, the institution may be encouraged to offer biological science courses. This will enable it to better maintain its medicinal plant garden and employ environmentally and eco-friendly practices.

The audit's goal was to confirm that campus procedures adhered to the environmental policy the university had embraced. The development and completion of a questionnaire, a campus tour, an examination and assessment of the documentation, key person interviews, data analysis, measurements, and suggestions were all part of the approach. It focuses on several aspects of a "Green Campus," such as waste management, biodiversity mapping, energy efficiency, and plantation management. Considering this, the audit's specific goals were to assess the colleges' compliance with relevant laws, rules, and standards, as well as the suitability of the environmental sustainability management control structure. It can have a significant effect on the environment, learning college operating costs, and student health.

The primary conclusions of this college's current green audit indicate that, for the most part, all departments and students understand the significance and necessity of doing green, eco-friendly actions and conserving the environment. Additionally, it was noted that the school adheres to several green initiatives, including upkeep of a garden, tree planting, water conservation, good waste management, etc. Nevertheless, a thorough examination revealed that many of the institution's methods are still in their infancy and require more development because the college has very few resources, including land, staff, facilities, etc.

The care of the college's environmentally friendly buildings and campus, as well as the high standards in the curricular and extracurricular areas, demonstrate the commitment of the College Authority, especially the Principal, the Internal Quality Assessment Cell (IQAC), and the Department of Geography, despite the institution's limited funding. Through the introduction of good changes to the socioeconomic and educational condition of the state and the country, it gives an ideal vision of education and is responsive to the problems of a growing India in a globalized world.



# GREEN AUDIT – ANALYSIS

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## 1.1. FINDINGS ON FLORAL DIVERSITY OF THE CAMPUS

The goal of the Rani Birla Girls' College is to provide to its student wholistic education in a liberal, progressive, and enlightened setting. The institution is housed at Shakespeare Sarani, which is ideally located and easily accessible from the intersection of Jawaharlal Nehru Road and A.J.C. Bose Road.

The significant findings from the current visit to this college campus show that a considerable diversity of flora is supported despite the institution's tiny size. On campus, there are 42 taxa of plants, including trees, herbs, and shrubs (Table 1). The vast majority of plants are native to the area. Many plant species are important commercially and have therapeutic advantages.

The committee also observed that there are currently very few name plates for the plants that are present in the gardens on the temporary sheets. The team recommends that plant name plates include the scientific name, local name (if available), family, and any known medicinal benefits in an effort to increase awareness among students and teachers. Furthermore, it will be very beneficial to conserve and catalogue the campus's biodiversity given its significance. It was also observed that a number of common animals and birds depend on the campus's greenery as a critical habitat. Therefore, proper, and sustainable management is required to maintain the campus's cleanliness and greenery.



Table 1. List of the Plant taxa recorded in the college campus

Sl. No.	Family	Scientific Name	Bengali Name	Common Name
1	Acanthaceae	<u>Justicia adhatoda L.</u>	বাসক	Vasaka/Malabar Nut
2	Acanthaceae	<u>Andrographis paniculata (Burm.f.) Wall. ex Nees</u>	কালমেঘ	Green Chiretta
3	Anacardiaceae	<u>Mangifera indica L.</u>	আম	Mango
4	Apocynaceae	<u>Plumeria pudica Jacq.</u>	কাঠচম্পা	Bridal Bouquet
5	Apocynaceae	<u>Alstonia scholaris (L.) R.Br.</u>	ছাতিম	Blackboard Tree
6	Araceae	<u>Dieffenbachia seguine (Jacq.) Schott</u>		Dumbcane
7	Araceae	<u>Epipremnum aureum (Linden &amp; André) G.S.Bunting</u>		Money Plant
8	Arecaceae	<u>Livistona chinensis (Jacq.) R.Br. ex Mart.</u>	সুৰাবুল	Chinese Fan Palm/ fountain palm
9	Arecaceae	<u>Cocos nucifera L.</u>	নারকেল	Coconut
10	Arecaceae	<u>Caryota mitis Lour.</u>		Fishtail Palm
11	Arecaceae	<u>Areca catechu L.</u>	সুপারি	Betel-nut Palm
12	Arecaceae	<u>Chrysalidocarpus lutescens H.Wendl.</u>		Palm
13	Asparagaceae	<u>Cordyline fruticosa (L.) A.Chev.</u>		Cordyline Plant
14	Asteraceae	<u>Tagetes erecta L.</u>	ফরাস গাঁদা	French marigold
15	Asteraceae	<u>Tridax procumbens L.</u>	ত্রিধারা	Coat Buttons
16	Asteraceae	<u>Cyanthillium cinereum (L.) H.Rob.</u>		
17	Cyperaceae	<u>Cyperus rotundus L.</u>		
18	Euphorbiaceae	<u>Codiaeum variegatum (L.) Rumph. ex A.Juss.</u>		Croton
19	Euphorbiaceae	<u>Euphorbia tithymaloides L.</u>	রাং চিতা	Redbird Flower
20	Euphorbiaceae	<u>Euphorbia hirta L.</u>	বারখেরিনি	Dove Milk
21	Euphorbiaceae	<u>Phyllanthus niruri L.</u>		
22	Euphorbiaceae	<u>Euphorbia milii Des Moul.</u>	কাঁটা মুকুট	Crown-of-thorns



23	<b>Euphorbiaceae</b>	<u>Acalypha indica L.</u>	মুক্তা ঝুরি	Indian Copperleaf
24	<b>Fabaceae</b>	<u>Tamarindus indica L.</u>	তৈতুল	Tamarind
25	<b>Fabaceae</b>	<u>Grona triflora (L.) H.Ohashi &amp; K.Ohashi</u>		
26	<b>Lecythidaceae</b>	<u>Couropita guianensis Aubl.</u>	নাগচম্পা /কামানগগালা	Cannon Ball tree
27	<b>Malvaceae</b>	<u>Hibiscus rosa-sinensis L.</u>	জবা	Chinese Hibiscus
28	<b>Meliaceae</b>	<u>Azadirachta indica A.Juss.</u>	নিম	Neon Tree
29	<b>Moraceae</b>	<u>Ficus benghalensis L.</u>	বট	Banyan tree
30	<b>Moraceae</b>	<u>Artocarpus heterophyllus Lam.</u>	কাঠাল	Jackfruit
31	<b>Myrtaceae</b>	<u>Syzygium cumini (L.) Skeels</u>	জাম	Java Plum
32	<b>Nyctaginaceae</b>	<u>Bougainvillea spectabilis Willd.</u>	বাগান বিলাস	Bougainvillea
33	<b>Poaceae</b>	<u>Cynodon dactylon (L.) Pers.</u>	দুর্বা	Scutch grass
34	<b>Poaceae</b>	<u>Digitaria ciliaris (Retz.) Koeler</u>		Southern Crabgrass
35	<b>Rubiaceae</b>	<u>Neolamarckia cadamba (Roxb.)</u>	কদম্ব	Kadamba
36	<b>Rubiaceae</b>	<u>Ixora pavetta Andrews</u>	রঙ্গন	
37	<b>Rubiaceae</b>	<u>Ixora coccinea L.</u>		
38	<b>Rubiaceae</b>	<u>Gardenia jasminoides J.Ellis</u>		
39	<b>Solanaceae</b>	<u>Solanum nigrum L.</u>		Grasses
40	<b>Verbenaceae</b>	<u>Duranta erecta L.</u>	কাটা মমগেন্দি	pigeon berry
41	<b>Verbenaceae</b>	<u>Clerodendrum infortunatum L.</u>	ভাংট, ঘঘংটু	





## 1.2. QUALITY ASSESSMENT OF SOIL AT RANI BIRLA GIRLS' COLLEGE:

Soil sample collection by the students for soil testing (13<sup>th</sup> December):

SOIL PROPERTIES	VALUE	REMARKS
pH	8.5	Strongly Alkaline
Nitrate Nitrogen	18 Lbs/acre	Medium
Ammoniacal Nitrogen	13 Lbs/acre	Low
Potassium	250 to 350 lbs/acre	High
Phosphate	Less than 20 lbs/acre	Very Low
Organic matter	Below 0.5%	Very Low
Salinity	0.1 PPT	Very Low

Source- Lab Report, Department of Geography, Rani Birla Girls' College





# RECOMMENDATIONS

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## SUGGESTIONS AND RECOMMENDATIONS

Based on observations and resource availability, the auditor makes the following recommendations during a green audit to the college authority, asking for their thoughtful consideration.

1. To raise awareness among students and teachers, all plants on campus must be properly identified with name plates that provide the plant's botanical name, family, local name, and any economic or medical significance.
2. By adding native medicinal (herbal) and commercially significant species, a tiny medicinal plant garden may be established on campus. (A proposed list is provided in table 2).
3. To raise general awareness among students about biodiversity conservation, campus events such as debates on environmental awareness, and green skill development may be arranged on a regular basis.
4. Increasing the variety of containers available can help the college's waste management efforts. Laboratory and non-biodegradable trash can be disposed of by working with a licensed, experienced company.
5. The biodegradable wastes can be turned into vermicompost or bio-compost, which can be utilised again for gardening to promote self-sustainability.
6. If available, energy-saving lightbulbs and electric appliances should be used to lower energy usage.
7. To preserve and enhance the campus's environmental health as well as that of its students and professors, the campus should undergo periodic assessment and green auditing.
8. Education-related graffiti featuring phrases and slogans from notable individuals, especially female scientists, might be strategically positioned to motivate students.
9. College campuses can install rainwater collection systems.



Table 2. Suggested Medicinal Plants for plantation in the College Garden.

