

GREEN AUDIT

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

Sustainability study

AUDIT REPORT

Studied for

Bombay Suburban Art and Craft Education Society's

L. S. Raheja

School of Architecture

Raheja Education Complex, Plot no. 341,

Kher Nagar, Bandra East,

Mumbai – 4000051

Studied in the capacity of

Accredited and Certified

Green Building Professional



Website: <https://thegreenviosolutions.co.in/>

Email: greenviosolutions@gmail.com

Disclaimer

The Audit Team has prepared this report for the **Bombay Suburban Art and Craft Education Society's L. S. Raheja School of Architecture** located at Raheja Education Complex, Plot no. 341, Kher Nagar, Bandra East, Mumbai – 4000051 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 internal team. 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.


Ar. Nahida Abdulla
Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com



Acknowledgement

The Audit Assessment Team extends its appreciation to the **Bombay Suburban Art and Craft Education Society's L. S. Raheja School of Architecture, Maharashtra** 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 everyone from the Management.

Our heartfelt thanks are extended to the Chairperson of the entire process **Ar. Principal Mandar Parab**, (Principal and Member Secretary).

We are also thankful to Institute's Task force who have played a major role in data collection.

- Faculty members – **Ar. Uttara Nalawade, Ar. Meghana Patil, Ar. Charvi Kamat and Ms. Bhakti Sawant**
- Non-teaching staff members – **Mr. Avinash Dhabade and Mr. Sachin Pitale**
- Admin staff members – **Ms. Jyoti Parab, Mr. Prashant Maingade, Mr. Ghanshyam Khanal and Mr. Ashish**

We appreciate the cooperation 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

Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview	5
3. Research	6
4. Evidence.....	9
5. Documentation	10
6. Suggestions	14
7. Compilation.....	16

1. Introduction

1.1 About the Institute

The Institute aims to be a renowned learning community engaged in exemplary teaching and research; by creating entrepreneurs who have been trained in understanding design as a broad humanistic and scientific discipline with technical skills complemented by personal vision and ethical perception.

The Mission of the Institute includes - To create a dynamic institution of learners through creative and critical thinking and dedication to high standards; To produce leaders that meet the demand of a globally challenging profession through sound training; To prepare students to evolve with the ever changing world by offering comprehensive, high quality programs and services that respond to the need of the industry; To strive for excellence and foster the spirit of professionalism by creating a culture of constant improvement through measuring learning across the institution and To support diversity thereby adopting a holistic approach through the process of lifelong learning.

1.2 Assessment of the Institute

1.2.1 Affiliation

The courses provided by the Institute received affiliation through the **University of Mumbai**, a public state university in Mumbai, Maharashtra.

1.2.2 Certification

The Institute has received the code under **All India Survey of Higher Education (AISHE)** wherein the code is C-33788.

1.2.3 Approval

The courses by the Institute have received approval through

- **Council of Architecture (COA), New Delhi**
- **Directorate of Technical Education, Maharashtra**
- **University Grants Commission (UGC) (2f), New Delhi**

2. Overview

2.1 Summarised Populace analysis for 2022-2023

2.1.1 Students data

The data (shared by the Institute) shows there were **367 students**.

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	07	05	12
2	Teaching staff	20	15	35
3	Non-Teaching staff	09	01	10
Total Staff Members		36	21	57

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

The staff data shows the Institute premises had **57 Staff Members**.

2.2 Summarised Populace analysis for 2021-2022

2.2.1 Students data

The data (shared by the Institute) shows there were **361 students**.

2.2.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	07	06	13
2	Teaching staff	19	17	36
3	Non-Teaching staff	09	01	10
Total Staff Members		35	24	59

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

The staff data shows the Institute premises had **59 Staff Members**.

The numbers given above are all core full time faculty

3. Research

3.1 Institute Infrastructure

3.1.1 Establishment

The Institute was established on **1959**

3.1.2 Spatial Organisation

The infrastructure facilities of the campus include:

RESOURCES:

Learning Resources - The college boasts a grand, spacious and well planned campus. The Institute is centrally located and is easily accessible by all modes of public transport. We strive to provide a healthy, safe and encouraging, learning environment to all our students.

Studios - The premise has well lit and airy studio spaces. Studio spaces have independent working tables and storage facilities for each student. The walls of the studios are lined with vibrant soft boards for displaying students' work. The space is efficient and encourages students to use it flexibly and make it their own.

Lecture Halls - Each lecture hall has smart projector facilities and a public address system. This imparts flexibility in teaching and learning methods and encourages healthy interaction amongst faculty and students.

