

GREEN AUDIT

STUDY PERIOD (TWO YEARS) 2021 – 2022 & 2022 - 2023

Sustainability study
AUDIT REPORT

Studied for
Regent Education & Research Foundation Trust's
**Regent Education and Research Foundation
Group of Institutions**

Bara kanthalia, Barrackpore,
Telini Para, Kolkata - 700121, West Bengal

Studied in the capacity of
**Accredited and Certified
Green Building Professional**



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Valid till **31 July 2024**

Background reference image Sasin Tipchai on unsplash

Disclaimer

The Audit Team has prepared this report for the **Regent Education & Research Foundation Trust's Regent Education and Research Foundation Group of Institutions** located at Bara kanthalia, Barrackpore, Telini Para, Kolkata - 700121, West Bengal based on input data submitted by the Institute analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and Institute. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit is a thorough study based on the inspection and investigation of data collected over a period of time and should not be used for any legal action. This is the property of Greenvio Solutions and should not be copied or regenerated in any form.

The Report is prepared by the Team of Greenvio Solutions under their brand and department – Sustainable Academe as Consultancy firm with the Project Head - Ar. Nahida Shaikh who is as an Accredited and Certified Green Building Professional-Architect. Green Building consultancy is her forte and she is one of the most sought after names when it comes to providing excellent quality services within the stipulated time frame.

The Study is conducted in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

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Acknowledgement

The Audit Assessment Team thanks the **Regent Education & Research Foundation Trust's Regent Education and Research Foundation Group of Institutions, West Bengal** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are extended are due to **Dr. Rakesh Binaykia**, Secretary and **everyone from the Governing body**.

Our heartfelt thanks are extended to the Chairperson of the entire process **Dr. Samik Chakraborty** (Principal) for the valuable inputs.

We are also thankful to Institute's Task force the faculty members who have played a major role in data collection – **Mr. Suprovat Basu (Deputy Registrar)** (*Special mention for the excellent coordination*); **Mr. Milton Ghosh** (Non-teaching staff member) and **Mr. Raju Kumar Shaw**, Senior Administrative Officer.

We highly appreciate the assistance of the **entire Teaching, Non-teaching, and Admin staff** for their support while collecting the data.

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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DETAILED REPORT

1. Introduction

1.1 About the Institution

RERF Group of Institutions a non-profit-making trusts which has been set up to promote the technological and professional education of highest standards and to encourage research and training activities so that the students, conferred with the degree can not only meet the professional challenges but also all the challenges life has to offer.

1.2 About the statements of the Institute

1.2.1 Mission

The Institute adheres and focuses towards:

- To actualize the Vision of Regent Education and Research Foundation, the Institute has presented its Mission statement, which explicitly declares its unwavering dedication.
- To foster a favorable learning atmosphere through continuous enhancement.
- To facilitate a cutting-edge learning process, where education is contextualized in the changes, necessities, and trials of the real world.
- To spark the intellects of the students to explore their individuality, adapt, and acknowledge diversity
- To equip the learners with a mature mind and heart, proficient in critical thinking, innovation, and experimentation, which empower them to become leaders
- To support students in building meaningful careers by enhancing their employability aptitudes and to nurture among the students the passion for exploration, creativity, and enterprise.
- To enable the students and faculties with the means of knowledge creation and promote their self-sufficiency
- To promise a dedication to establish a connection with nature, fellow beings,

and their own deeper selves

- To promote students and staffs as an accountable tech-members of society with social, moral and ethical consideration.

1.2.3 Aim

The Institute has formulated the following aim to achieve its mission:

Continuously evaluate and increase the quality and relevance of academic content and performance standards in the core subjects for pre-school, grades 1 to 12 and university education. Enhancement of the quality of student life by providing professional development opportunities and promoting a sense of community.

1.2.4 Motto

The Institute channelizes its efforts towards the motto of:

"All students are performing at a standard level."

"Ensure that the assignments are done correctly in the first instance."