Sl.No.	Name of the medicinal plants	Uses
1	<i>Rauvolfia serpentina</i> (L.) Benth. Ex Kurz	Hypertension, high blood pressure.
2	<i>Justicia adhatoda</i> L.	Bronchial disease, cough,
3	<i>Holarrhena pubescens</i> Wall. ex G. Don	Dysentery, Diarrhea, Fever, Diabetes, Malaria.
4	<i>Vitex negundo</i> L.	Skin disease, Eczema, Ringworm, Liver disorder, Spleen enlargement.
5	<i>Saraca asoca</i> (Roxb.) Willd.	Dysmenorrhea, Depression, Leucorrhoea
6	<i>Lawsonia inermis</i> L.	Skin disease, Anti-hemorrhagic, Leprosy
7	<i>Nyctanthes arbor-tristis</i> L.	Sciatica, Arthritis, Fever, Dry cough, Ringworm,
8	<i>Catharanthus roseus</i> (L.) G. Don	Diabetes, Malaria, Leukemia
9	<i>Aloe vera</i> (L.) Burm.f.	Antioxidants.
10	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson	Fever, Jaundice, Chronic Diarrhea, Cancer, Dysentery, Bone Fracture, Pain, Asthma, Skin Disease, Poisonous Insect & Snake Bite, Eye Disorders.
11	<i>Phyllanthus emblica</i> L.	Source of Vitamin C, Improves Immunity and nourishes eyes, hair and skin.
12	<i>Ocimum tenuiflorum</i> L.	Useful in Cough, Asthma and Fever, Anti-Oxidant
13	<i>Centella asiatica</i> (L.) Urb.	Diarrhea, Dysentery, Healing Property
14	<i>Oxalis corniculata</i> L.	Use for treatment of Influenza, Fever, Urinary Tract Infections, Enteritis, Diarrhea, Traumatic Injuries and Sprains.
15	<i>Eclipta prostrata</i> (L.) L.	Ayurvedic medicine, the leaf extract is considered a powerful liver tonic, rejuvenate, and especially good



## CONCLUSION

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Significant team discussions and meetings with important staff members on a range of environmental-related topics are part of this audit. The Rani Birla Girls' College nature club encourages resource protection with all, 40% of a college campus is covered with green space and 60% is used for landscaping. The College considers the environmental impact of most of its operations and makes a concerted effort to act in an environmentally friendly manner. Despite its generally good performance, the College can still strive to enhance its procedures and become a more sustainable organization by following the recommendations in this study.

It's crucial to start a few things, such drip irrigation and inspecting the tap flow. We also strongly suggest placing water balance reports and water meters for each building or block.



## REFERENCES

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- Relevant Indian Standard Code practices
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle Rules:1989 (Amended in 2005)
- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 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
- Energy Conservation Act 2010.
- E-waste management rules 2016
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)



## **ANNEXURE – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS**



Spacious and well equipped computer lab



Classrooms as per NBC guidelines with more than 40% window ratio



Color-coded Dustbins



Lush Green Campus



Gardening inside the College Campus



Installed Stop-watch in Water tank to prevent water wastage



Gardening inside the College Campus



Well-maintained College Campus



Poster making activities



Cleanliness drive



Cleanliness drive outside campus

\*\*\*\*\* END OF THE REPORT \*\*\*\*\*



# GREEN AUDIT REPORT, 2024



## RANI BIRLA GIRLS' COLLEGE

(Affiliated to The University of Calcutta)

38, SHAKESPEARE SARANI

KOLKATA: 700017 – West Bengal



By

**Dr. S.S. Dash, Scientist F**

**Dr. Sudhir Kumar Yadav, Botanist**

**Shri Saniav Kumar, Botanist**

**Botanical Survey of India, Kolkata**

(Ministry of Environment, Forest and Climate Change, Govt. of India)



# GREEN AUDIT REPORT, 2024



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## SUMMARY

The Green Audit, also referred to as an ‘*Environmental Audit*’ is the process of systematic identification, quantification, recording, reporting and analysis of components related to the environmental and eco-friendly approach of any establishments. Its main objective is to analyse and promote eco-friendly practices in the campuses with an aim to conserve biodiversity.

The rapid urbanization and economic and industrial development at local, regional, national and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutions which will lead to sustainable development. The National Assessment and Accreditation Council (NAAC) New Delhi has made it mandatory (Criteria # 7) that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility (CSR) of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures. Green Audit or Environment Audit focuses on the Carbon Footprint reduction measures being implemented by the College Management.

In accordance with the Green Campus Evaluation Plan, the **Principal, Rani Birla Girl’s College, Kolkata, West Bengal**, through its Internal Quality Assessment Cell (IQAC) requested the **Director, Botanical Survey of India, Kolkata** to conduct Green Audit of the campus *vide letter no. 312/Prin/2024, dated 19.01.2024 (Annex. 1)*.

In this regard, the scientific team of Botanical Survey of India, as a pioneer institution in the field of Plant Taxonomy and Floristic Survey, under the Ministry of Environment, Forest and Climate Change, Government of India, conducted Green Audit of the campus *vide letter no. BSI-295/1/2s024 – Tech. / 187, dated 15<sup>th</sup> March, 2024 (Annex. 1)*. The team visited the college campus on **16<sup>th</sup> March, 2024** and conducted a field survey. The information and baseline data provided by the Principal were reviewed and noted as background of this study. The team collected field data on floristic diversity of the campus along with other aspects as prescribed for the Green Audit. During physical verification, it was observed although, this college is a degree level college for imparting quality education in Arts stream only and also for Geography. Presently, the college does not have infrastructure for Science stream (Botany, Zoology, Physics, Chemistry, Maths, Environmental Science etc.). Even though, the college authority and the Internal Quality

Assessment Cell (IQAC) of the college have maintained and promoted many eco-friendly initiatives in its campus in well organised manner, in spite of very limited resources.

During visit to the campus, it was also observed that some of the departments are well developed and well equipped with instruments. Notably, the Geography department is well equipped with instruments and maps and has good infrastructure for undertaking sponsored projects. Similarly, the Physics and Chemistry departments have also many scientific instruments for supporting practical classes. The library section is well maintained in its limited available space. In order to save electricity, the LED bulbs were found in use, which is a good initiative. Similarly, for the conservation of the rain water, the college authority informed that, under CSR funds, the college is going to receive few water tanks as grants. Besides, for development of the Botanic Garden in the spare land, soil putting works was in progress, and the college authority informed that it is planned to develop a garden, if sufficient fund is available. Further, it is also observed that the college may be promoted for undertaking courses in Biological sciences (Botany, Zoology, Biotechnology etc.), if resources are available, which will help the college to maintain the botanic garden and also to implement the environmental and eco-friendly approached more effectively.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology included: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Plantation, Waste Management, Energy efficient measures and mapping of Biodiversity. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student health and learning college operational costs and the environment.

The main findings of the present green audit of this college show that, in general, all the departments and students are aware about the importance and need of a green and eco-friendly measures and environmental conservation. It was also observed that several green practices such as maintaining botanic garden, planting trees in the campus, water

conservation and proper maintenance of waste etc. are followed in the campus. However, on detailed review, it was observed that, as the college resources such as area, manpower, buildings etc. are very limited, many of the practices followed in the college are still in nascent stage and needs further nurture.

The dedication of the College Authority, particularly the Principal, the Internal Quality Assessment Cell (IQAC), and the Department of Geography of the college is well reflected by observing the maintenance of its eco-friendly buildings and campus, and also high standards in curricular and co-curricular spheres of the institution, with its limited resources. It offers an ideal vision of education and responsive to the challenges of an emerging India in a globalized world, by bringing in a positive difference in the socio economic-educational status of the state and the nation.

## INTRODUCTION

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

## GENERAL PROFILE OF THE COLLEGE

RANI BIRLA GIRLS' COLLEGE, Kolkata was established in July 1961 as an undergraduate arts college affiliated to the University of Calcutta by the Hindusthan Charity Trust in the memory of Rani Jogeshwari Devi Birla to serve as a women's educational institution and to impart a comprehensive learning programme to its students within an enlightened, liberal and progressive milieu. Undergoing a remarkable transformation, this college departed from its initial apparatus of governance (by a private Trust) to function as an aided institution under the Government of West Bengal.

The institution holds the distinction of being the bearer of a teaching and learning legacy of more than six decades and has been relentless in its pursuit of excellence. This college has maintained good academic performance with consistency. Co-curricular training and value-orientation have been equally prioritized within the institutional agenda. The college is very conveniently located on Shakespeare Sarani and is easily accessible from both the A.J.C. Bose Road and Jawaharlal Nehru Road intersections of Shakespeare Sarani. It is adjacent to Bharatiya Bhasha Parishad and Macpherson Square.



Figure 1: Front view of the College from Main Road side





**Figure 2: View of the College from inside the campus**

**Vision:**

The college was established with an inspirational vision to serve as an ideal seat of learning aimed at promoting higher education and holistic development of young women learners of diverse social and economic background within a liberal, progressive and enlightened milieu.

**Mission:**

As a premier and reputed institution committed to the goal of women's empowerment through higher education, the institutional mission is oriented to motivating learners to achieve distinction in academic, administrative and cultural spheres and to venture into self-employment or entrepreneurship.

## **INTERNAL QUALITY ASSESSMENT CELL (IQAC)**

The establishment of Internal Quality Assurance Cell (IQAC) by accredited institutions is a major step in pushing long-term quality standards. An essential component of the college's administration, the INTERNAL QUALITY ASSESSMENT CELL (IQAC) adds to the campus's quality culture. The journey of IQAC commenced on December 18, 2009. The IQAC strives to make sure that everyone who is involved upholds high standards so they can be in positions of leadership in the challenging climate of the future. It collaborates with administrators, non-teaching staff, teachers, and students to guarantee coordination and upkeep of quality.

The suitability of the facilities offered to stakeholders is assessed by the IQAC team. The IQAC team welcomes any fresh suggestions for raising the standard of instruction and research in postsecondary education. IQAC has a set course of action for every academic session.

### **Plan of action:**

A Green Campus is a place where environmental friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind. Keeping these facts in mind, the college's IQAC ensures to implement the Green Audit idea on campus as a regular activity, with the following goals in mind:

- To create and announce the college's green policy.
- To increase the stakeholders' knowledge and sensitivity of the various environmental issues and dangers that the college and its surroundings face.
- To establish a set of "green standards" that the college will always strive to meet.
- To have a professional third-party auditor provide expert advice on how to promote environmentally friendly operations.

## **GREEN AUDITING**

The college has implemented the "Green Campus" concept to promote sustainability and environmental preservation. The three primary pillars are: 100% of graduates exhibiting environmental literacy; zero environmental footprint; and positive influence on occupant health and performance. Reducing energy, water, and CO<sub>2</sub> emissions while fostering a healthy and educational environment for students is the aim.