Library - The college library is a knowledge haven which enriches teaching, learning and research experience for the students and staff. It is well stocked with more than 6000 books, 350 e-books, several design magazines and E- journal subscription on varied subjects like Design, Graphics, Construction, Interiors, Landscape, Architectural Theories and several others. The Institute takes continual efforts to keep this compilation updated and maintained

Computer Lab - The Institute encourages students to envisage, develop and represent their ideas in innovative ways. To support this vision, the Computer lab has forty computers equipped with the latest design and visualization softwares.

Staffroom - The staffroom is a comfortable space for the faculty. It also accommodates cabins for the Principal and senior faculty. The Principal's cabin and staffroom are always open for students. Students can approach for additional guidance or any other concerns.

CO-CURRICULAR FACILITIES

Multipurpose Hall - A fully air conditioned multipurpose hall becomes an integral part of a student's journey in the institute, from Orientation day to the Convocation ceremony. This hall is aereate, well-furnished and fitted with a state of the art public address system, making it a perfect setting for several co-curricular and extracurricular events through the year

Seminar Hall - A hundred seater seminar hall is also available for various lectures and seminars conducted for the students throughout the year.

Material Bureau - Along with theoretical knowledge, to ensure a well-rounded education a material bureau has been set up. The Bureau has latest material samples, catalogues, application brochures and joinery prototypes. Being able to see materials upclose, gives students better visualization and understanding of all it's possible applications.

Surveying Lab - The surveying lab has equipment to train the students on various methods of land survey. These land surveys are used by students to create site drawings before design can begin.

Climatology Lab - The climatology lab is equipped with instruments to measure temperature, humidity, solar radiation, wind flow, wind direction, etc. This enables the students to understand the environmental factors and its impact on design.

Carpentry Workshop - The college has a wood and a metal workshop with necessary machines and tools. This gives an opportunity to students to explore various techniques, materials and also gain valuable hands-on experience.

Construction yard - The construction yard becomes the site of several creative endeavors and workshops. This space is used by students to create awe inspiring installations, life scale arches, creative wall bonds, prototypes of roofs, modifiable furniture and many more such interventions.

ALLIED FACILITIES

Canteen and Gym – The facility is provided to common to all shared campuses

Medical Assistance - The Institute cares for its students wellbeing. Along with basic first aid being available on campus, a general physician visits the institute every afternoon. The institute also has a psychologist visit once every week. Students who need assistance can make appointments and avail this free of charge facility.

Common rooms - The campus also has separate boys and girls common rooms, accessible to all students. This a space meant only for students. They use this space for group activities, co-curricular and extra-curricular participation, student council initiatives and many more.

Universal Access - The institute strives to provide its students universal access. The building is planned to give a barrier free access to all its spaces for physically challenged students. There is provision for ramps, elevators, wide lobbies and doors to ensure ease of movement. The driveway till the entrance of the institute allows access by all vehicles. This ensures easy approach and exit in case of any emergency.

Digital Campus - The entire campus has also been equipped with wireless internet access for its staff and students within the premises. This facilitates work and access to information wherever they are within the institute.

3.2 Operation and Maintenance of the premises

The interview session was held with the staff regarding the operation and working hours. The Institution is open from Monday to Saturday with the timings being 07:15 am to 19:00 hours.

4. Evidence



Plate 1: Discussion with the team and Principal of the Institute



Plate 2: Investigation of the fire & lie safety practices and internal spaces of campus



Plate 3: Discussion with the internal team about the facilities

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 Site investigation and data verification of the premises; these are common for all the Buildings in the premises.

- **Social awareness** - *The Institute has taken up awareness drives on various social issues for rural upliftment and regeneration in the Institute and surrounding villages.*
- **Silent and peaceful atmosphere** – *The Institute is located amidst residential areas which are well designed thus these help to maintain the pollution under control and provide a healthy ambience.*

5.1.2 Community development

The details of **extension initiatives** under various heads in Institute are documented below:

S. No.	Type	Coordinator name
1	National Service Scheme (NSS)	Ar. Ninad Sansare
2	Campus placement event	Ar. Mridula, Ar. Anuj, Ar. Arun
3	Elective Glass in Architecture	Ar. Mrridula, Ar. Anuj
4	Elective - Software Auto CAD, Revit and Grasshopper	Ar. Gargi

Table 3: Details of the extension initiatives by the Institute

The details of the **environmental activities** by the Institute documented below:

S. No.	Activity	Details	Type	Date
1	Tree plantation drive	On field visit	Physical	2018
2	World Environmental Day	Screening of film	Physical	-

Table 4: Environmental initiatives undertaken by the Institute

The **activities** at present are not practiced in a full-fledged manner but the Institutes' team have been guided about awareness posters that can be initiated.

