

GREEN AUDIT

STUDY PERIOD 2023 - 2024

Sustainability study
AUDIT REPORT

Studied for
Cosmopolitan Education Society's
**Valia Chhaganlal Laljibhai College of Commerce
& Valia Lilavantiben Chhaganlal College of Arts**

D. N. Nagar, Cosmopolitan Education Society Road,
Andheri (West), Mumbai - 400053

Studied in the capacity of
Accredited and Certified GBP



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

Email: greenviasolutions@gmail.com

Disclaimer

The Audit Team has prepared this report for the **Cosmopolitan Education Society's Valia Chhaganlal Laljibhai College of Commerce & Valia Lilavantiben Chhaganlal College of Arts** located at D. N. Nagar, Cosmopolitan Education Society Road, Andheri (West), Mumbai – 400053, Maharashtra, India based on input data submitted by the College and analyzed 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 **Cosmopolitan Education Society's Valia Chhaganlal Laljibhai College of Commerce & Valia Lilavantiben Chhaganlal College of Arts, Maharashtra** for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our heartfelt thanks to Chairperson of the entire process **Dr. Shobha Menon**, Principal for their valuable inputs.

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

- Teaching staff member (Assistant Professors) – **Mr. Arvind Panchal and Ms. Maitri Dave**
- Admin staff member (Office Superintendent) – **Mr. Anil Talekar and Mr. Sadanand Sawant**
- Non-teaching staff member – **Mr. Prabhakar Chougule**

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview.....	4
3. Observation	5
4. Compliance	7
5. Investigation	12
6. Suggestion	17
7. Compilation.....	23

1. Introduction

1.1 Statements of the Institution

1.1.1 Vision

The Institute proposes "To maintain the highest academic standards upholding the noblest ideas and moral values, to identify hidden talent, create enlightened, empowered and socially committed students and above all good human beings."

1.1.2 Mission

The Institute adheres and focuses "To provide value based quality education and training in an environment conducive to intellectual, social and cultural enrichment so as to mould responsible citizens with a harmonious blend of Indian traditions and modern technology for a better tomorrow."

2. Overview

2.1 Summarised Populace analysis for 2023-2024

2.1.1 Students data

The data (shared by the Institute) shows there were **2,176 students**.

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	07	07	14
2	Teaching staff	11	23	34
3	Non-Teaching staff	07	01	08
Total Staff Members		25	31	56

Table 1: Staff data of the Institution for 2023-2024

The staff data shows the Institute premises had **56 Staff Members**.

3. Observation

This chapter focuses on the positive aspects adopted by the Institute either based on the previous year study or as an act towards sustainability goals.

Section 1 – Green practices audit

This section was overlooked as there is a shared premises.



Plate 1: Well-maintained green spaces in the premises

Section 2 – Waste audit



Plate 2: Dustbins in the premises

Section 3 – Water audit

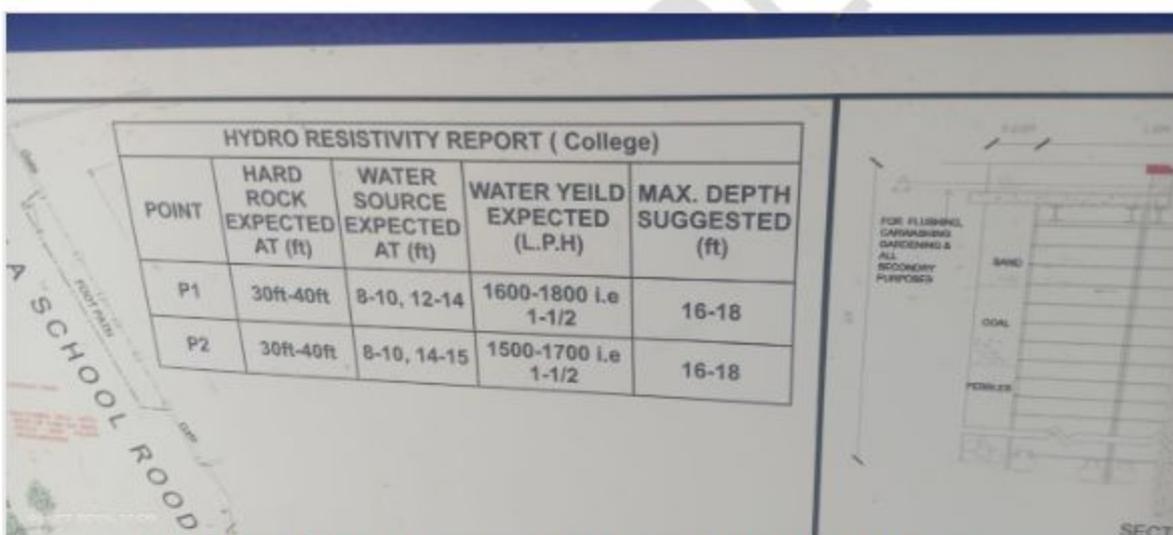


Plate 3: Rain water harvesting detail (Similar to last year) in the premises

Section 4 – Health and Hygiene audit



Plate 4: Awareness messages signage display

4. Compliance

The compliance study was carried out through investigative ways. This was done to understand extent of implementations based on previous reports.

- Original report study for 2019-2020 and 2020-2021
- Renewal study one for 2021-2022 and 2022-2023
- Renewal study one (Current) for 2023-2024

4.1 Compliance status

The details of compliance are analysed on previous year Report i.e. 2022-2023 depicted with following background colour codes:

- Implemented (Fully)
- Partially implemented
- Not implemented

S. No.	Recommendation	Compliance Status evidence detail
Section 1 – Green practices audit		
1.	Undertake environment study of local areas	Steps to be taken
2.	Plant as a gift	 <p>Mumbai, Maharashtra, India Vells College Of Arts,Commerce And Science, SCDB HIGH SCHOOL, Madhuban Colony, D.N.Nagar, Andheri West, Mumbai, Maharashtra 400053, India Lat 19.125168° Long 72.829496° 25/05/23 08:59 AM GMT +05:30</p>