### **OBJECTIVES:**

The Green Audit has gained significant importance in recent times for an institution's self-evaluation, as it indicates the institution's contribution to addressing the current environmental issues. Since its founding, the college has made an effort to maintain a clean atmosphere. As a result, the current green audit's goals are to identify, measure, characterise, and order the environmental sustainability framework in accordance with the laws, rules, and guidelines that apply. The primary goals of doing a Green Audit are:

- Mapping the college's geographic location
- To record the variety of plants and animals at the college
- To record the weather conditions in Kolkata, the college's location
- To document the condition of the surrounding water, air, weather, and noise levels.
- To document the meteorological parameters of Kolkata, the location of the college
- To record the waste disposal system.
- To calculate the college's energy needs.

### **METHODOLOGY:**

Rani Birla Girls' College is conducting a green audit to make sure that campus policies and practices align with the nation's green policy. The process consists of data collection, campus physical inspection, documentation observation and review, and data analysis.

## FINDINGS ON FLORAL DIVERSITY OF THE CAMPUS

RANI BIRLA GIRLS' COLLEGE, Kolkata was established in July 1961 as an undergraduate arts college affiliated to the University of Calcutta by the Hindusthan Charity Trust in the memory of Rani Jogeshwari Devi Birla to serve as a women's educational institution and to impart a comprehensive learning programme to its students within an enlightened, liberal and progressive milieu. The college is very conveniently located on Shakespeare Sarani and is easily accessible from both the A.J.C. Bose Road and Jawaharlal Nehru Road intersections of Shakespeare Sarani. It is adjacent to Bharatiya Bhasha Parishad and Macpherson Square.

The important findings of the present visit of this college campus show that though the area of the campus is very limited, however it supports significant diversity of flora. The campus is flourished with **42** taxa of plants, ranging from herbs to shrubs and trees (**Table 1**). Most of the plants are native species. Many of the plant species are economically important with medicinal values.

The team also observed that presently, only few name plates for the plants present in the gardens are provided on the temporary sheets. Therefore, the team recommends that name plates of plants, mentioning the scientific name, local name (if available) with family, and their medicinal uses, if available, may be tagged for spread awareness among the students and faculty members. Further, considering the importance of biodiversity, proper maintenance and cataloguing of biodiversity of the campus will be of significant use. Besides the plants available in the campus (as mentioned under table 1), BSI team also suggested for development of a small medicinal Garden in the available space and plantation of common medicinal plants as suggested (**Table 2**). Besides, It was also observed that the flora of the campus support significantly as habitats for many common birds and animals. Therefore, it should be maintained properly and sustainably in order to maintain a green and clean campus.

**Table 1. List of the Plant taxa recorded in the college campus**

Sr. No.	Family	Scientific Name	Bengali Name	Common Name
1.	Annonaceae	<i>Monoon longifolium</i> (Sonn.) B. Xue & R. M. K. Saunders		False Ashoka
2.	Lecythidaceae	<i>Couropita guianensis</i> Aubl.	নাগচম্পা / কামানগোলা	Cannon Ball tree
3.	Meliaceae	<i>Azadirachta indica</i> A.Juss.	নিম	Neeon Tree
4.	Acanthaceae	<i>Justicia adhatoda</i> L.	বাসক	Vasaka/ Malabar Nut
5.	Moraceae	<i>Ficus benghalensis</i> L.	বট	Banyan tree
6.	Arecaceae	<i>Livistona chinensis</i> (Jacq.) R.Br. ex Mart.	সুবাবুল	Chinese Fan Palm/ fountain palm
7.	Anacardiaceae	<i>Mangifera indica</i> L.	আম	Mango
8.	Euphorbiaceae	<i>Codiaeum variegatum</i> (L.) Rumph. ex A.Juss.		Croton
9.	Araceae	<i>Dieffenbachia seguine</i> (Jacq.) Schott		Dumbcane
10.	Myrtaceae	<i>Syzygium cumini</i> (L.) Skeels	জাম	Java Plum
11.	Apocynaceae	<i>Plumeria pudica</i> Jacq.	কাঠচম্পা	Bridal Bouquet
12.	Arecaceae	<i>Cocos nucifera</i> L.	নারকেল	Coconut
13.	Rubiaceae	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	কদম্ব	Kadamba
14.	Araceae	<i>Epipremnum aureum</i> (Linden & André) G.S.Bunting		Money Plant
15.	Arecaceae	<i>Caryota mitis</i> Lour.		Fishtail Palm
16.	Arecaceae	<i>Areca catechu</i> L.	সুপারি	Betel-nut Palm
17.	Asparagaceae	<i>Cordyline fruticosa</i> (L.) A.Chev.		Cordyline Plant
18.	Moraceae	<i>Artocarpus heterophyllus</i> Lam.	কাঁঠাল	Jackfruit
19.	Arecaceae	<i>Chrysalidocarpus lutescens</i> H.Wendl.		Palm
20.	Apocynaceae	<i>Alstonia scholaris</i> (L.) R.Br.	ছাতিম	Blackboard Tree
21.	Verbenaceae	<i>Duranta erecta</i> L.	কাটা মেহেন্দি	pigeon berry
22.	Rubiaceae	<i>Ixora pavetta</i> Andrews	স্বৈত রঙ্গন	
23.	Rubiaceae	<i>Ixora coccinea</i> L.		
24.	Malvaceae	<i>Hibiscus rosa-sinensis</i> L.	জবা	Chinese Hibiscus
25.	Euphorbiaceae	<i>Euphorbia tithymaloides</i> L.	রং চিতা	Redbird Flower

26.	Asteraceae	<i>Tagetes erecta</i> L.	ফরাসি গাঁদা	French marigold
27.	Euphorbiaceae	<i>Euphorbia hirta</i> L.	দুধিয়া/ বারোকানি	Dove Milk
28.	Euphorbiaceae	<i>Phyllanthus niruri</i> L.		
29.	Nyctaginaceae	<i>Bougainvillea spectabilis</i> Willd.	বাগান বিলাশ ফুল	Bougainvillea
30.	Acanthaceae	<i>Andrographis paniculata</i> (Burm.f.) Wall. ex Nees	কালমেঘ	Green chiretta
31.	Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	দূর্বা	Scutch grass
32.	Asteraceae	<i>Tridax procumbens</i> L.	ত্রিধারা	Coat Buttons
33.	Fabaceae	<i>Tamarindus indica</i> L.	তৈতুল	Tamarind
34.	Solanaceae	<i>Solanum nigrum</i> L.		Grasses
35.	Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koeler		Southern Crabgrass
36.	Euphorbiaceae	<i>Euphorbia milii</i> Des Moul.	কাঁটা মুকুট	Crown-of- thorns
37.	Euphorbiaceae	<i>Acalypha indica</i> L.	মুক্তবুরি	Indian Copperleaf
38.	Asteraceae	<i>Cyanthillium cinereum</i> (L.) H.Rob.		
39.	Fabaceae	<i>Grona triflora</i> (L.) H.Ohashi & K.Ohashi		
40.	Rubiaceae	<i>Gardenia jasminoides</i> J.Ellis		
41.	Verbenaceae	<i>Clerodendrum infortunatum</i> L.	ভাংট, ঘৈংটু	
42.	Cyperaceae	<i>Cyperus rotundus</i> L.		

**Table 2. Suggested Medicinal Plants for plantation in the College Garden.**

SL. No.	Name of the medicinal plants	Uses
1	<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	Hypertension, high blood pressure.
2	<i>Justicia adhatoda</i> L.	Bronchial disease, cough,
3	<i>Holarrhena pubescens</i> Wall. ex G. Don	Dysentery, diarrhoea, fever, diabetes, malaria.
4	<i>Vitex negundo</i> L.	Skin disease, Eczema, ringworm, liver disorder spleen enlargement.
5	<i>Saraca asoca</i> (Roxb.) Willd.	Dysmenorrhoea, Depression, leucorrhoea

6	<i>Lawsonia inermis</i> L.	Skin disease, anti hemorrhagic, leprosy
7	<i>Nyctanthes arbor-tristis</i> L.	Sciatica arthritis, fever, dry cough ringworm,
8	<i>Catharanthus roseus</i> (L.) G.Don	Diabetes, malaria, leucomia
9	<i>Aloe vera</i> (L.) Burm.f.	Aantioxidants.
10	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson	Fever, jaundice, chronic diarrhea, cancer, dysentery, bone fracture, pain, asthuma, skin disease, poisonous insect, snake bite, eye disorders.
11	<i>Phyllanthus emblica</i> L.	Source of Vitamin C, Improves Immunity and nourishes eyes, hair and skin.
12	<i>Ocimum tenuiflorum</i> L.	Useful in cough, asthma and fever, anti-oxidant
13	<i>Centella asiatica</i> (L.) Urb.	Diarrhoea, dysentery, healing property
14	<i>Oxalis corniculata</i> L.	Use for treatment of influenza, fever, urinary tract infections, enteritis, diarrhoea, traumatic injuries and sprains.
15	<i>Eclipta prostrata</i> (L.) L.	Ayurvedic medicine, the leaf extract is considered a powerful liver tonic, rejuvenate, and especially good for the hair.