1.2.5 Objectives

The objective of the Institute is:

- To blend the age-old Indian values with the contemporary values introduced by the advancements in science and technology.
- To ensure holistic growth of the students, emphasizing innovation and enhancement.
- Spreading progressive and contemporary education on the strong foundation of our indigenous philosophy and culture.
- To establishing the Institute as a hub of distinction and contentment, maintaining the utmost academic quality.

1.3 Assessment of the Institute

1.3.1 Affiliations

The Institute is affiliated to **Maulana Abul Kalam Azad University of Technology, West Bengal**, a public state university located in Haringhata region, Nadia district, in the Indian state of West Bengal.

1.3.2 Approval

The technical courses provided by the Institute are approved by **All India Council for Technical Education (AICTE), New Delhi**.

1.3.3 Certification

The Institute has received the following Certifications

- **AISHE** – The All India Survey of Higher Education code is C-6300
- **ISO 9001** – Quality Management Systems

2. Overview

2.1 Summarised Populace analysis for 2022-2023

2.1.1 Students data

The data (shared by the Institute) shows there were a total of **1,305 male and 228 female students.**

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	36	13	49
2	Teaching staff	75	43	118
3	Non-Teaching staff	23	05	28
Total Staff Members		134	61	195

Table 1: Staff data of the Institution for 2022-2023

The staff data shows the Institute premises had a total of **195 Staff Members.**

2.2 Summarised Populace analysis for 2021-2022

2.2.1 Students data

The data (shared by the Institute) shows there were a total of **1,186 male and 299 female students.**

2.2.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	35	05	40
2	Teaching staff	81	40	121
3	Non-Teaching staff	21	04	25
Total Staff Members		137	49	186

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the Institute premises had a total of **186 Staff Members.**

2.3 Total Institute Area & Institute Building Spread Area

The **site area is 5.53 acres** and the **Built-up area is 15,760 sq. ft.** for an approximately **1,728 footfalls.**

2.4 Institute Infrastructure

2.4.1 Establishment

The Institute was established in **2009.**

2.4.2 Spatial Organisation

There are provisions for staircase for accessibility on the premises, whereas there are amenities such as CCTV, a first aid room, etc.

The Institute is located pretty close to nature and hence has a very fresh environment which is absolutely pollution free and healthy.

The Building is a Reinforced Cement Concrete (RCC) framework building.

2.5 Operation and Maintenance of the premises

The interview session and data collection session was held with the staff regarding the operation and working hours. The schedule shared by the team shows that the Institute is working Monday to Saturday beginning at 09:00 hours up to 18:00 hours.

3. Research

3.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution sustainable and healthy premises for its inhabitants.

3.2 Analysis of the Green Building Study Audit

The procedure included detailed verification as follows:

- Investigation
- Technical discussion with team
- Observations
- Inferences

3.3 Strategy adopted for Green Building Study Audit

The strategies included data collection from the admin department, actual inventory, investigation to check the operation and maintenance, analysis of the data collection, and preparation of the Report.

3.4 Activities undertaken for the Green Building Study Audit

- Discussion with the Institute
- Allotment and Initiation by the Institute
- Data collection
- Submission of the files

4. Observation

Survey Results

An online survey was conducted to analyse the student and staff views about the Energy management practices adopted in Institute, following is the result received.