<p>3.</p>	<p>Environmental awareness</p>	
<p>4.</p>	<p>Documentation</p>	

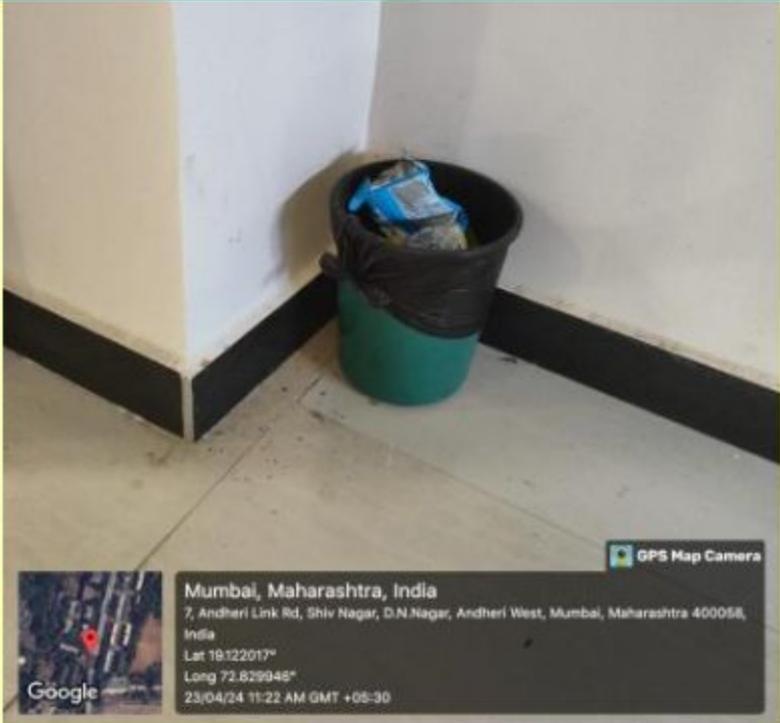
Section 2 – Waste audit		
5.	Incinerators	Steps to be taken
6.	Twin Dual Litter Dustbin Bins	
7.	Compost pit	
8.	Material of the dustbin	
9.	Dustbins at every 100m	
Section 3 – Water audit		
10.	Waste water from toilets	Steps to be taken
11.	Waterless urinals	
12.	Water flow stopper	
Section 4 – Health and Hygiene audit		
13.	Improve the smell issue near the compost zone.	Changed the location

Table 2: Details of the compliance study

4.2 Compliance technical study

The initiatives undertaken by the Institute are documented below:

S. No.	Date	Initiative
1.	04 June 2023	Tree Plantation
2.	06 August 2023	Mahim beach cleanup drive
3.	15 August 2023	Tree Plantation Drive
4.	08 September 2023	Tree Plantation
5.	09 September 2023	Tree Plantation
6.	13 to 15 September 2023	A competition on "E- RASE YOUR E- WASTE".
7.	16 September 2023	Mega mangrove clean up drive
8.	29 September 2023	Juhu beach cleanup drive
9.	29 September 2023	Versova beach cleanup drive
10.	02 October 2023	Madh beach cleanup drive
11.	03 December 2023	World Volunteer Day -Beach Cleaning Day
12.	05 December 2023	Tree plantation
13.	13 December 2023	Waste to Knowledge (newspaper collection drive)
14.	25 February 2024	Tree Plantation
15.	01 March 2024	E-Waste Collection
16.	02 March 2024	Poster making competition (World Wildlife Day)
17.	03 March 2024	Tree Plantation Drive
18.	13 March 2024	Save Sparrows Campaign

Table 3: Eco-initiative by the Institute

Evidences of the initiatives





Plate 5: Evidences of the initiatives

DETAILED

5. Investigation

5.1 Evidence

1 | Page

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Shobha Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Vaha C.E College Date: 27.04.2024

Document objective: Inferences of the Site visit

Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
- Detailed documentation of every type of waste management is undertaken	- Undertake ecological restoration projects for nearby localities
Energy Audit	
- Reduction in the nos. of lights through replacement with panel lights & white coloured interiors	- Prepare documentation of renewable source of energy
Environment Audit	
- Increase in the nos. of potted plants.	- Documentation & reflectance of the spaces as discussed

Shobha Menon
Signature & round seal
Name: Dr. Shobha Menon
Designation: Principal
For the said Institute

[Seal]
Signature & round seal
Name: Mrs. P. S. S. S.
Designation: Project Coordinator
For The Greenvio Solutions

Website: thegreensolutions.co.in Email: greenviosolutions@gmail.com



Plate 6: Evidence files related to inferences of the site visit

Evidence documents for Site visit of external audit team

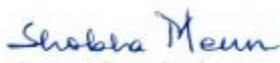
Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Valia C.L. College Date: 27.04.2024

Document objective: Induction Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. Shobha Menon	Internal	Principal	
4.	Ms. Maitri Dave	Internal	Ast. Professor	


Signature & round seal
Name: Dr. Shobha Menon
Designation: Principal
For the said Institute




Signature & round seal
Name: Ar. Nahida Abdulla
Designation: Project Coordinator
For The Greenvio Solutions



Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Plate 8: Evidence file related to induction meeting attendance record

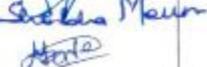
Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Valia C-2 - College Date: 27/04/2024

Document objective: **Exit Meeting attendance sheet**

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. Shobha Menon	Internal	Principal	
4.	MS Maitri Dute	internal	Asst. Professor	



Signature & round seal

Name: Dr. Shobha Menon

Designation: Principal

For the said Institute



Signature & round seal

Name: Mrs. F. A. Shaikh

Designation: Project Coordinator

For The Greenvio Solutions

Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Plate 9: Evidence file related to exit meeting attendance record

5.2 Sampling

The following results are based on the investigation carried out during the site visit.



Figure 1: Energy and environmental parameters investigation study

Comfort and sound testing as on
27 April 2024

6. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner. The same has been identified in two phases for a total duration of three years.