# INFRASTRUCTURE OF THE COLLEGE

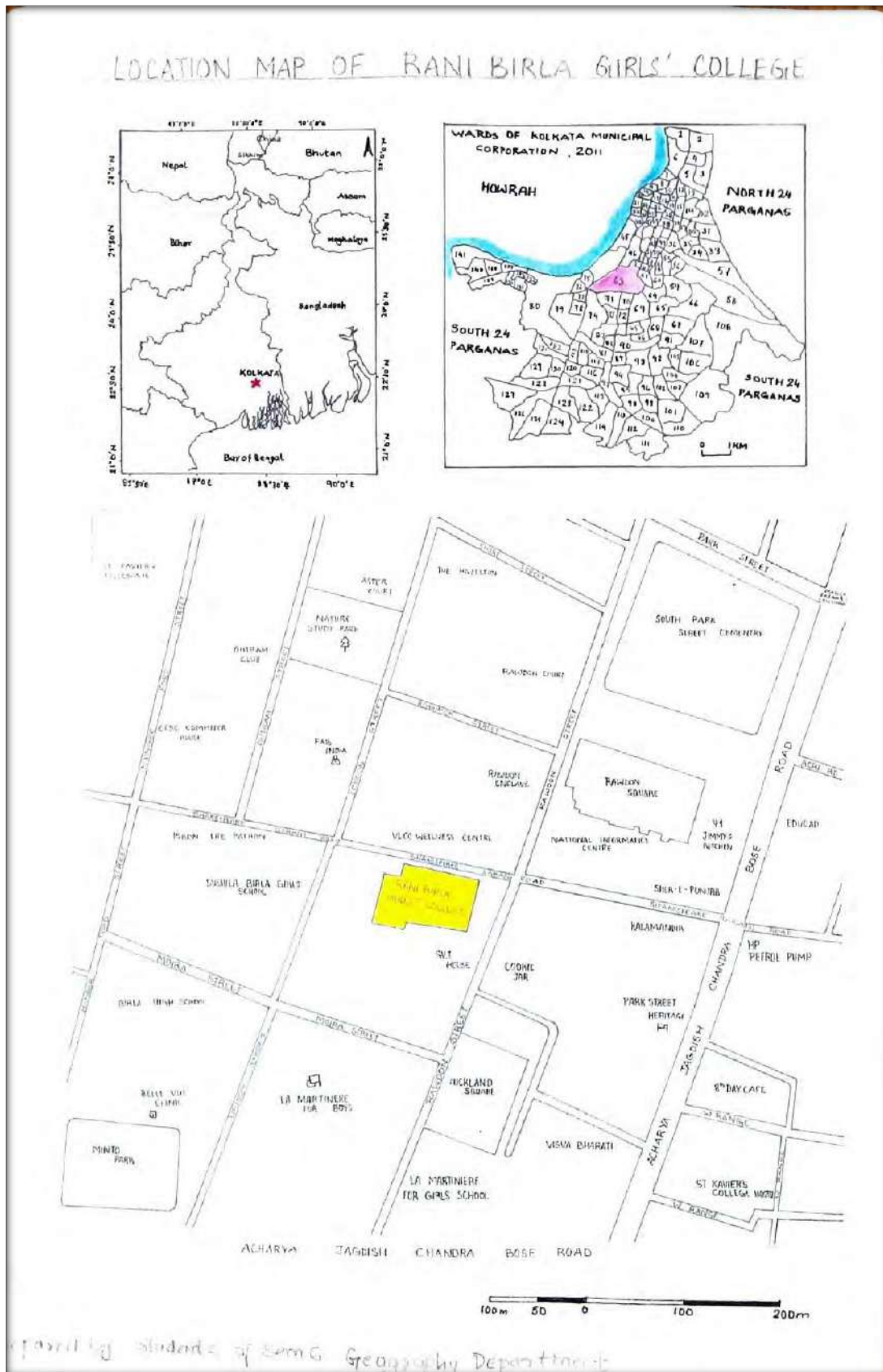
## GEOGRAPHICAL LOCATION:

Rani Birla College comes under the University of Calcutta and was established in the year 1961, imparting higher education in the field of Arts. It is located in a rented building in the heart of the capital of West Bengal and at a prime location i.e. Shakespeare Sarani, Kolkata at 22° 54'N and 88° 35' E. The college is running in a rented property with an area of 1 Bigha 4 Katha and 2 Chatak (nearly 32,535 sq. ft). out of the total area, 11,330 sq. ft is built-up. The premise has a playground of 8020 sq. ft area. The College admits students from all social milieus and empowers them through intensive mentoring and counselling to face the challenges of life and become responsible and sensitized citizens of the country. RBGC provides a caring and nurturing environment where students come into their own, blossoming into confident young women ready to face the world.



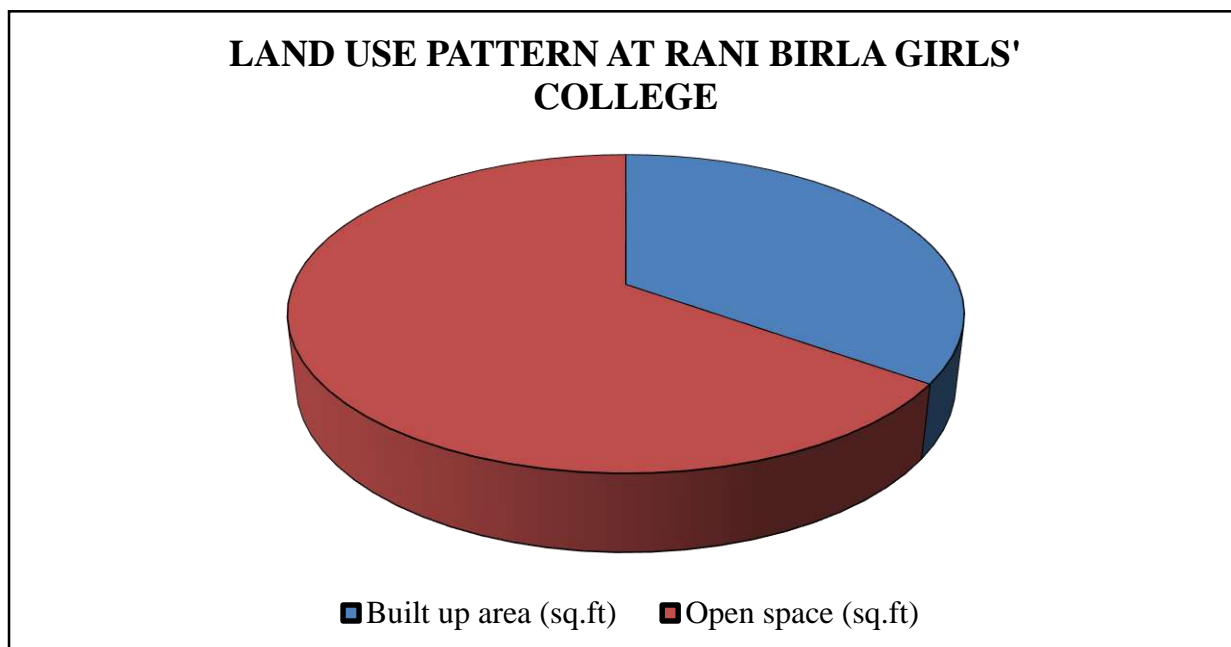


# LOCATION OF RANI BIRLA GIRLS COLLEGE

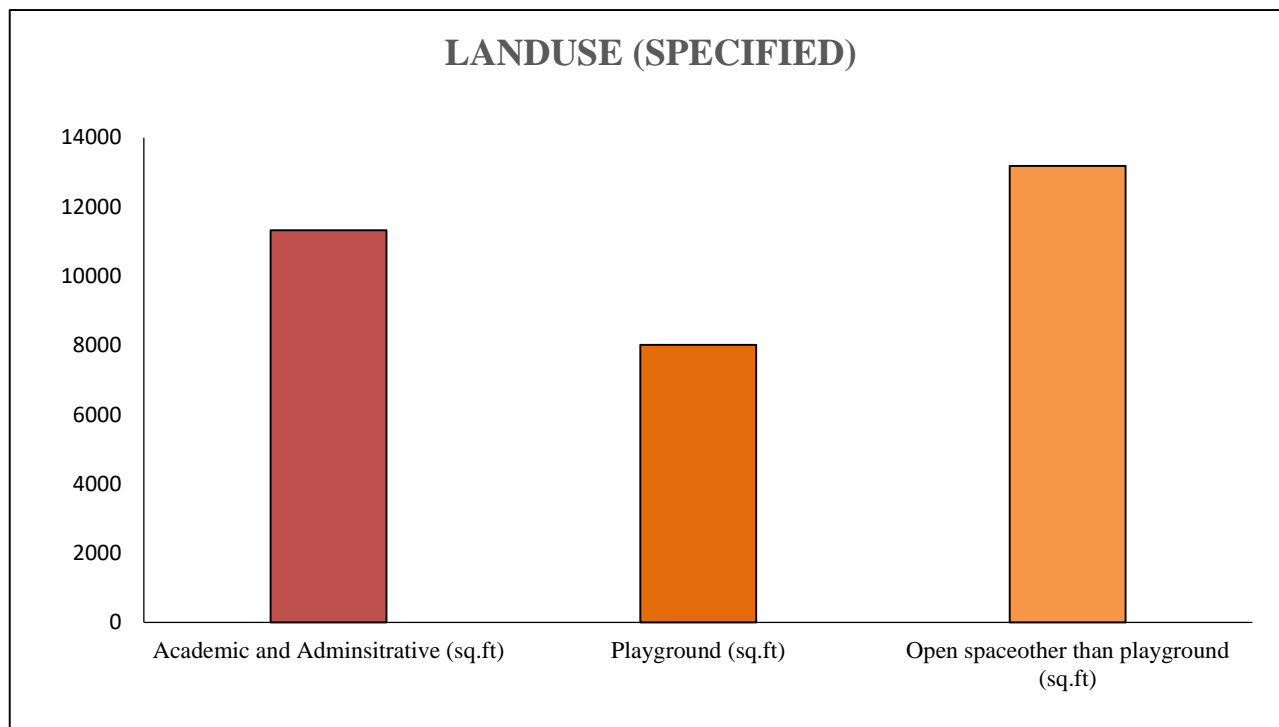


Building Name	Building Square Footage (m <sup>2</sup> )	Age of Building (years)	Purpose of Building	Number of Floors	Daily Operational Hours	Days of Use per Week	Average number of occupants
Main Building (Total Campus)	11,330 sq. ft	Nearly 80 years	Academic	3	8	6	700
Anex-I Building		Nearly 80 years	Academic	2	8	6	120
Anex-II Building		Nearly 80 years	Academic	2	8	6	50

LANDUSE	AREA IN SQ. FT
<b>BUILT UP AREA</b>	11330 sq.ft
<b>OPEN SPACE</b>	21205 sq.ft
<b>Total Area</b>	32535 sq.ft



LANDUSE (SPECIFIED)	AREA IN SQ. FT
Academic and Administrative (sq.ft)	11330
Playground (sq.ft)	8020
Open space other than playground (sq.ft)	13185