4.1 Participation

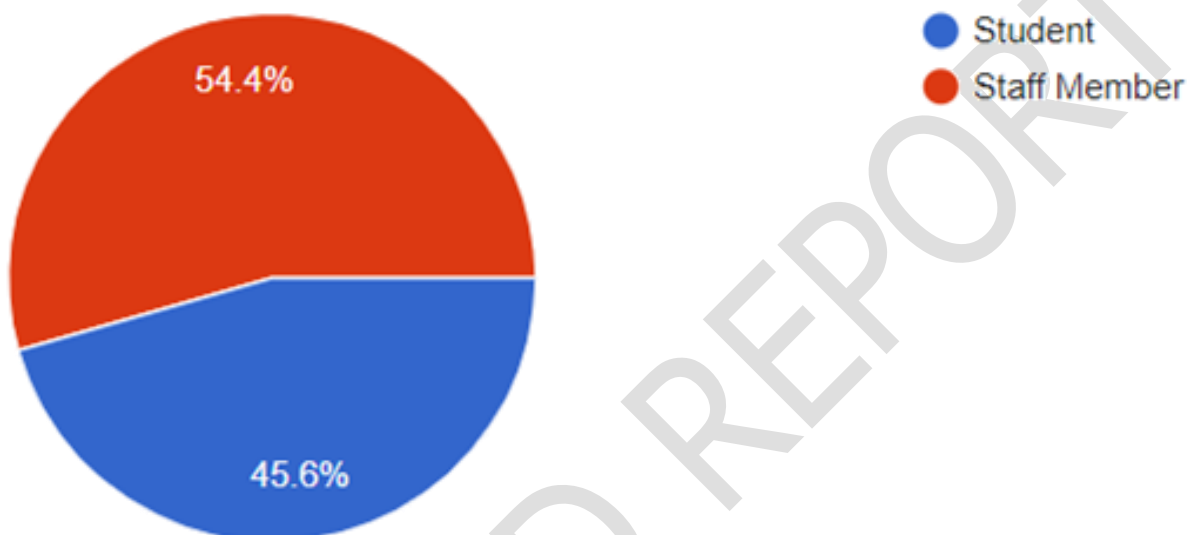


Figure 1: Participation analysis in the survey

A total of **158 responses** were received out of which 46% were students.

Note: The Participants were asked to review the practice on a scale of 1-5 with scale components as follows:

- ➔ Scale 1 – Poor
- ➔ Scale 2 – Satisfactory
- ➔ Scale 3 – Good
- ➔ Scale 4 – Very good
- ➔ Scale 5 – Excellent

The figures in each of the columns of graph depict the Number of participants responses in numerical (Percentage of the participant response) – For example 101 responses (44.5%)

4.2 About the Green awareness practices adopted by Institute

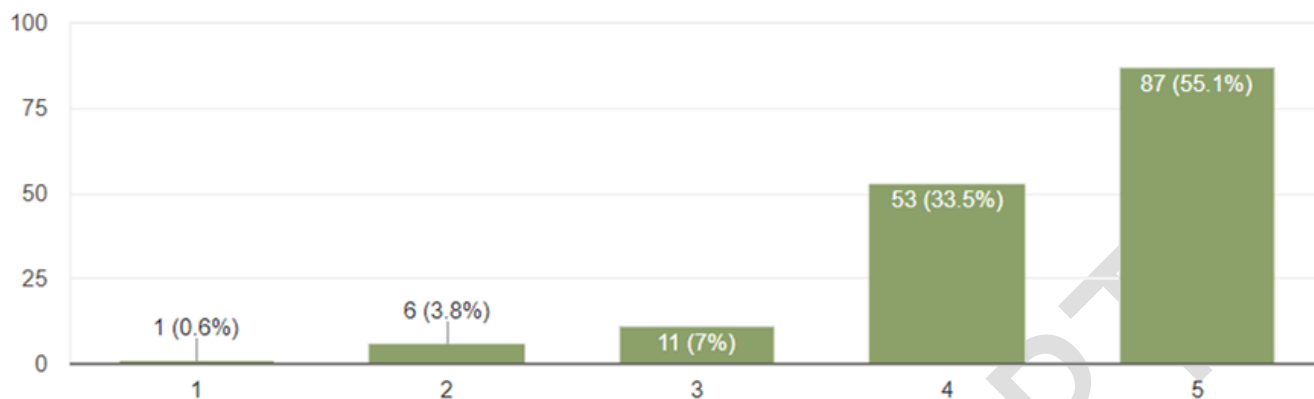


Figure 2: Green awareness practices in the Institute

Observation: The students and staff almost 55% of the respondents found practices to be Excellent (Rating of 5); whereas almost 34% of the respondents found practices to be Very Good (Rating of 4); and 7% of the respondents found practices to be Good (Rating of 3).