➤ Phase 1

- *Duration: One year from the date of Report submission – Shared currently*
- These are first hand suggestions
- They are easy and quick to implement
- They involve close very less or almost no expenses
- They can serve as a foundation for the entire plan of action

Section 1 – Green practices audit

➤ Mandatory programs should be conducted on following days

- January
 - i. Wd. Braille Day
- February
 - i. Wd. Wetland day
 - ii. Wd. Pulses day
 - iii. Intd. Polar Bear Day
 - iv. NI. Science day
- March
 - i. Wd. Wildlife day
 - ii. Intd. Action for Rivers
 - iii. Global Recycling Day
 - iv. Wd. Sparrow day
 - v. World forest day/ Intl. day of happiness
 - vi. Wd. Water day
 - vii. Wd. Meteorological & resources day
- April
 - i. Intd. Mine awareness day

- ii. World health day
- iii. Wd Atmosphere Day
- iv. Intd. Earth day
- v. Intd girl in ict/ Wd. Safety, health
- o May
 - i. Wd Migratory Bird Day
 - ii. Intd. Of plant health
 - iii. Wd. Bee day
 - iv. Intd. Biological diversity
 - v. Wd. No tobacco day
- o June
 - i. Wd. Bicycle day
 - ii. Wd. Env't day
 - iii. World Oceans Day
 - iv. Global Wind Day
 - v. Wd. Combat drought
 - vi. Sustn. Gastronomy day
 - vii. Intd. Of the tropics
- o July
 - i. Intd. Of cooperatives & World Day Free of Plastic Bags
 - ii. Soil conservation
 - iii. Wd. Population day
 - iv. Mangrove Ecosystem
- o August
 - i. Intd. Indigenous day
- o September
 - i. Intd. Clean blue sky
 - ii. Intd. Literacy/ Clean-up Day
 - iii. World ozone day
 - iv. Intd. Of peace/ Zero Emission Day
 - v. Intd. Aware food loss
- o October
 - i. Wd. Nature day
 - ii. Wd. Habitat day
 - iii. Wd. Wildlife day

- iv. Wd. Cotton day
- v. Wd. Migratory bird
- vi. Intd. Rural women
- vii. Wd. Food day
- viii. Climate Action
- ix. Wd. Cities day
- o November
 - i. Wd. Tsunami awareness
 - ii. Nl. Birds day
 - iii. Wd. Energy/ Diabetes
 - iv. Wd. Toilet day
- o December
 - i. Intd. Person with disability day
 - ii. Wd. Soil day

Note:

- ➔ Wd. Stands for World
- ➔ Intd. Stands for International Day

Section 2 - Waste audit

➔ Awareness

- Educate the housekeeping staff through monthly or quarterly programs related to waste management
- Generate awareness among student and staff stakeholders about products that generate waste through display boards about 'Do not litter' with messages about waste management, its importance and process

➔ Measures towards waste management

- Check cutlery practice in canteen area to inculcate healthy habits
 - i. Steel/ paper/ *bagasses* (sugarcane waste) plates for food
 - ii. Paper cups/ *Kulhad* or mud containers for tea
 - iii. Food served on leaf and further used for composting
 - iv. Spoons or straws made of disposable or edible material
 - v. Stakeholders can be guided to bring their own tiffin's for material management
 - vi. Possibilities of waste paper reused including newspaper for cutlery replacement can be explored

➔ Regular checks

- Food wastage - Check the quantity of food wastage in canteen and device a plan of action with the staff accordingly
- Dustbins overflow – Location of the dustbins, whether they are overflowing, whether the waste is dumped anywhere within or in backyard of premises – Take a check and collect the waste appropriately

➔ Facilities

- One dry big dustbin has to be installed in every 10-20 meters of walking area in outdoor spaces
- Install twin litter dustbins on every floor, outdoors specifically canteen - Provision of coloured specific dustbins for different waste, instruction boards at multiple locations 'OR' Blue dustbin for degradable or red dustbin for household waste or green dustbin for recyclable
- Install Sani bins with display of 'Sanitary pads icon' in washrooms of every department and toilets

Section 3 - Water audit

➔ Awareness

- Remind every stakeholder about water conservation/ avoid water wastage by displaying board at every wash room, laboratories, outdoor ground and canteen areas
- Literate employees about water conservation and educate the staff members about the measures and action that can be taken

➔ Measures towards water conservation

- Put a container below the outdoor unit pipe of every air conditioner and reuse the same for secondary purposes such as washing cars, cleaning campus outdoor areas etc. avoid using the same for plantation.
 - i. Maintain a record of the nos. of containers and water recycled on a daily basis, further prepare a monthly or quarterly report about the same

➔ Regular checks

- Check taps/ faucets of toilets, wash basins, laboratories and outdoor areas for non-working conditions and leakages on a daily basis after 5 pm or once Institute's working hours are over
- If there is hostel facility there should be a regular check once students go to the Institute for any open taps or any type of water wastage; additionally replace all showers with bucket and tap system within hostel premises
- Lock the outdoor taps when they are not in use and check pipelines for damage to avoid any non-maintenance
- Use buckets for floor cleaning to save water and recycle the waste water
- Any kind of water wastage in any area indoor/ outdoor in every department of the Institute and report about the same to authorities
- Cover any open drain/ open water area (except farm/ water pond) that can be prone to become a mosquito breeding spot

Section 4 - Health and Hygiene Audit

➔ Awareness

- Prepare specific instructions for cleaning and sanitizing and display the instructions all over premises
- Display signages/ posters about 'Do not spit' and 'Keep surrounding clean' No smoking' and 'Healthy premises' for healthy habits
- Undertake every Saturday 'Campus Cleanliness program' once in a week by the students and staff members

➔ Neat and clean premises practices

- Daily one times cleaning of all floors passage areas through sweeping dusting in indoor areas collection of dry fallen leaves and access ways; watering of plants in outdoor areas
- Daily three times cleaning, disinfecting washroom areas and check to avoid any garbage burning all around campus
- Weekly deep cleaning of building spaces including individual areas, open grounds and grass cutting

➔ Stakeholder intervention

- Practice pest control programs with through external stakeholders such that 'Once in every 15 days for Library' whereas 'Once in a month for outdoor areas such as open drains, mosquito breeding spots etc.' and 'Once in every six months or annually for entire campus'

➔ Hygiene Facilities - Availability of Sanitizing Equipment

- Water dispenser (Non-mechanic/ electric), hand wash on every floor
- There should be facilities such as potpourri, camphor tablets in the toilet to avoid smell and health related issues in toilet areas
- Install sanitary vending machine or make the sanitary pads available through a female representative, the information about the same should be displayed in foyer areas
- Green carpets could be placed outside drinking water and toilet blocks. This will add to hygiene areas and keep the water spillage under control.