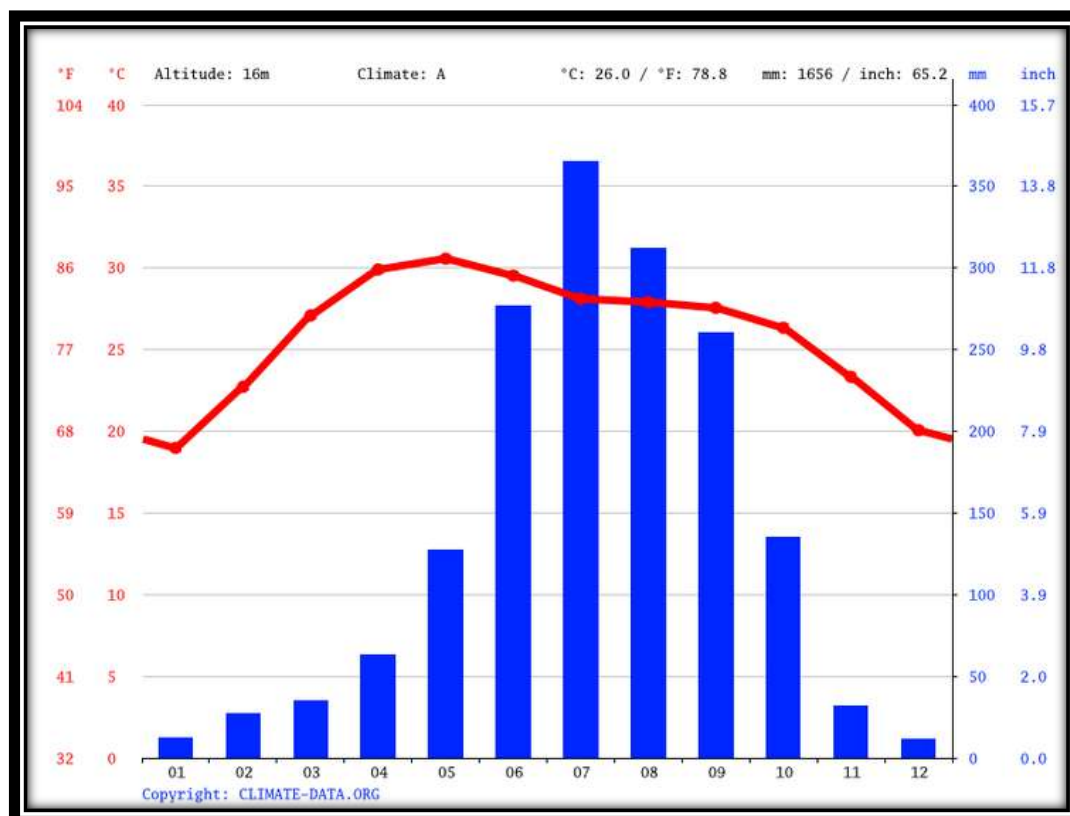
### Weather Data of Kolkata and Rani Birla Girls' College:

The Capital of West Bengal, Kolkata, and Rani Birla Girls' College in Kolkata experiences a tropical wet-and-dry climate (Köppen climatic classification Aw). The yearly mean temperature is 26.8 °C (80 °F), but monthly average temperatures range from 15 °C to 30 °C (59 °F to 86 °F).[1] Summers are hot and humid, with temperatures in the low 30s. During dry spells, maximum temperatures frequently approach 40 °C (104 °F) in May and June.[1] Winter typically lasts around two and a half months, with seasonal lows ranging from 9 to 11 degrees Celsius (48.2 to 51.8 degrees Fahrenheit) between December and January. The highest recorded temperature was 43.9 °C (111 °F), while the lowest was 5 °C (41 °F).

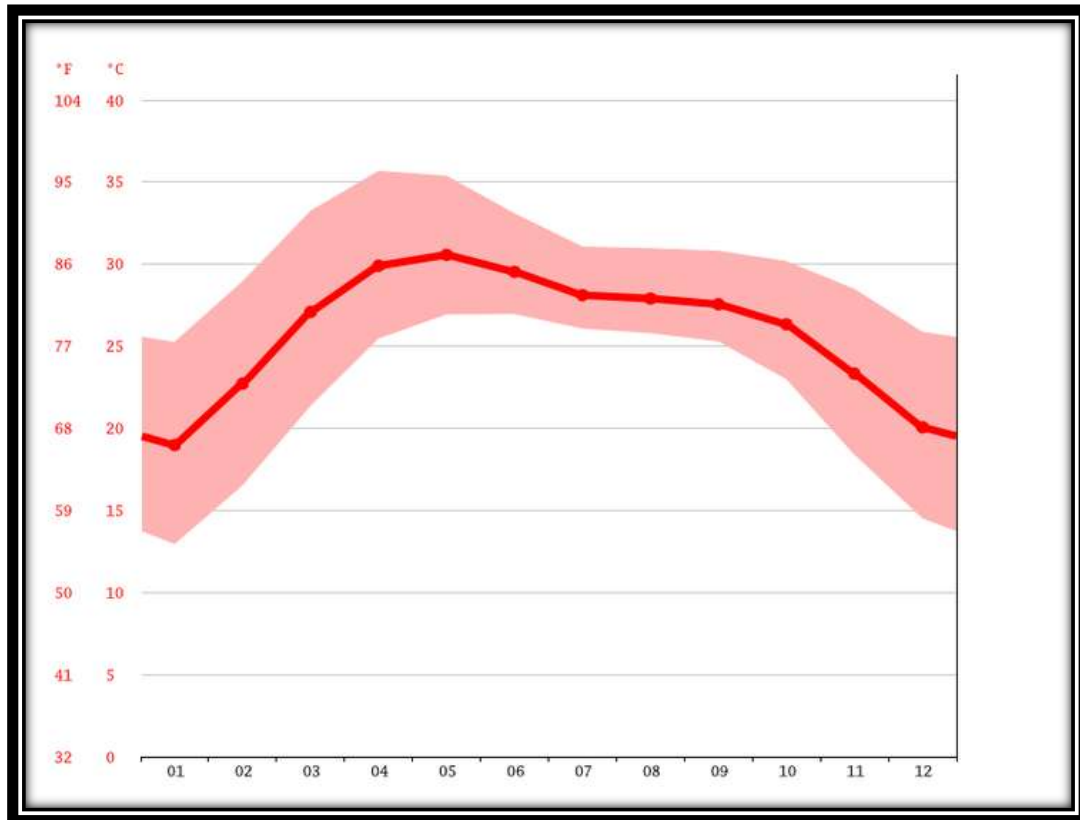
	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	19 °C (66.2) °F	22.7 °C (72.9) °F	27.1 °C (80.8) °F	29.9 °C (85.8) °F	30.6 °C (87) °F	29.5 °C (85.2) °F	28.1 °C (82.6) °F	27.9 °C (82.2) °F	27.6 °C (81.6) °F	26.3 °C (79.4) °F	23.3 °C (74) °F	20.1 °C (68.1) °F
Min. Temperature °C (°F)	12.9 °C (55.3) °F	16.5 °C (61.7) °F	21.4 °C (70.5) °F	25.5 °C (77.8) °F	26.9 °C (80.5) °F	27 °C (80.5) °F	26.1 °C (78.9) °F	25.8 °C (78.4) °F	25.3 °C (77.5) °F	23 °C (73.4) °F	18.4 °C (65.1) °F	14.5 °C (58.1) °F
Max. Temperature °C (°F)	25.3 °C (77.5) °F	29 °C (84.1) °F	33.3 °C (91.9) °F	35.7 °C (96.2) °F	35.4 °C (95.7) °F	33.1 °C (91.6) °F	31.1 °C (87.9) °F	31 °C (87.7) °F	30.8 °C (87.5) °F	30.2 °C (86.3) °F	28.5 °C (83.3) °F	25.9 °C (78.6) °F
Precipitation / Rainfall mm (in)	12 (0)	27 (1)	35 (1)	63 (2)	127 (5)	277 (10)	365 (14)	312 (12)	260 (10)	135 (5)	32 (1)	11 (0)
Humidity(%)	64%	61%	59%	67%	73%	81%	85%	86%	87%	82%	70%	65%
Rainy days (d)	1	2	3	6	9	16	21	21	18	10	2	1
avg. Sun hours (hours)	9.1	9.3	9.7	9.7	8.9	8.7	8.2	7.8	7.8	8.3	8.9	8.8

Data: 1991 - 2023 Min. Temperature °C (°F), Max. Temperature °C (°F), Precipitation / Rainfall mm (in), Humidity, Rainy days. Data: 1999 - 2023: avg. Sun hours. Source: <https://en.climate-data.org/asia/india/west-bengal/kolkata-2826>

### RAINFALL-TEMPERATURE GRAPH OF KOLKATA



## AVERAGE TEMPERATURE BY MONTH IN KOLKATA



**Quality Assessment of soil at Rani Birla Girls' College:**

Soil sample collection by the students for soil testing (27<sup>th</sup> March, 2024):



SOIL PROPERTIES	VALUE	REMARKS
pH	8.5	Strongly Alkaline
Nitrate Nitrogen	18 Lbs/acre	Medium
Ammoniacal Nitrogen	13 Lbs/acre	Low
Potassium	250 to 350 lbs/acre	High
Phosphate	Less than 20 lbs/acre	Very Low
Organic matter	Below 0.5%	Very Low
Salinity	0.1 PPT	Very Low

*Source- Lab Report, Department of Geography, Rani Birla Girls' College*

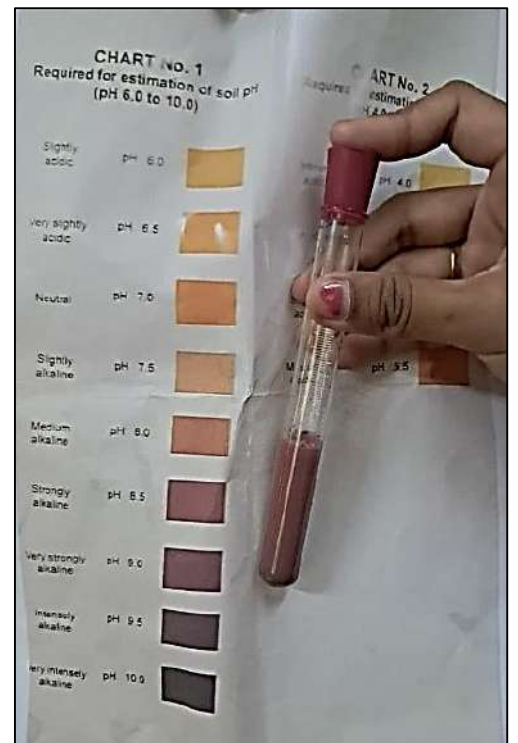


Figure 3: Scientific equipments available in the Geography Department



**Library4: Library facility available in college**



## **SUGGESTIONS AND RECOMMENDATIONS**

During Green Audit, based on the observation and availability of the resources, BSI team, recommends the following suggestions and recommendations, to draw the kind attention of the college authority.