Inference: Though the majority responses are for 'Excellent – Rating 5' is less than 50% thus this shows that the said section requires improvement.

4.3 About the Water management practices adopted by Institute

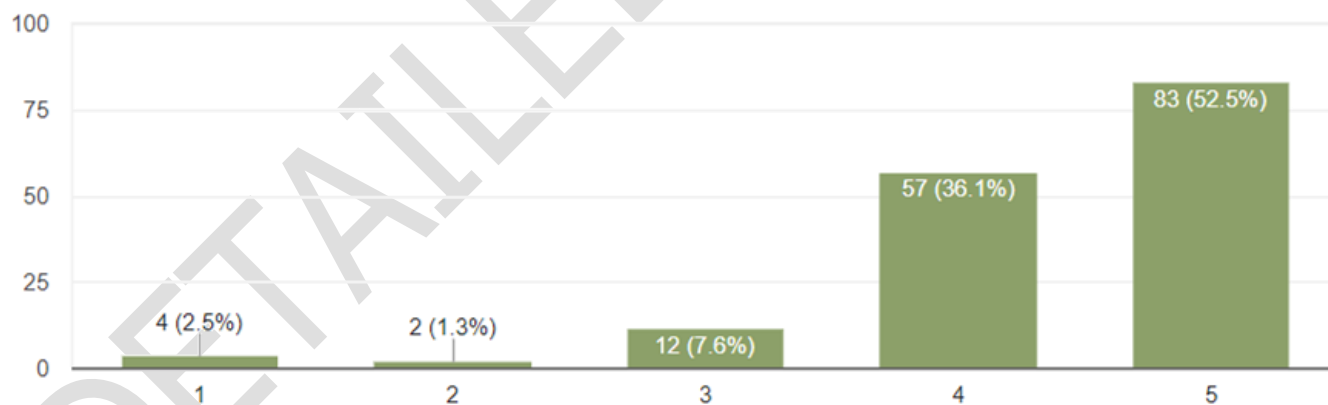


Figure 3: Water management practices in the Institute

Observation: The students and staff almost 53% of the respondents found practices to be Excellent (Rating of 5); whereas almost 36% of the respondents found practices to be Very Good (Rating of 4); and 8% of the respondents found practices to be Good (Rating of 3).

Inference: Though the majority responses are for 'Excellent – Rating 5' is less than 50% thus this shows that the said section requires improvement.