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

ENERGY AUDIT

STUDY PERIOD - 2023 - 2024

Sustainability study

AUDIT REPORT

Studied for

Cosmopolitan Education Society's

**Valia Chhaganlal Laljibhai College of Commerce
& Valia Lilavantiben Chhaganlal College of Arts**

D. N. Nagar, Cosmopolitan Education Society Road,

Andheri (West), Mumbai - 400053

Studied in the capacity of

Accredited and Certified GBP



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

Email: greenviosolutions@gmail.com

Disclaimer

The Audit Team has prepared this report for the **Cosmopolitan Education Society's Valia Chhaganlal Laljibhai College of Commerce & Valia Lilavantiben Chhaganlal College of Arts** located at D. N. Nagar, Cosmopolitan Education Society Road, Andheri (West), Mumbai – 400053, Maharashtra, India based on input data submitted by the College and analyzed 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 **Cosmopolitan Education Society's Valia Chhaganlal Laljibhai College of Commerce & Valia Lilavantiben Chhaganlal College of Arts, Maharashtra** for assigning this important work of Energy Audit. We appreciate the cooperation extended to our team during the entire process.

Our heartfelt thanks to Chairperson of the entire process **Dr. Shobha Menon**, Principal for their valuable inputs.

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

- Teaching staff member (Assistant Professors) – **Mr. Arvind Panchal and Ms. Maitri Dave**
- Admin staff member (Office Superintendent) – **Mr. Anil Talekar and Mr. Sadanand Sawant**
- Non-teaching staff member – **Mr. Prabhakar Chougule**

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview.....	4
3. Observation	5
4. Compliance	6
5. Investigation	14
6. Suggestion	19
7. Compilation.....	23

1. Introduction

1.1 Statements of the Institution

1.1.1 Vision

The Institute proposes "To maintain the highest academic standards upholding the noblest ideas and moral values, to identify hidden talent, create enlightened, empowered and socially committed students and above all good human beings."

1.1.2 Mission

The Institute adheres and focuses "To provide value based quality education and training in an environment conducive to intellectual, social and cultural enrichment so as to mould responsible citizens with a harmonious blend of Indian traditions and modern technology for a better tomorrow."

2. Overview

2.1 Summarised Populace analysis for 2023-2024

2.1.1 Students data

The data (shared by the Institute) shows there were **2,176 students**.

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	07	07	14
2	Teaching staff	11	23	34
3	Non-Teaching staff	07	01	08
Total Staff Members		25	31	56

Table 1: Staff data of the Institution for 2023-2024

The staff data shows the Institute premises had **56 Staff Members**.

3. Observation

This chapter focuses on the positive aspects adopted by the Institute either based on the previous year study or as an act towards sustainability goals.

Section 1 – Energy management



Plate 1: Electrical appliances in the premises

Section 2 – Energy generation



Plate 2: Electronic appliances (Control the flow of electrons in order to perform a task) in the premises

Section 3 – Life safety management



Plate 3: Fire and life safety measures

4. Compliance

The compliance study was carried out through investigative ways. This was done to understand extent of implementations based on previous reports.

- ➔ Original report study for 2019-2020 and 2020-2021
- ➔ Renewal study one for 2021-2022 and 2022-2023
- ➔ Renewal study one (Current) for 2023-2024

4.1 Compliance status

The details of compliance are analysed on previous year Report i.e. 2022-2023 depicted with following background colour codes:

- ➔ Implemented (Fully)
- ➔ Partially implemented
- ➔ Not implemented

S. No.	Recommendation	Compliance Status evidence detail
Section 1 – Energy management		
1.	Energy efficient lighting	Panel LED lights are introduced and many nos. of appliances (Lights) are reduced

		
2.	Smart gardening	Under process
Section 2 – Energy generation (To increase the solar energy)		
3.	No major recommendations were proposed	
Section 3 – Life safety management		
4.	No major recommendations were proposed	

Table 2: Details of the compliance study

4.2 Compliance technical study

4.2.1 Section 1 - Energy management

The study focuses only on those appliances that have a scope of energy reduction and preservation as the other appliances are a mandatory requirement and cannot be overlooked.

A. Calculated Electrical Consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff.

The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioner, and equipment. The inventory and data collection for sources of energy consumed in the premise is summarised in the following sections.

The following documentation is based on the consumption practice of the premises on a regular working day.

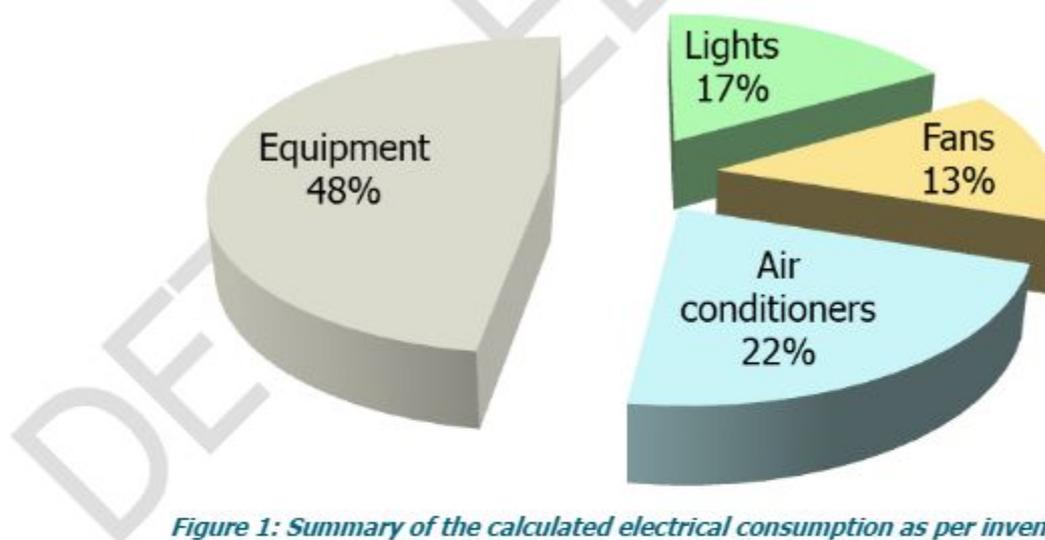


Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consume 48% whereas the air conditioners consume 22% while the lights consume 17% and the fans consume 13% of the total calculated electrical energy.

Note: The study is based on only those appliances that consume more energy or are non-energy efficient appliance.

B. Lights

B1) Types of lights based on the numbers

There are **1,005 lights on the premises** the following table shows the various types of lights on the premises.