- 1. All plants available in the campus need to be labelled with a proper name plate, mentioning its botanical name, family, local name and economic or medicinal importance, if any, to increase awareness among the students and faculty members.**
- 2. A small Medicinal Plant Garden in the campus may be developed in small space, by introducing indigenous medicinal (Herbal) and economically important plants (A suggested list is provided in table 2).**
- 3. Outreach activities on eco-friendly initiatives involving green skill development, environmental Awareness, debates on objectives of mission LiFE etc. may be organised in the campus regularly for increase general awareness among the students towards biodiversity conservation.**
- 4. Waste management of the college may be strengthened by increasing the number of different types of bins. Non-Biodegradable and laboratory waste may be disposed by engaging registered and professional agency can be done.**
- 5. The bio-degradable wastes may be used for generating bio-compost / vermi-compost that can be reused for gardening for self-sustainability.**
- 6. The energy saving bulbs and electric appliances, if left out at any places, should be used to reduce the energy consumption.**
- 7. Periodic review and green auditing of the campus should be conducted for maintaining and improving the environmental health of the campus as well as students and faculty members.**
- 8. The Graffiti on education quotes and slogans by the eminent personalities, particularly the women Scientists, may be placed suitably to inspire the student.**
- 9. The college may start courses in Biological sciences (Botany, Zoology, Biotechnology etc.) by arranging necessary resources. This will be an added advantage to maintain the botanic garden in the campus.**

## ACKNOWLEDGEMENT

The team is thankful to Dr. A.A. Mao, Director, Botanical Survey of India, Kolkata for granting permission and facilities for conducting green auditing of the College. The team also expresses gratitude to Dr. Srabanti Bhattacharya, Principal, Rani Birla Girls' College and Mrs. Sushmita Das, Co-ordinator of IQAC of Rani Birla Girls' College, Kolkata, West Bengal for extending support for green audit. The team is also thankful to the faculty members of Department of Geography of the College for their support. Special gratitude to Dr. Keya Dutta and Kamalika Paul, the convenors of Nature Club of the college.

## PHOTOGRAPHS OF THE CAMPUS



Figure 5: Front and back side view of the College building



**Figure 6: BSI team with Principal and faculties of the college.**



**Figure 7: Presentation on Green Audit and Mission LiFE to the students and faculties**



**Figure 8: Computes and digital resources available in college lab**



**Figure 9: Topographical maps available in Geography department**



**Figure 10: Dustbins available in the campus**



**Figure 11: Sanitary napkin vending machine available in the campus**



**Figure 12: Concrete block around the tree**



**Figure 13: Temporary name plates available for selected trees in the campus**



**Figure 3: Greenery inside the college campus**



**Figure 4: Plantation of **croton** in the campus garden**

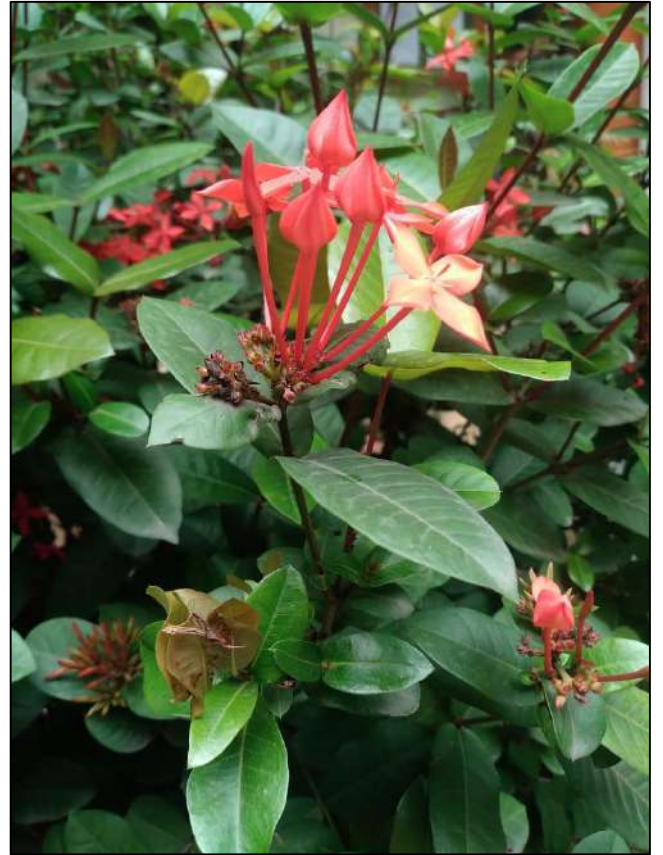




**Figure 5:** *Couroupita guianensis* Aubl. (Cannon Ball Tree) – A gigantic tree, with close up of inflorescence and flowers



*Hibiscus × rosa-sinensis* L.



*Ixora coccinea* L.



*Phyllanthus niruri* L.



*Solanum nigrum* L.

**Figure 6: Some common plants available in college garden**



*Andrographis paniculata* (Burm.f.) Nees



*Cyanthillium cinereum* (L.) H.Rob.



*Euphorbia hirta* L.



*Grona triflora* (L.) H.Ohashi & K.Ohashi



*Gardenia jasminoides* J.Ellis



*Ixora pavetta* Andrews

**Figure 7: Some common plants available in college garden**



Figure 8: Documentation of plants of the campus by BSI team



**Figure 20: Documentation and photography of the plants of the campus by BSI team**



**Figure 21: Interaction with IQAC faculty regarding maintenance of the garden in the college campus**

Annex. 1 : Communication for Green Audit



PHONE : 2287-5509 / 2283-5797  
**RANI BIRLA GIRLS' COLLEGE**  
38, Shakespeare Sarani  
Kolkata - 700 017  
GOVT. AIDED NAAC ACCREDITED

Letter No. 312/Prin/2024

Dr. Tiwari

To  
The Director  
Botanical Survey of India  
CGO Complex, 3<sup>rd</sup> MSO Building  
DF Block  
Sector-1 Saltlake City  
Kolkata-700064

Sumit  
25/1/2024  
Dr. Sudhir for hand.  
Sumit  
29/1/24

Subject: Applying for Green Audit

Date: 19/01/24.

Respected Sir/Madam,

I am pleased to inform you that, Rani Birla Girls' College, a government-aided undergraduate college (affiliated to University of Calcutta), Located at 38, Shakespeare Sarani, Kolkata-700017, are keen to conduct a green audit of our premises for the upcoming National Assessment and Accreditation Council (NAAC) process.

Rani Birla Girls' College is committed to sustainability and environmental responsibility and we think that a comprehensive green audit would allow us to improve our campus greenery. We therefore request you to kindly assist us in the green audit process of our institution by conducting the same with your expertise.

We look forward towards your kind response; we are also open to any discussions regarding the possibilities of any other program or campaign you suggest in this regard.

Thanking you and looking forward to your kind acceptance.

Warmest Regards,

S. Bhattacharya

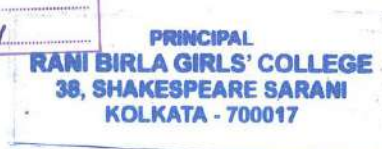
DR. Srabanti Bhattacharya

Principal

Contact Person  
Dr. Keya Shiva  
8777858264

keyadutta0205@rediffmail.com

TECHNICAL SECTION, OFFICE OF DIRECTOR, BSI,  
Div. No. T-424  
Date: 25.01.2024





भारत सरकार  
GOVERNMENT OF INDIA

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय  
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE



सत्यमेव जयते

स्पीड पोस्ट / SPEED POST



भारतीय वनस्पति सर्वेक्षण / BOTANICAL SURVEY OF INDIA  
सी.जी.ओ. कॉम्प्लेक्स / CGO COMPLEX  
तृतीय एम. एस. ओ. भवन / 3<sup>RD</sup> MSO BUILDING  
पाँचवाँ और छठा तल / 5<sup>TH</sup> & 6<sup>TH</sup> FLOOR  
डी एफ ब्लॉक, सेक्टर I / DF BLOCK, SECTOR I  
साल्टलेक, कोलकाता-६४ / SALT LAKE, KOLKATA - 700064  
Tel.: (033) 2321 4050 [Tech. Section] ; E-mail: tech@bsi.gov.in

फाइल संख्या/File No. BSI-295/1/2024-Tech.

दिनांक /Date: 15<sup>th</sup> March, 2024

### आदेश/ORDER

Approval of the Competent Authority, Botanical Survey of India is hereby conveyed for the tour of the following officials of BSI from their respective place of posting to Shakespeare Sarani, Kolkata for the purpose and date mentioned below:

Sl. No.	Name and Designation	Duration of tour approved	Purpose of visit
i.	Dr. Sudhir Kumar Yadav Botanist BSI-Hqtrs., Kolkata	16 <sup>th</sup> March, 2024	To conduct the Green Audit at Rani Birla Girls' College, 38, Shakespeare Sarani, Kolkata - 700017 on 16 <sup>th</sup> March, 2024.
ii.	Shri. Sanjay Kumar Botanist BSI-CNH, Howrah	16 <sup>th</sup> March, 2024	-DO-

The expenditure involved in this regard will be borne by the Rani Birla Girls' College, 38, Shakespeare Sarani, Kolkata - 700017.

(उमेशकुमार ल. तिवारी / Umeshkumar L. Tiwari)  
वैज्ञानिक डी / Scientist D

For, प्रभारी, तकनीकी अनुभाग/ In-Charge, Tech. Section

Distributions:

1. Officials concerned.
2. H.o.O., BSI- Hqtrs./ BSI-CNH, for information.
3. Principal, Rani Birla Girls' College, 38, Shakespeare Sarani, Kolkata - 700017, for information and necessary action w.r.t. the letter No. 312/Prin/2024, dated 19.01.2024.

7635-7639)  
प्रेषित / DESPATCHED  
जाय  
15/03/24





View of a gigantic tree of *Couroupita guianensis* Aubl. (Cannon Ball Tree) in college campus



**ENERGY**

**AUDIT**

**REPORT**

**Link as hosted on the official  
website of the college:**

**[https://www.rbgc.ac.in/Audit-Reports/Energy\\_Audit\\_2022-23.pdf](https://www.rbgc.ac.in/Audit-Reports/Energy_Audit_2022-23.pdf)**

# RANI BIRLA GIRLS' COLLEGE

Affiliated to The University of Calcutta

38, SHAKESPEARE SARANI  
KOLKATA: 700017



## ENERGY AUDIT REPORT

PERIOD OF ASSESSMENT

APRIL 2022 – MARCH 2023

*Debiprasad Maiti*  
12/06/23

Debiprasad Maiti  
MBA (Power), B.Tech (Elec), Assistant Engineer  
West Bengal Medical Services Corporation Ltd.  
(wholly owned by Govt. of W.B.)