4.4 About the Waste management practices adopted by Institute

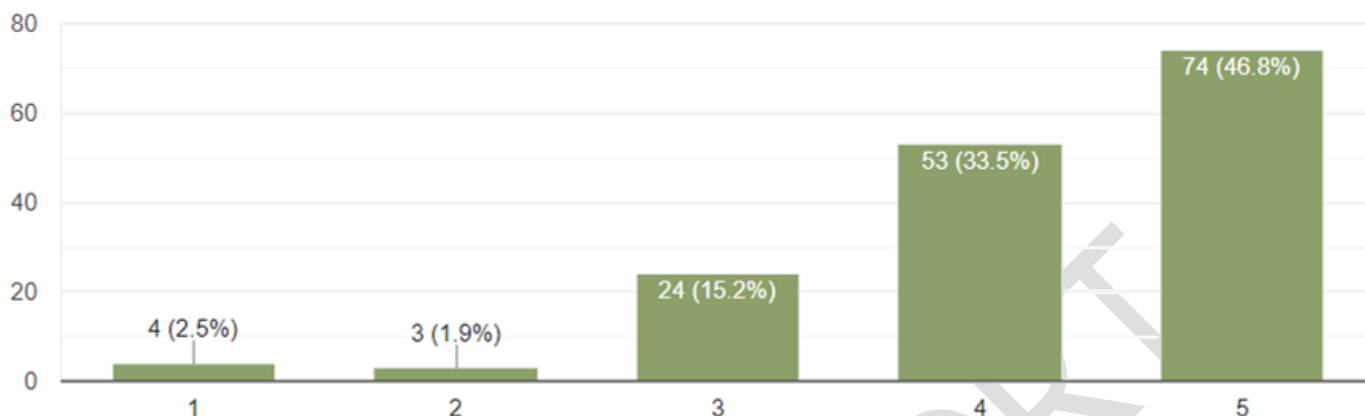


Figure 4: Waste management practices in the Institute

Observation: The students and staff almost 47% of the respondents found practices to be Excellent (Rating of 5); whereas almost 34% of the respondents found practices to be Very Good (Rating of 4); and 15% of the respondents found practices to be Good (Rating of 3).

Inference: Though the majority responses are for 'Excellent – Rating 5' is less than 50% thus this shows that the said section requires improvement.

4.5 About the Hygiene practices adopted by Institute

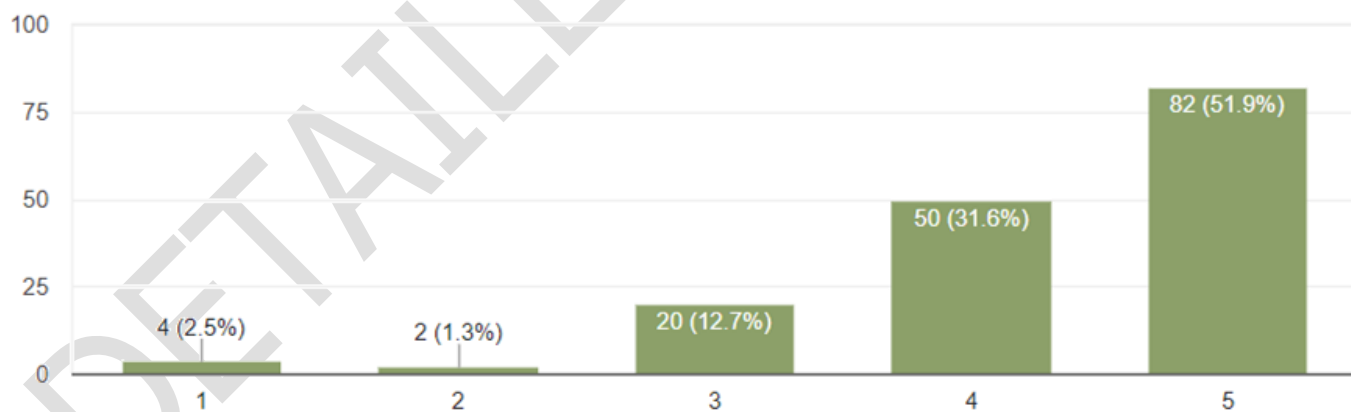


Figure 5: Hygiene practices in the Institute

Observation: The students and staff almost 52% of the respondents found practices to be Excellent (Rating of 5); whereas almost 32% of the respondents found practices to be Very Good (Rating of 4); and 13% of the respondents found practices to be Good (Rating of 3).

Inference: Though the majority responses are for 'Excellent – Rating 5' is less than 50% thus this shows that the said section requires improvement.

5. Documentation

5.1 Green Practices Audit

The increasing global warming and climate change have made us realise that apart from the enormous strategies the individual small efforts need to be taken by individuals and Educational Institutes as the younger generations are the future of the world and once they are taught about these practices only then can we assume a better future.

5.1.1 Green practices

We observed the following points during the process.