S. No.	Type	Nos.
1	LED lights – Including sensor based lights <i>(Energy efficient appliance)</i>	856
2	Non-LED lights <i>(Non-Energy efficient appliance)</i>	149

Table 3: Summary of the types of lights on-premise

B2) Types of lights based on the power consumption

The energy consumption of lights is **38,798 kWh** of energy.

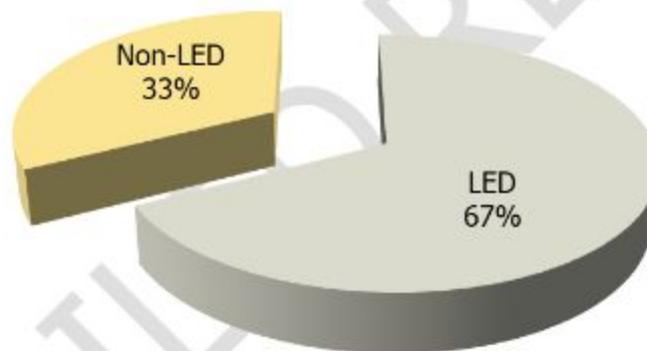


Figure 2: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights on-premises shows **LED lights consume 67%** whereas the **Non-LED lights consume 33%** of the total power consumed by lights.

C. Air conditioners

C1) Types of air conditioners based on the numbers

There are **95 nos. of air conditioners** on the entire premises.

C2) Building-wise consumption analysis

The energy consumption of air conditioners is **51,749 kWh** of energy.

D. Fans

D1) Types of fans based on the numbers

There are a total of **477 fans** on the premises as follows:

S. No.	Type	Nos.
1	Ceiling fans	453
2	Exhaust fans	17
3	Wall mounted fan	07

Table 4: Summary of the types of fans in the premises

D2) Types of fans based on the power consumption

The energy consumption of fans is **31,494 kWh** of the energy.

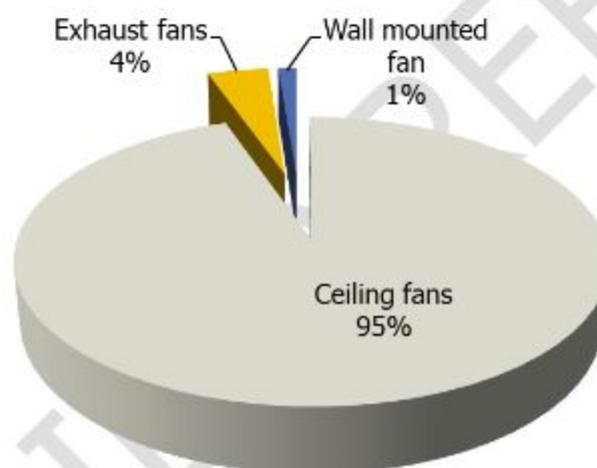


Figure 3: Types of fans based on power consumption

The above analysis shows the **Ceiling fans consume 95%** whereas the **Exhaust fans consume 4%** while the **wall mounted fans Exhaust fans consume 4%** of the total power.

E. Equipment

E1) Types of Equipment

There are **258 nos. of computers** in the Educational sector.

E2) Types of equipment as per their energy contribution

The energy consumption of equipment is **1,11,101 kWh** of energy.

4.2.2 Section 2 - Energy generation

Solar panels are available.



Plate 4: Rooftop solar panels in the premises



Plate 5: Certain areas for fabrication in the premises

Inference about the observation states:

The study suggests that there could be an awareness poster displaying detail about the renewable energy, mode incorporated, energy produced and utilised for sensitization of the stakeholders.

additionally, certain wirings require fabrication.

4.2.3 Section 3 - Life safety management

The details of the fire extinguisher refill orders are documented below:



Date: 12/01/2023

Annexure

Sub: Fixed Fire Protection System at Building

**Cosmopolitan Education Society,
Valia College,
CES Road, D. N. Nagar,
Andheri West, Mumbai- 400 053.**

This is to certify that, the Fire Hydrant and Alarm System of above building/premises is maintained and is in good working condition.
Following are the details of the system.

Sr. No.	Equipment Details	Qty.
1.	Booster Pump	01 Nos.
2.	Landing Valve	10 Nos.
3.	Courtyard Valve	06 Nos.
4.	Hose Reel Drum Set	10 Nos.
5.	Hose Box Set	16 Nos.
6.	Fire Service Inlet 2 Way	01 Nos.
7.	Fire Alarm Panel	01 Nos.
8.	Smoke Detector	101 Nos.
9.	Manual Call Point	12 Nos.
10.	Sounder	12 Nos.

The Inbuilt Fire Protection System found in good condition on day of inspection.
Alternate power supply to be provided.

For NEO ENTERPRISES

Digitally signed by SHAILESH D CHAVAN
DN: c=IN, o=NEO ENTERPRISES,
ou=MANAGEMENT,
2.5.4.20=2c744fb91af1416332141fd77a
5548b1f400794903c077b94d079b009e-
d, postalCode=410210, st=Maharashtra,
serialNumber=bb0b130ca111910b3bbf
7d5e11d1c87e67a73a154bb2b613c7315
96482bfc, cn=SHAILESH D CHAVAN
Date: 2023.01.12 17:01:51 +05'00'

**SHAILESH
D CHAVAN**

Authorized Signatory

Plate 6: Fire protection system details



Plate 7: Fire and life safety measures in the premises

5. Investigation

5.1 Evidence

1 | Page

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Shobha Abdulla
Accredited & Certified Green Building Professional, ISO 1A (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Vaha C.E College Date: 27.04.2024

Document objective: Inferences of the Site visit

Observations (Positive aspects)	Suggestions (Improvement aspects)
Green Audit	
- Detailed documentation of every type of waste management is undertaken	- Undertake ecological restoration projects for nearby localities
Energy Audit	
- Reduction in the nos. of lights through replacement with panel lights & white coloured interiors	- Prepare documentation of renewable source of energy
Environment Audit	
- Increase in the nos. of potted plants.	- Documentation & reflectance of the spaces as discussed

Shobha Menon
Signature & round seal
Name: Dr. Shobha Menon
Designation: Principal
For the said Institute


Signature & round seal
Name: Mrs. P. S. S. S.
Designation: Project Coordinator
For The Greenvio Solutions

Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Plate 8: Evidence files related to inferences of the site visit

Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Valia C.L. College Date: 27.04.2024

Document objective: Induction Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. Shobha Menon	Internal	Principal	
4.	Ms. Maitri Dave	Internal	Ast. Professor	


Signature & round seal
Name: Dr. Shobha Menon
Designation: Principal
For the said Institute




Signature & round seal
Name: Ar. Nahida Abdulla
Designation: Project Coordinator
For The Greenvio Solutions



Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Plate 10: Evidence file related to induction meeting attendance record

5.2 Sampling

The following results are based on the investigation carried out during the site visit.