**Audited By:**

**Debiprasad Maiti**

**B.Tech( Elec) Assistant Engineer**

**West Bengal Medical Services Corporation Ltd.**

## **Acknowledgement**

The Auditors places on record its sincere thanks to the management of Rani Birla Girls' College, University of Calcutta for their interest and cooperation for conduction detailed Energy Audit. The interactions and deliberations with Rani Birla Girls' College, Shakespeare Sarani (Kolkata), team were exemplary and the whole exercise was thoroughly a rewarding experience.

We thank the team members involved for providing all necessary coordination and information. The study team acknowledges the vital support and contributions of Dr. Srabanti Bhattacharya, Principal, Rani Birla Girls' College, University of Calcutta. e-mail: [rbgcprincipal@gmail.com](mailto:rbgcprincipal@gmail.com)

Our sincere gratitude goes to Ms. Sushmita Das, IQAC Coordinator, Rani Birla Girls' College.

We thank Dr. Keya Dutta, Assistant Professor in History for coordinating the process of Energy Audit.

We also thank Department of Geography, Rani Birla Girls' College, especially Dr. Chalantika Laha Salui, Assistant Professor for their all support and cooperation for making this report successfully.

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## **SECTION-1**

### **INTRODUCTION**

#### **1.1 Background**

Availability and utilization of energy drives the growth of economy and advancement of any country and thus, the demand of energy is increasing day by day. The worldwide mounting energy crisis with galloping cost hike, concern for environmental protection and open market competitive economy possesses serious challenge to Indian College to survive and grow.

One of the easier available options for survival is 'Energy Conservation' thereby saving environment and cost reduction through strategic energy management. It also gives a positive orientation to energy cost reduction, preventive maintenance and quality control programs. This is the translation of conservation ideas into reality by blending techno-economically feasible solutions within a specified time frame.

Energy conservation is a worldwide objective. The energy policy of the Government of India calls for conservation of energy. With the enactment of Energy Conservation Act-2001 amongst others has emphasized upon the power of the appropriate Govt. to enforce efficient use of energy and its conservation.

This study has mapped power system parameters at the source, Distribution Panels and various equipment's. It has also mapped illumination level at various activity areas in the RANI BIRLA GIRLS COLLEGE, where the team was permitted to enter for the study. The study could identify concerned problem areas, barriers towards maintaining right use of available facilities and come out with cost effective solutions. It also recommends cost effective and fast pay back solutions for performance improvement of all the systems.

#### **1.2 Objective of the Study**

The objective of the study is to assess overall efficiency of the various systems and defined pacific energy consumption of the public building and make recommendations about potential energy saving opportunities, based on the observation of energy audit.

- Electrical Structural details
- Use & occupancy of the building.

- Energy supply features
- Details of systems/equipment's/appliance etc.
- Quality of power

### **1.3 Methodology for Energy Audit**

Detail energy audit consists of evaluation of the present trend of energy consumption. Energy Audit activities, in general, include.

- The activity starts with collection of basic information and general overview of the - RANI BIRLA GIRLS COLLEGE -Based on the dissections with Dr. Srabanti Bhattacharya, Principal, RANI BIRLA GIRLS COLLEGE, University of Calcutta.
- RANI BIRLA GIRLS COLLEGE was requested to provide the electricity bills for last 1 year
- Identification of energy streams.
- Quantification of energy streams into discrete functions (system/ equipment's/ appliances etc.)
- Identification of energy and cost savings opportunities.
- Establish measurement and verification protocol i.e., objective measurement through meters by identifying measurement points.
- Required data collection, field measurements and analysis of data, etc.

The Deliverables are a report consisting of following:

- a) The main energy-consuming equipment's performance and the suggested energy-saving solutions.
- b) The financial computation of the associated investment and the rate of return.
- c) Assess the building's use and occupancy as well as the state of the structure and the equipment that supports its systems.

### **1.4 About Rani Birla Girls College, University of Calcutta**

Rani Birla Girls' College was established in July 1961 as an undergraduate arts college affiliated to the University of Calcutta by the Hindusthan Charity Trust in the memory of Rani Jogeshwari Devi Birla to serve as a women's educational institution and to impart a comprehensive learning programme to its students within an enlightened, liberal and

progressive milieu. Undergoing a remarkable transformation, this college departed from its initial apparatus of governance (by a private Trust) to function as an aided institution under the Government of West Bengal.

The institution holds the distinction of being the bearer of a teaching and learning legacy of more than six decades and has been relentless in its pursuit of excellence. This college has maintained good academic performance with consistency. Co-curricular training and value-orientation have been equally prioritized within the institutional agenda. The college is very conveniently located on Shakespeare Sarani and is easily accessible from both the A.J.C. Bose Road and Jawaharlal Nehru Road intersections of Shakespeare Sarani. It is adjacent to Bharatiya Bhasha Parishad and Macpherson Square.



### **1.5. Status of the college building**

Rani Birla College comes under the University of Calcutta and it is established in the year 1961, imparting higher education in the field of Arts. It is located in a rented building in the heart of the capital of West Bengal and in prime location i.e. Shakespeare Sarani, Kolkata. The college is running in the rented property with an area of 1 Bigha 4 Katha and 2 Chatak (nearly 32,535 sq. ft). out of the total area, 11,330 sq. ft is built-up. The premise has a playground of 8020 sq. ft area. The College admits students from all social milieus and empowers them through intensive mentoring and counselling to face the challenges of life and become responsible and sensitized citizens of the country. RBGC provides a caring and nurturing



environment where students come into their own, blossoming into confident young women ready to face the world.

Building Name	Building Square Footage (m <sup>2</sup> )	Age of Building (years)	Purpose of Building	Number of Floors	Daily Operational Hours	Days of Use per Week	Average number of occupants
Main Building (Total Campus)	11,330 sq. ft	Nearly 80 years	Academic and Administrative	3	8	6	700
Anex-I Building		Nearly 80 years	Academic and Administrative	2	8	6	120
Anex-II Building		Nearly 80 years	Academic	2	8	6	50

## **SECTION-2**

### **Electrical Supply & Billings**

#### **2.1. Energy Sources**

Electricity is the major energy sources of the college. Electricity is supplied by CESC, Kolkata. Diesel oil is being used in the DG sets for in-house generation of electricity during power cut.

#### **2.2. Energy Consumption**

For the Unit / college, the applicable CESC electrical tariff is in two parts i.e. a fixed cost (Demand Charges) and unit (kWh) rate. The average monthly unit consumption of the college is 1560.71 kVAh and the average monthly electricity bill amount is around Rs. 15,233/- (April 2022 to March 2023).

#### **2.3. DG Sets**

There is a DG set available in the college of capacity 63 kVA for in house generation of electricity. This control panel model of DG has rated voltage of 415v and rated current of 86.8 A. The DG is with rated frequency of 50 Hz. As the power supply is very good in the area so the running hour of DG set is very less. It is advisable to put an energy meter on each DG set then it would be easy to conduct the efficiency of DG set. This way, the operator could also note down the unit generation and oil consumed. The operator may record the operating parameters of the sets in the following manner in future.

The mechanical details like temperature, lube oil etc. should be in addition to the above. From the above data, the management may calculate the offices generated by the DG set in an hour and total diesel consumption. The offices generated per litre of diesel consumed can hence be calculated on an hourly basis. Thereafter, the monthly figures can be calculated in the similar fashion. It may be noted that the efficiency of the DG set depends largely on the operating load factor. The maximum efficiency of the DG set is available at about 80-85% load factor.

Annual average Electricity consumption as per electric bill			Diesel consumption (lit)	Diesel consumption Amount (Rs)	AMC (Rs)	Other Maintenance cost (Rs)
Duration	Electricity (kVA)	Electricity Cost (Rs)				
April 2022 to March 2023	1560.71	15233/-	20 lit	1854/-	10,620/-	3,000/-

#### 2.4. Air Conditioning

There are three window ACs. One in the Office and two in the ground floor of the main building. Two split Acs are installed in the 2<sup>nd</sup> Floor. Each one is with 1 ton capacity.

#### 2.5. Computer

There are all together 54 computers used in various departments as well as in college administration. In the main building, in ground floor, Principal's office and Geography Department have 11 desktop computers. Office in the ground floor of Anex-I building has 6 computers. In the first floor of main building, Library has 6 desktop computers, other departments like B.FAD and Zonal have 12 desktop computers. In the second floor, Journalism department has 9 desktop computers. In Anex-2 building, there are 10 desktop computers under C.M.E.V.

#### 2.6. CCTV Cameras

24 hours CCTV surveillance is available in the whole campus of the college. All together 11 active CCTV cameras and 2 surveillance screens are there. CCTV cameras are installed in the entrance of college. Other places like entrance of office, Principal's office and stairs, lobbies, library are under CCTV surveillance.

## SECTION-3

### Lights, Fans, Air-condition

#### 3.1 LIGHTING

Building Name	Floor	Light source	Light number	Type of light (Normal / CFL)	Wattage	Number of days institution open	Number of hours lights are left on each day
Main Building	Ground Floor	Tube light	32	CFL-21 Normal-11	40 watt each	6 days / week	8 hrs
	1st Floor	Tube light	49	CFL-43 Normal-06	40 watt each	6 days / week	8 hrs
	2nd Floor	Tube light	19	CFL-13 Normal-06	40 watt each	6 days / week	8 hrs
Annex Building	Anex-1	Tube light	18	CFL-11 Normal-07	40 watt each	6 days / week	8 hrs
	Anex-2	Tube light	8	CFL-04 Normal-04	40 watt each	6 days / week	8 hrs

#### 3.2. FAN

Saving on Replacement of Ceiling Fan with Energy Efficient fans	
Total no. of fan nos.	
Ground Floor	23
1st Floor	28
2nd Floor	22
Anex-1	14
Anex-2	09
running hours per day	8 hrs

### 3.3. AIR CONDITIONING LOAD

In the Unit/ college, there are 3 window AC of 1 ton capacity in ground floor and office. Two 2 star rated Split AC in the second floor. Air-conditioners to maintain comfort temperature in the Auditorium/ office etc. Package units are installed mainly for the Auditorium. Due to the study being done in winters, the Energy efficiency assessment could not be done for the ACs. It is recommended that whenever new split/ window ACs are being installed, it should be 5 stars rated. Filters of package units were also checked during study which was found very clean. Energy Consumption in star rated split office is given above for information.