- **Waste management** - *All the laboratories, classrooms, and cabin corridors are having dust bins. Laboratories are having dustbins wastage; Plastic bags are strictly banned on the Institute premises and canteen.*
- **Cleanliness Campaign** - *The Swachha Bharat Abhiyan is carried out on Institute premises as well as off-premises.*
- **Universal design** – *The Institute premises has special provisions such as ramps, lifts for the specially abled.*
- **Documentation of all the events** – *The best part about the Institute is the prompt and professional response, this was observed not only in the way the Team responded throughout the project but also through the documented data submitted be it the cleanliness report or the eco club activities report; each of these were documented and presented in a sophisticated manner which is highly appreciating.*
- **Garden committee** – *The Institute has a distinguished garden committee who is responsible for the beautification for the premises. This team undertakes a lot of activities related to the enhancement of the landscape features of the premises. As part of our research what we observed as the best feature was the involvement and enthusiasm of each member in this activity.*

5.1.2 Community development

The Institute conducts environmental initiatives documented as follows:

S. No.	Event	Particulars	Type	Date
Academic year 1(2022-23)				
1	Tree Plantation	When you plant a tree, you don't just plant a sapling but hope. We have learned it the hard way that trees are extremely important for our survival. We first resorted to deforestation and made space for more buildings on earth. Later, when we saw the environment getting seriously affected, we were introduced to something called "afforestation", a simple process of planting more trees for a better future	Physical	22-03-2023
2	Clean India Campaign(Swachh Bharat Abhiyan)	A clean India would be the best tribute India could pay to Mahatma Gandhi on his 150 birth anniversary in 2019," said Shri Narendra Modi as he launched the Swachh Bharat Mission at Rajpath in New Delhi. On 2nd October 2014, Swachh Bharat Mission was launched throughout length and breadth of the country as a national movement. The campaign aims to achieve the vision of a 'Clean India' by 2nd October 2019.	Physical	22-03-2023
Academic year 2(2021-22)				
3	World Environment Day	World Environment Day serves as a global platform for public outreach, with participation from numerous countries annually. It provides an opportunity for businesses, non-governmental organizations, communities, governments, and celebrities to advocate for environmental causes and promote green practices.	Virtual	05-06-2022

Table 3: Details of the events undertaken by the Institute

5.2 Waste Audit

Waste is an inevitable part of our lives. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted. The waste management strategies are studied and ways that can be adopted aiming to make the premise clean and sustainable are proposed.

5.2.1 Waste produced

S. No.	Type of waste	Source	Current Disposal method	Can be retreated/ recycled?	Methodology
1	Solid waste	Toilets–Biodegradable waste	Led into the storm water drains	Yes	TREATED – Biogas plant can be initiated
2	Liquid waste	Toilets, washbasins		Yes	TREATED - Sewage treatment plant can be initiated
3	Paper waste	Newspaper and other paper	Given to vendor	Yes	TREATED – A recycling plant can be initiated
4	E-waste	Computers - Non-biodegradable waste		Yes	
5	Dry waste in form of leaves	Open space & plantations, papers - Non biodegradable waste	Composting has been undertaken	Not applicable	CONTINUE with the current practice
6	Organic regular waste	Dust, dirt dust waste from indoor spaces			

Table 4: Details of the waste management practices adopted by the team

There are 148 dustbins in the indoor areas and 48 in the outdoor areas.

5.3 Water Audit

Water is one of the basic needs. Pure drinking water is a resource that needs to be preserved efficiently. A water audit helps to identify the sources of water consumption, and the water requirement by the premises is met by these sources.

The effective usage of water without any wastage should be a mandatory practice. Understanding the techniques as per site context to increase water conservation in terms of awareness and practice can be identified and executed as part of this exercise.

5.3.1 Water availability and consumption

5.3.1.1 Source of Primary water supply

The Institute uses drinking water for daily consumption through the 'OVERHEAD' water tanks as documented below used for primary purposes.