Temperature testing as on
27 April 2024 conducted within
hostel premises

Figure 4: Energy and environmental parameters investigation study

6. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner. The same has been identified in two phases for a total duration of three years.

➔ Phase 1

- Duration: One year from the date of Report submission – Shared currently
- These are first hand suggestions
- They are easy and quick to implement
- They involve close very less or almost no expenses
- They can serve as a foundation for the entire plan of action

Section 1 – Energy management

➔ General practice

- The stakeholders should be educated to
 - i. Keep the lights on in the class room only when needed and unplug electrical devices when not in use.
 - ii. Electrical appliances consume energy even when you are not using them hence plugging something in only when needed can save electrical energy usage.
 - iii. At the time of locking the departments all fans, lights should be switched off.
 - iv. The students should be trained to switch off fans and lights when there is no need of them.
 - v. Staff should be trained to switch of lights and fans in their rooms when they leave the room.

➔ Awareness and vigilance

- Strict instructions for avoiding wastage of energy including rules such as if anyone is found putting on the switch unnecessary may be a punishable offence or fine

- Seminars/ Webinars/ Workshops o stakeholders on energy preservation, use of e-vehicles
- Conduct visits and monitoring by authority for check of appliances/ their working conditions/ energy usage etc. every fifteen to twenty days

➤ **Facilities intervention to reduce electrical load**

- Use white colored interiors and exterior façade to reflect light and
- Avoid dark colored interior and exterior façade, especially exterior façade
- Cover the inverters/ solar meters on the rooftop areas
- Demarcate the areas as 'DANGER' and do not allow any other stakeholder except the skilled or expertise staff member
- Cover the rooftop of outdoor air conditioner units to avoid any direct sun exposure on the top area as this may lead to increased electrical consumption and reduce the duration of quick cooling

➤ **Display information about the technical facilities**

- Any space that has any source of renewable energy in the block certain information as follows should be displayed on a board near the entrance or foyer area of the block for sensitization
 - i. 'DANGER ZONE' and 'NO SMOKING ZONE' boards
 - ii. Do and Don't for the specific type of plant
 - iii. Plant name
 - iv. Capacity
 - v. Location
 - vi. Type of renewable energy system
 - vii. Nos. of units
 - viii. Installation date, month and year
 - ix. Energy generated per day and annually
 - x. Energy consumption actual requirement per day and annually
 - xi. Energy saved per day and annually
 - xii. Last maintenance date and vendor
 - xiii. Revenue generation (if any) per day and annually
 - xiv. Institute name and logo

Section 2 – Energy generation

No suggestions for this section

Section 3 – Life safety management

➔ Display boards for awareness

- *All fire and life safety exit signages* as per NBC norms should be displayed at every nook and corner including assembly point, exit points
- *A RACE Board* at the location of extreme populace/ footfalls.
- There should be *a PASS Board* alongside every fire extinguisher



Reference suggestions 1: PASS Board display

➔ Fire and life safety measures

- Every space that has a gas cylinder/ air conditioner/ combustible appliance/ more than ten electrical or electronic appliance and Server rooms there should be EITHER sand bucket/ fire ball/ fire extinguisher

➔ Earth pit zones

- Add signboard about 'Outdoor Electrical area'
- Code the earthing pits in the courtyard.

➔ DG and Transformer area

- Add safety signages such as 'Danger-do not touch' etc.
- Add signboards about the usage such as 'Transformer areas' and 'Diesel Generator area' etc.
- Every user in this space should compulsorily jacket, helmet, gloves, boots while working and being a part of this space.
- Code the earthing pits in the courtyard.
- Add additional fire extinguishers

DETAILED R/R

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.

Specific references for study related to energy

- <https://www.energy.gov/eere/buildings/zero-energy-buildings>
- <https://www.dsaarch.com/zero-net-positive-energy>
- U.S. Energy Information Administration
- <https://www.happysprout.com/inspiration/what-is-smart-gardening/>
- <https://ieeexplore.ieee.org/document/6779316>
- <https://www.murata.com/en-global/apps/industry/security/entranceandexitsystem>
- <https://www.energuide.be/en/questions-answers/what-are-the-alternatives-to-air-conditioning/2121/>
- IGBC Green Campus rating system Abridged Reference Guide
- GEM Sustainability Certification Rating Program
- Inference study reference images
 - https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=NG125PFE4WHMWSYAK8TCAKIHMWX0F4QD
 - <https://housing.com/news/smart-gardening/>
 - <https://solarpowerproject.in/solar-panels-for-parking-lots.php>

ENVIRONMENT AUDIT

STUDY PERIOD 2023 - 2024

Sustainability study
AUDIT REPORT

Studied for
Cosmopolitan Education Society's
**Valia Chhaganlal Laljibhai College of Commerce
& Valia Lilavantiben Chhaganlal College of Arts**

D. N. Nagar, Cosmopolitan Education Society Road,
Andheri (West), Mumbai - 400053

Studied in the capacity of
Accredited and Certified GBP



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

Email: greenviosolutions@gmail.com

Disclaimer

The Audit Team has prepared this report for the **Cosmopolitan Education Society's Valia Chhaganlal Laljibhai College of Commerce & Valia Lilavantiben Chhaganlal College of Arts** located at D. N. Nagar, Cosmopolitan Education Society Road, Andheri (West), Mumbai – 400053, Maharashtra, India based on input data submitted by the College and analyzed 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 **Cosmopolitan Education Society's Valia Chhaganlal Laljibhai College of Commerce & Valia Lilavantiben Chhaganlal College of Arts, Maharashtra** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our heartfelt thanks to Chairperson of the entire process **Dr. Shobha Menon**, Principal for their valuable inputs.