Star rated window ACs are also available in the market. It also consumes similar power as there in split office. Proper cleaning of ACs is very important for its output performance. At least, once in two months cleaning of ACs filter is recommended during the season.

AC				
Building Name	Floor	No. of AC	Type of AC	Capacity
Main Building	Ground Floor	2	Window	1 ton
	2nd Floor	2	Split **	1 ton
Annex Building	Anex-1	1	Window	1 ton

### 3.4. COMPUTERS

Building Name	Floor	Type of Computer	Number of Computer	Usage duration / day	Number of days institution open
Main Building	Ground Floor	Desktop	11	8 hrs	6 days / week
	1st Floor	Desktop	18	8 hrs	6 days / week
	2nd Floor	Desktop	9	8 hrs	6 days / week
Annex Building	Anex-1	Desktop	6	8 hrs	6 days / week
	Anex-2	Desktop	10	8 hrs	6 days / week

### 3.4. CCTV CAMERAS

Building Name	Floor	Number of CCTV camera
Main Building	Ground Floor	4
	1st Floor	4
	2nd Floor	1
	3 <sup>rd</sup> Floor	2

## SECTION – 4

### Recommendation

#### Fans

- Employ fan blades designed like aero foil.
- Turn off fans when not in use.

#### Lighting

- Make use of occupancy sensors to control wastage of electricity.
- Install a greater number of energy-saving substitutes for incandescent lights in place of normal tube lights.
- To permit utilising fewer fixtures, think about reducing them.
- Reassess the type, control, and strategy of outside lighting. Take firm control over it.
- Installation of some solar energy fixtures to reduce energy consumptions.

#### Buildings

- Take into account new thermal windows, doors, roofing insulation, etc.
- For windows facing the sun, take into account coatings and shades in addition to tinted or reflective glass.

  
12/05/23  
Debiprasad Maiti  
• MBA (Power), B Tech (Elec) Assistant Engineer  
• West Bengal Medical Services Corporation Ltd.  
• (wholly owned by Govt. of W.B.)

**Certificates  
from  
Recognized  
Agencies**



Rani Birla Girls College, Kolkata formed a waste management committee to act regularly to maintain the green campus of the college. A collaboration was initiated with VITAL WASTE COMPANY and they conducted a Waste Audit for the period of June to August, 2024. College initiated for its E-waste recycling and recycled 495 kgs of paper waste and 209 kgs of metal waste and received certificates from the company for conserving environment.

## Certificate from VITAL WASTE for 495 kgs of papers



Certificate from VITAL WASTE for 209 kgs of metals waste



# Certificate from VITAL WASTE for 290 kgs of E-waste

CERTIFICATE NO.: VW/2023-2024/W/ 03

  
**VITAL WASTE**  
A RECYCLING AND WASTE MANAGEMENT COMPANY

## CERTIFICATE

OF E-WASTE RECYCLING

This certificate is proudly presented to

**Rani Birla Girls' College**

For the ethical collection and channelization for recycling of 290 kgs of E-Waste.

This document certifies that all materials/equipment have been channelized for recycling under standard set down in the E-waste (Management) Rules, 2016 and amendments thereafter

08-01-2024  
DATE



*Pranav Goel*  
CHIEF EXECUTIVE OFFICER

CPCB REGISTRATION NO.: B-29016(141)/(PRO)/2022/WM-III Division



# Certificate from VITAL WASTE for 32 kgs of plastic waste



# Report from VITAL WASTE



## WASTE AUDIT REPORT

REPORT NUMBER: VW/2023-2024/AR/0004

PREPARED FOR  
Rani Birla Girls' College



PERIOD  
1/6/2024  
TO  
1/8/2024

### OVERVIEW

Vital Waste has been appointed to conduct waste management of various types of solid waste at your premises. A Waste Audit Report has been prepared as per the waste collection done.

### PURPOSE

The purpose of the audit was to identify, quantify and analyse the composition of the waste stream generated by the collective functional areas within the Premises.

### SUMMARY

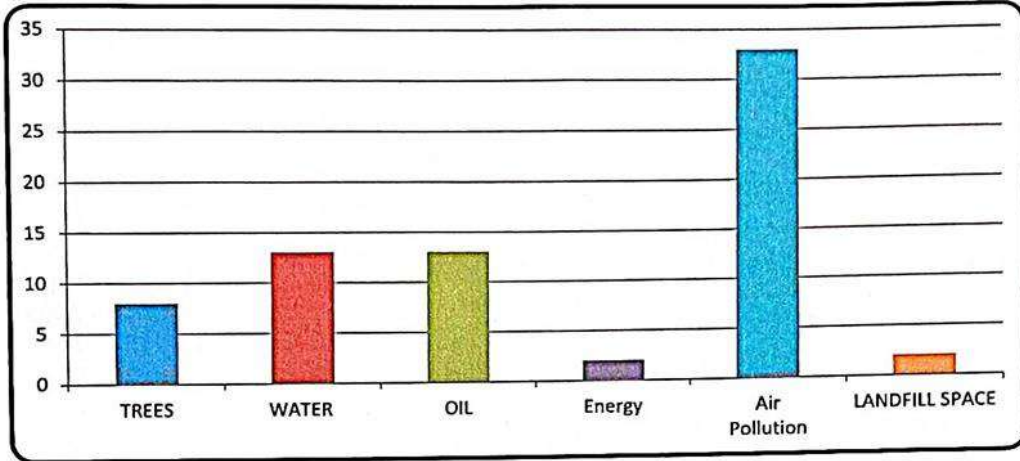
The total amount of solid, non-hazardous waste generated is estimated to be as below:-

1. PAPER	495 KGS
2. METAL	499 KGS
3. PLASTIC	32 KGS

Enclosure - Graphical Representation of Environmental Impact through Recycling.

Environment Saving through Recycling of PAPER

TREES	WATER	OIL	Energy	Air Pollution	LANDFILL SPACE
MATURE TREES	IN '000 LITERS	IN '000 LITERS	(MWH)	(Pounds)	(CUBIC METERS)
8	13	13	2	33	2

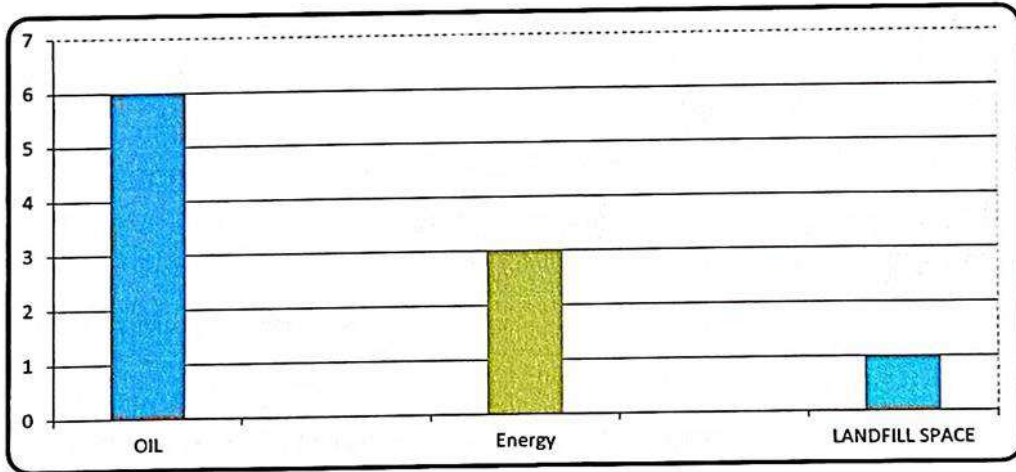


Environment Saving through Recycling of METAL

OIL
IN '0000 LITERS
6

Energy
(MWH)
3

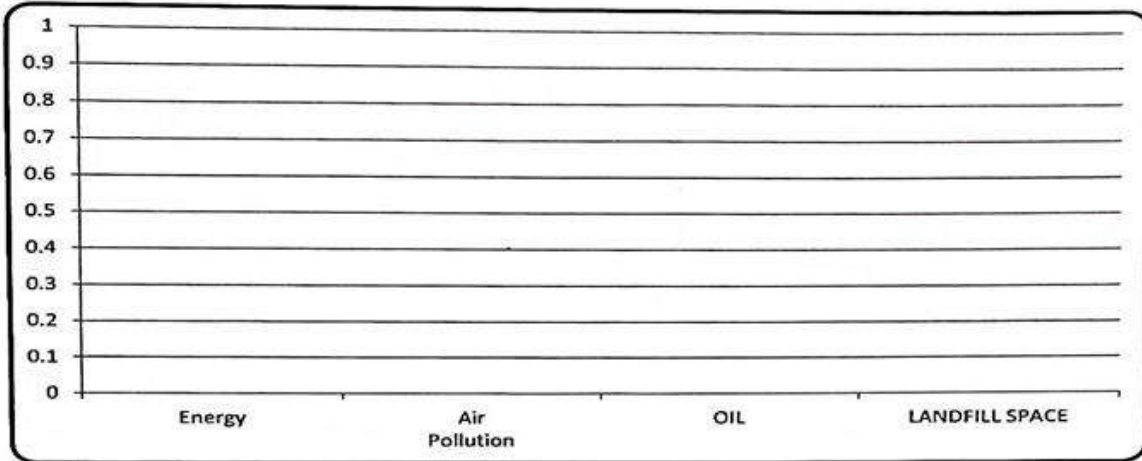
LANDFILL SPACE
(CUBIC METERS)
1



Environment Saving through Recycling of PLASTIC

Energy	Air Pollution	OIL	LANDFILL SPACE

(MWH)	(in '000 Pounds)	IN '00 LITERS	(CUBIC METERS)
0	0	0	0



We thank you for giving us the opportunity to help you Reduce, Reuse and Recycle materials from your existing waste stream and provide you a foundation for a Waste Reduction Work Plan.

*\*Environmental Saving projections are made in accordance with the collection data available and are indicative figures only*

## Tree Plantation by NATURE CLUB



\*\*\*\* END OF THE REPORT \*\*\*\*