S. No.	Type	Capacity (litres)	Nos.
1	Overhead	29,500	10
2	Fire tank	10,000	2
3	Rain water harvesting tank	14,000	4

Table 5: Details of the water tanks in the premises

5.3.1.2 Source of Secondary water supply

The Institute uses the secondary sources of water supply for general usages such as watering plants, kitchen, toilets, and wash basins connected to the labs and other spaces. **At present, there are 2 bore wells with a capacity of 5,000 litres each used as secondary uses.**

5.1.3.3 Source of Tertiary water supply

The tertiary source of water is the additional source of water harvesting. *We have suggested adopting practice of rain water bunds around every block and connecting the overflow pipes of the artificial water pond (farm pond) to the well for ground water recharge.*

5.1.3.4 Source of Reusing waste water

The initiative is not under practice at present completely only the chemicals are neutralized before letting it down in the drains. **However, certain measures w.r.t. academics and equipment are practiced in the laboratories include fume motor usage.** *We have suggested to under practices of green chemistry as per discussion to treat the waste water from the laboratories and reuse after filtering for watering the plants and the trees in the premises.*

5.3.2 Areas of water usage

Based on the inventory done and data shared by the staff it was found that the premise has the following facilities:

S. No.	Particulars	Nos.
1	Handicap toilets for male	2
2	Handicap toilets for female	2
3	General toilets for male	60
4	General toilets for female	24
5	Total single flush toilets	60
6	General urinals	48
7	Net-metering for water supply	8,000
8	Total taps for gardens	7

Table 6: Details of the water usages in the premises

5.4 Health and Hygiene Audit

The hygiene is a part and parcel of our daily life. It is extremely essential to keep the surroundings clean in the same manner as we would want our houses to be. Educational Institutes have a bigger role to play in order to affect the young minds in the positive manner through better hygienic practices.

5.4.1 Facilities available

The Institution has washroom facility, hand wash, drinking water and dustbin facilities.

5.4.2 Hygiene aspects

There was no major hygiene issue observed anywhere in the premises.

6. Suggestions

Section-wise suggestions related to premises

The following suggestions are to be considered as a **first priority** for implementation. These **should be executed within the next 1.5 to 2.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

6.1 Green practices Audit

- ➔ **Plant as a gift** - As a kind gesture, the guests visiting the premise can be asked to plant a small plant on the premise itself and they can be even given plants/bouquets from the flowers of the plants on the premise as a gift.
- ➔ **Environmental awareness** - There can be various artworks on the compound wall giving the message of saving the environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizens.

6.2 Waste Audit

- ➔ **Signages** - Messages about avoiding wastage should be placed at appropriate locations.
- ➔ **Dustbins at every 100m** - There should be a dustbin at every 50-100m in open spaces
- ➔ **Material of dustbin** - The plastic dustbins should be replaced with eco-friendly material.
- ➔ Join hands for '**Trash to Treasure**' initiative as a Donor or Beneficiary Institute through which any type of building or material waste shall be collected from your Institution, recycled and given to an NGO or Organization for reuse.
- ➔ Tie up with **Bisleri International regarding their 'Bottles for change program'** also with '**Thereco**' for their waste management.
- ➔ Invite companies such as '**Thaely**' and '**Recharkha**' to undertake skill development workshops.
- ➔ Write to NGOs such as *Adar Poonawala Foundation* for twin litter dustbins and beautification projects.

6.3 Water Audit

- ⇒ **Water tanks** - Additional safety and concrete support can be provided for the Water tanks with appropriate beautification and display boards about their capacity.
- ⇒ **Wastewater from toilets** - This should be collected and a wastewater treatment plant can be installed in the open space wherein this water can be treated and reused for gardening and toilet flushing.
- ⇒ **Signages** - Messages about avoiding water wastage should be placed at appropriate locations.
- ⇒ **Water flow stopper** - The water flow stopper should be installed to avoid overflow and smart use of the system. Install water-saving showerheads or flow restrictors. No leakage anywhere on-premises. Water lawn only when it needs it.
- ⇒ **Waterless urinals** - There can be the provision of waterless urinals as a Green Building initiative in the premise, either the existing ones can be replaced with such a facility or new toilets can be constructed in this manner.
- ⇒ **Rain water bunds** – There should be landscape beautification project undertaken to appropriate channelize the rain water through bunds and similar facilities.