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

- Teaching staff member (Assistant Professors) – **Mr. Arvind Panchal and Ms. Maitri Dave**
- Admin staff member (Office Superintendent) – **Mr. Anil Talekar and Mr. Sadanand Sawant**
- Non-teaching staff member – **Mr. Prabhakar Chougule**

Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

Contents

Disclaimer	1
Acknowledgement	2
Contents.....	3
1. Introduction.....	4
2. Overview.....	4
3. Observation	5
4. Compliance	8
5. Investigation	11
6. Suggestion	16
7. Compilation.....	19

1. Introduction

1.1 Statements of the Institution

1.1.1 Vision

The Institute proposes "To maintain the highest academic standards upholding the noblest ideas and moral values, to identify hidden talent, create enlightened, empowered and socially committed students and above all good human beings."

1.1.2 Mission

The Institute adheres and focuses "To provide value based quality education and training in an environment conducive to intellectual, social and cultural enrichment so as to mould responsible citizens with a harmonious blend of Indian traditions and modern technology for a better tomorrow."

2. Overview

2.1 Summarised Populace analysis for 2023-2024

2.1.1 Students data

The data (shared by the Institute) shows there were **2,176 students**.

2.1.2 Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	07	07	14
2	Teaching staff	11	23	34
3	Non-Teaching staff	07	01	08
Total Staff Members		25	31	56

Table 1: Staff data of the Institution for 2023-2024

The staff data shows the Institute premises had **56 Staff Members**.

3. Observation

This chapter focuses on the positive aspects adopted by the Institute either based on the previous year study or as an act towards sustainability goals.

Section 1 – Eco-restoration of outdoors (Landscape perspective)

This section was overlooked as there is a shared premises.



Plate 1: Well-maintained green spaces in the premises

Section 2 – Documentation



Plate 2: Awareness messages in the premises

Section 3 – Amenities



Plate 3: Water feeders in the premises

Section 4 – Environmental management systems

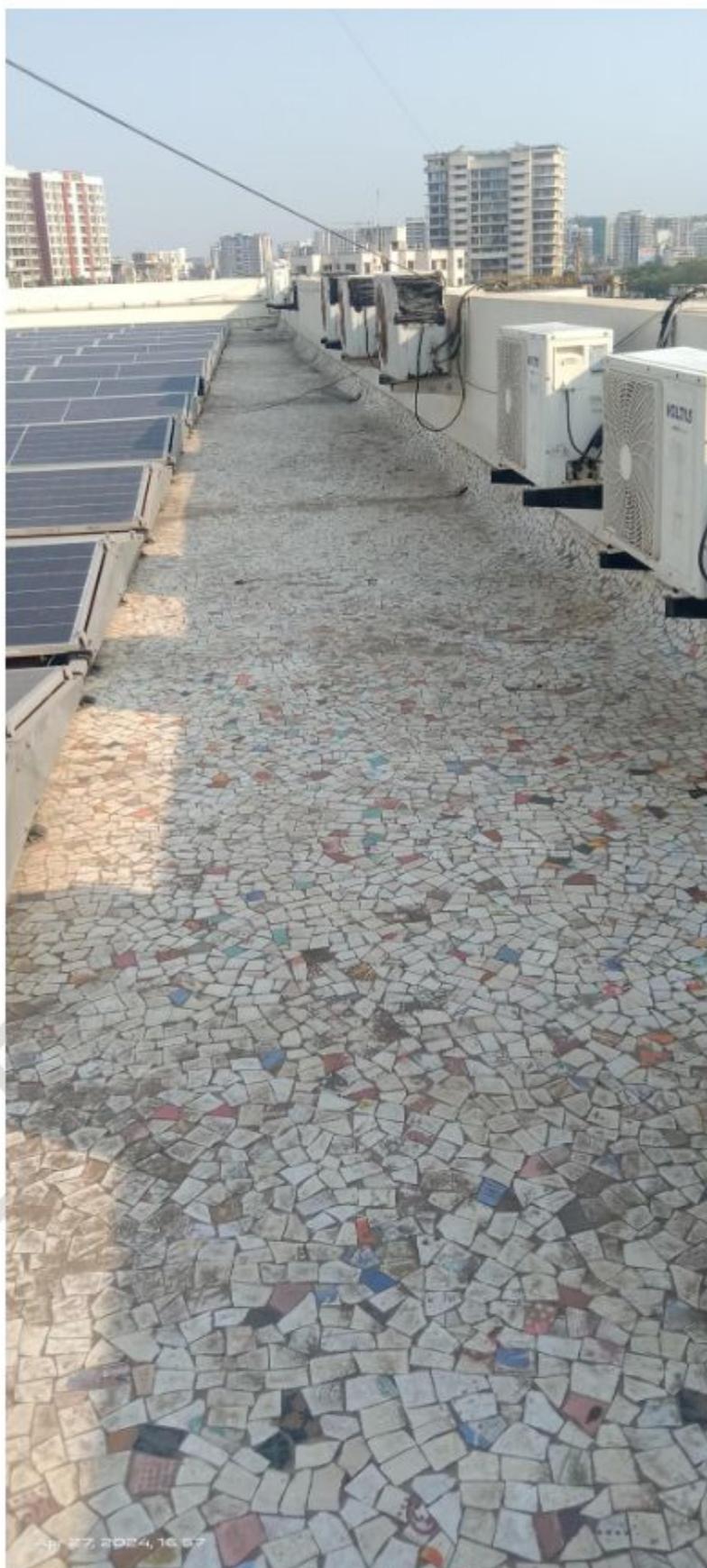


Plate 4: Rooftop with china mosaic tiles acting as white reflective material to reflect harsh sun rays

4. Compliance

The compliance study was carried out through investigative ways. This was done to understand extent of implementations based on previous reports.

- Original report study for 2019-2020 and 2020-2021
- Renewal study one for 2021-2022 and 2022-2023
- Renewal study one (Current) for 2023-2024

4.1 Compliance status

The details of compliance are analysed on previous year Report i.e. 2022-2023 depicted with following background colour codes:

- Implemented (Fully)
- Partially implemented
- Not implemented

S. No.	Recommendation	Compliance Status evidence detail
Section 1 – Eco-restoration		
1.	No major suggestions were provided in this regards	
Section 2 – Documentation		
2.	No major suggestions were provided in this regards	
Section 3 – Amenities		
3.	Child area	Steps to be taken
4.	Resting places	Implemented

		
5.	Additional facilities for birds	<p>Implemented</p> 

Section 4 – Environmental management systems

6.	Cool rooftops	Steps to be taken
7.	Specific area designated for E-vehicles	
8.	Promote the use of Eco-friendly vehicles	
9.	Battery charging points for Eco-friendly vehicles	
10.	Bicycles as a gift	