5.2 Waste Audit

Waste is an inevitable part of our lives. Over the years the awareness about waste management techniques has given a rise to rethink how the waste can be avoided being sent to the landfills. The audit provides an approximation of the types of waste generated, location of waste collections, disposal techniques used, waste segregation methodologies adopted, and waste management strategies that are implemented in addition to the newer ways that can be adopted aiming to make the premise clean and sustainable.

5.2.1 Waste produced

S. No.	Type	Current disposal system	Proposed disposal system
1	Solid waste (Toilets)	City sewerage system, Dry waste - Garbage collection van	Continue with the same
2	Organic waste (Regular)	City sewerage system, Canteen kitchen waste - Municipal garbage collection van	A small sized compost bin can be purchased to manage the same and convert it into manure, if successful a full sized project can be undertaken
3	Dry paperwaste, consisting mainly paper, books, newspaper etc.	Collected by local Raddiwala	
4	Liquid waste (Toilets, wash basins)	City sewerage system	
5	Chemical waste from laboratories	NA	NA
6	Toxic waste from laboratories	NA	NA
7	E-waste	Collected by E waste recycling agency - certificate inserted in adjoining cell	
8	Plastic waste	Municipal garbage collection truck	Tie up with a vendor
9	Bio-waste (Sanitary)	Municipal garbage collection truck	
10	Medical waste (Pharmacy etc.)	NA	NA
11	Construction waste and reuse (during maintenance, repairworks and renovation)	Debris collection vendors	Continue with the same

Table 5: Waste management system by the Institute

Currently, there are 40 twin litter dustbins inside and 3 large bins 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 requires water from the Local Municipality for drinking water purposes. The facilities available include the following:

S. No.	Type	Size	Capacity (litres)	Nos.
1	Underground	15X6.5X10	27,593	1
		15X9X8	30,564	1
		15X9X8	30,564	1
2	Overhead	21X18X8.5	90,925	1
		21x2.5x7.10	1,07,596	3
3	Fire tank	15.5x4x10	17,546	1
		15.5x 6.5x10	26,319	1
4	Rain water harvesting tank	15.5x4x10	17,546	1
5	Water cooler	-	-	3

Table 6: Details of the water facilities

5.3.1.2 Source of Secondary water supply

The Institute uses the following sources of water supply for secondary usages such as watering plants, kitchen, toilets, and wash basins and other spaces. There are no wells or bore wells available at present.

5.3.1.3 Source of Tertiary water supply

The tertiary source of water is the source of water harvesting; the project at present practiced through pit connected to the rooftop rain water pipes.

5.3.1.4 Source of Reusing waste water

This initiative is not practiced at present. Since the campus **is located is not a technical campus with laboratories etc.** the system is not an urgent requirement.

5.3.2 Areas of water usage

Based on the inventory done and data shared by the staff we found that the premise has the facilities such as toilets and washbasins.

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

The team should undertake steps to upgrade the hygiene areas of the site as per the instructions and discussion. **The current practices however are fine.**

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 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 slogans in local and national language 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.
- **Signages on the plants mentioning scientific names** - The practice of having the names of each plant and tree will provide awareness among the staff and students.
- **Government initiatives** - The Institute can take up initiatives such as Swachh Bharat Abhiyan, cleanliness drives in the Institute and surrounding villages also activities such as the capacity building of locals in surrounding villages by Institute students.
- **Increase the green awareness practice** – This should be in terms of the physical and virtual events which will be beneficial for all stakeholders in the shared premises. (Basically the frequency of the lectures should be increased)
- **Documentation** – Improve and increase the documentation and visibility/ reflectance of the environment related events on the website, social media handles.

6.2 Waste Audit

- ➔ **Signages** - Messages about avoiding wastage should be placed at appropriate locations.
- ➔ **Include better plastic/ E-waste management measures** - The Institute can celebrate one day of every month as a 'Plastic/ E-waste awareness day' The stakeholders (Students and staff members) can be asked to bring plastic/ E-waste which can be further given to an NGO for recycling or better purpose.
- ➔ 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.

6.3 Water Audit

No changes proposed for this section.

6.4 Health and Hygiene Audit

Compound wall – The compound wall should have awareness messages about 'No Smoking' and 'No Tobacco'

7. Compilation

The study is based on the data collected, analyzed, 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 analyze 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 centre for Accessible Environments) – an initiative supported by Shakti Sustainable Energy Foundation.
- Reference images for suggestions:
 - ❑ <https://www.gaf.com/en-us/blog/six-truths-about-cool-roofs-281474980105387>
 - ❑ <https://earthbound.report/2021/07/14/5-ways-to-reduce-the-urban-heat-island-effect/>