6.4 Health and Hygiene Audit

- ⇒ **Health related provisions** – There should be provisions for a dedicated health centre and 24x7 available ambulance services inside the premises.
- ⇒ **Signboards** – The Institute should have multiple signboards about 'No smoking' and 'Healthy premises' at every nook and corner of the Institute.
- ⇒ **Compound wall** – The compound wall should have awareness messages about 'No Smoking' and 'No Tobacco'

6.2 General suggestions

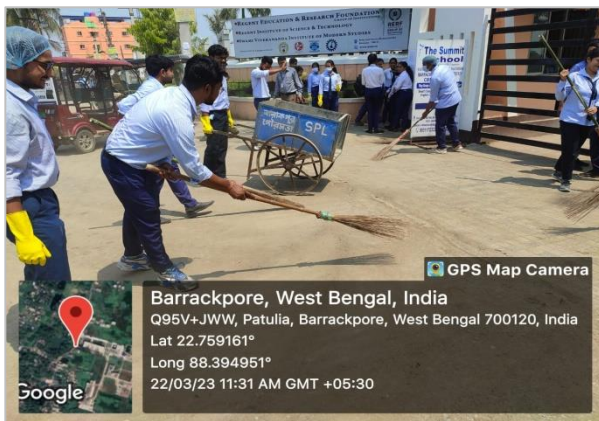
The following suggestions are to be considered as a **second priority** for implementation. These **should be executed within the next 2.5 to 3.5 years from the date of the Report submission**. The Institute can execute a plan after discussion with Project Head.

- ⇒ Increase the zoning activities for eco-zone, orange zone, green zone – Although this has to be undertaken on an entire premises basis; since the Institute is a shared campus this will have to be undertaken after discussion with Management.
- ⇒ Certain areas tiles has a withering situation due to on-going repairs which were informed will be upgraded.
- ⇒ Certain manuals should be written and prepared for visually and hearing impaired.

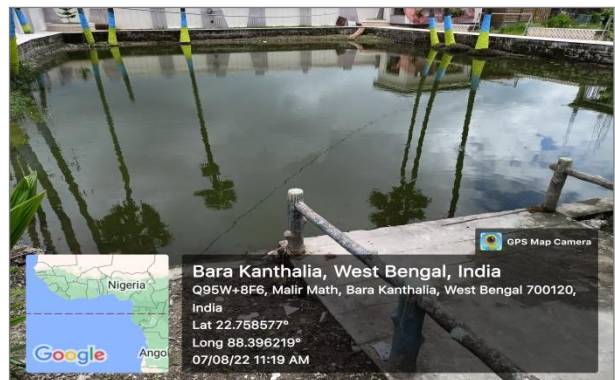
DETAILED REPORT



The RERF Campus with entrance gate and buildings in the premises



Investigative parameters – Green practices for community development – Cleanup and Plantation activity



Investigative parameters – Water Management – Water sources and natural rain water harvesting system



Investigative parameters – Waste Management – Compost pit and dustbins in premises

7. Compilation

The study is based on the data collected, analysed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyse and study the data collected.

- ➔ Uniform Plumbing Code – India, 2008
- ➔ IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- ➔ IGBC Green Landscape Rating system, March 2013
- ➔ BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
- ➔ Used only for understanding Universal design - Universal Accessibility Guidelines for Pedestrian, Non-motorized vehicle and Public Transport Infrastructure – Report guidelines by Samarthyam (National center for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation and www.umassd.edu
- ➔ The city of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States
- ➔ Images on site by Coordinators of the both teams
- ➔ Icon images used by <https://www.vecteezy.com/free-vector/security-camera-icon> and <https://www.vecteezy.com/free-vector/electric-car-icon>