Table 2: Details of the compliance study

4.2 Compliance technical study

There are twenty bicycles used by stakeholders. The plantations in the premises comprise:

Sr. no	Botanical Name	Type	Numbers
1	<i>Ti</i>	Plant	82
2	<i>Jungle Geranium</i>	Shrub	3
3	<i>Dieffenbachia Seguine</i>	Shrub	25
4	<i>Hibiscus</i>	Flowering Plant	3
5	<i>Watery Rose Apple</i>	Herbs	1
6	<i>Coconut Tree</i>	Tree	8
7	<i>Monoon Longfolium</i>	Plants	11
8	<i>Neem</i>	Tree	3
9	<i>Holy Basil</i>	Plant	10
10	<i>Euphorbia Ingens</i>	Plant	3
11	<i>Hugrophila Carymbosa</i>	Plants	2
12	<i>Mango</i>	Tree	2
13	<i>Chinese Evergreen</i>	Plant	50
14	<i>Ficus glomerata Roxb</i>	Tree	7
15	<i>Norfolk Island Pine</i>	Tree	1
16	<i>Arabian Jasmine</i>	Flowering Plant	3
17	<i>Periwinkle</i>	Flowering Plant	3
18	<i>Oleander</i>	Tree	2
19	<i>Plumeria alba</i>	Flowering Plant	1

Table 3: Plantations in the premises

There are 220 nos. of plantations in the premises.

Evidence documents for Site visit of external audit team

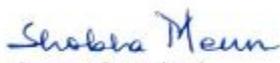
Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Valia C.L. College Date: 27.04.2024

Document objective: Induction Meeting attendance sheet

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. Shobha Menon	Internal	Principal	
4.	Ms. Maitri Dave	Internal	Ast. Professor	


Signature & round seal
Name: Dr. Shobha Menon
Designation: Principal
For the said Institute




Signature & round seal
Name: Ar. Nahida Abdulla
Designation: Project Coordinator
For The Greenvio Solutions



Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Plate 7: Evidence file related to induction meeting attendance record

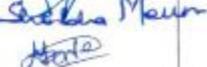
Evidence documents for Site visit of external audit team

Audit team headed by external expert - Ar. Nahida Abdulla
Accredited & Certified Green Building Professional, ISO IA (IMS)
Audit objective: Green Building up gradation of the premises

Audits covered: Green audit Energy audit Environment audit

Institute: Valia C.L. College Date: 27/04/2024

Document objective: **Exit Meeting attendance sheet**

S. No.	Name	Committee	Designation	Signature
1.	Mrs. F. A. Shaikh	External	Project Coordinator	
2.	Ar. Nahida Abdulla	External	Project Head	
3.	Dr. Shobha Menon	Internal	Principal	
4.	MS Maitri Dente	internal	Asst. Professor	



Signature & round seal

Name: Dr. Shobha Menon

Designation: Principal

For the said Institute



Signature & round seal

Name: Mrs. F. A. Shaikh

Designation: Project Coordinator

For The Greenvio Solutions

Website: thegreenviosolutions.co.in Email: greenviosolutions@gmail.com



Plate 8: Evidence file related to exit meeting attendance record

5.2 Sampling

The following results are based on the investigation carried out during the site visit.



Figure 1: Energy and environmental parameters investigation study

Comfort and sound testing as on
27 April 2024

6. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner. The same has been identified in two phases for a total duration of three years.

➔ Phase 1

- Duration: One year from the date of Report submission – Shared currently
- These are first hand suggestions
- They are easy and quick to implement
- They involve close very less or almost no expenses
- They can serve as a foundation for the entire plan of action

Section 1 – Eco-restoration of outdoors (Landscape perspective)

➔ Feeders

- At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.

➔ Numbering the plantations in the premises

- Make a list of all the plantations in the premises
- Secondly, start numbering the plantations in either of the ways:
 - i. Painting the nos. on iron plates and nailing the same
 - ii. Printing the nos. on paper, laminating and pasting the same
 - iii. Painting the nos. with letters and nos. directly
- Care should be taken that the display should be visible
- Uniform color palette should be identified and used
- Measures should be taken to avoid withering during monsoon
- This could be undertaken as a student activity



Reference suggestions 1: Numbering the plantations

➔ Improve the ecological footprint of the premises

- Undertake the landscape ecological redesign to increase green cover
- The following plantations can be planted for Carbon neutralisation as an additional measure, even though they might be existing in premises

- i. Neem – Helps reduce greenhouse gases through photosynthesis absorbing large quantities of CO₂ producing oxygen

(<https://neemfoundation.org/greening-india-with-neem/#:~:text=The%20planting%20of%20Neem%20trees,of%20CO2%20and%20producing%20oxygen>)

- ii. Peepal – Can uptake CO₂ during the night as well because of its ability to perform a type of photosynthesis called Crassulacean Acid Metabolism (CAM)

([https://nurserylive.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2,-,Peepal,Crassulacean%20Acid%20Metabolism%20\(CAM\)\)](https://nurserylive.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2,-,Peepal,Crassulacean%20Acid%20Metabolism%20(CAM))))

- iii. Teak – The highest capacity for carbon sequestration among trees in India. This is the finding of a study conducted by the Gujarat Ecological Education and Research (GEER).

(<https://timesofindia.indiatimes.com/city/ahmedabad/teak-absorbs-max-co2-from-air-helps-check-global-warming/articleshow/51721842.cms>)

➔ Plant as an extension of 'Green motto'

- External resource persons visiting the premises can share the goal of green environment in the following ways:

- i. Plant a sapling within the premises
- ii. Handover a sapling as a gesture

Section 2 – Documentation

➔ Messages on the beam area

- Include quotes and messages from eminent personalities all over the premises on beam for inspiration and beautification.

➔ Awareness

- Introduce zone wise display boards at relevant locations

Section 3 – Amenities

➔ Facilities

- Speed limit signage
- First aid box near the administrative area
- Suggestion box every floor of the premises

Section 4 – Environmental management systems

No recommendations proposed for this section.

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.

National references

- IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013

International references

- The city of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States
- Streetscape elements – Chapter 6 on San Francisco
- American lung association <https://www.lung.org/>
- Study related to air pollution <https://www.airgle.com/>
- Exploring the light pollution <https://education.nationalgeographic.org/>
- Urban heat island effect <https://www.epa.gov/heat-islands/what-you-can-do-reduce-heat-islands>

