Environment Audit

Study Period (One Year) 2023 - 2024

Sustainability study

AUDIT REPORT

Studied for

Institute of Engineering,
Technical Campus, Bhaddal (Ropar)

Village: Bhaddal, P.O.Mianpur,
Rupnagar – 140108, Punjab

Studied in the capacity of

Accredited and Certified
Green Building Professional

Studied by

Website: https://thegreenviosolutions.co.in/
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Disclaimer

The Audit Team has prepared this report for **Institute of Engineering, Technical Campus, Bhaddal (Ropar)** located at *Village: Bhaddal, P.O.Mianpur, Rupnagar – 140108, Punjab* 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.

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.

Ar. Nahida Abdulla

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

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Acknowledgement

The Audit Assessment Team extends its appreciation to **Institute of Engineering, Technical Campus, Bhaddal (Ropar), Punjab** for assigning this important work of Environment 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.

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

Sustainable Academe
Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 About the Institution

1.1.1 Vision

The Institute proposes

- *To impart high-caliber professional education in the state of Punjab, especially to the underprivileged population in the Kandi area, with the aim of improving their socio-economic conditioneconomic condition.*
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1.1.2 Mission

The Institute's focuses and adheres towards:

- *To establish state-of-the-art technical and professional institutes andtheir subsidiary institutes in the Kandi area.*
- *To plan and implement rural development programs in the area surrounding the Institute.*
- *To raise awareness about education, health and socio-economic development among the rural populace of the area.*
- *To achieve Excellence in each and every pursuit and to raise the standards of the Institute so as to attain an autonomous status.*

2. Overview

2.1 Summarised Populace analysis for 2023-24

2.1.1 Students data

The data (shared by Institute) shows there were 435 students. (Male and female)

2.1.2 Staff data

Above data documents 61 staff members.

Thus, total populace stands at 496 nos.

3. Documentation

3.1 Ecological audit

The campus is spread over 58 acres of land comprising a built-up area of 4,29,368 sq. ft.

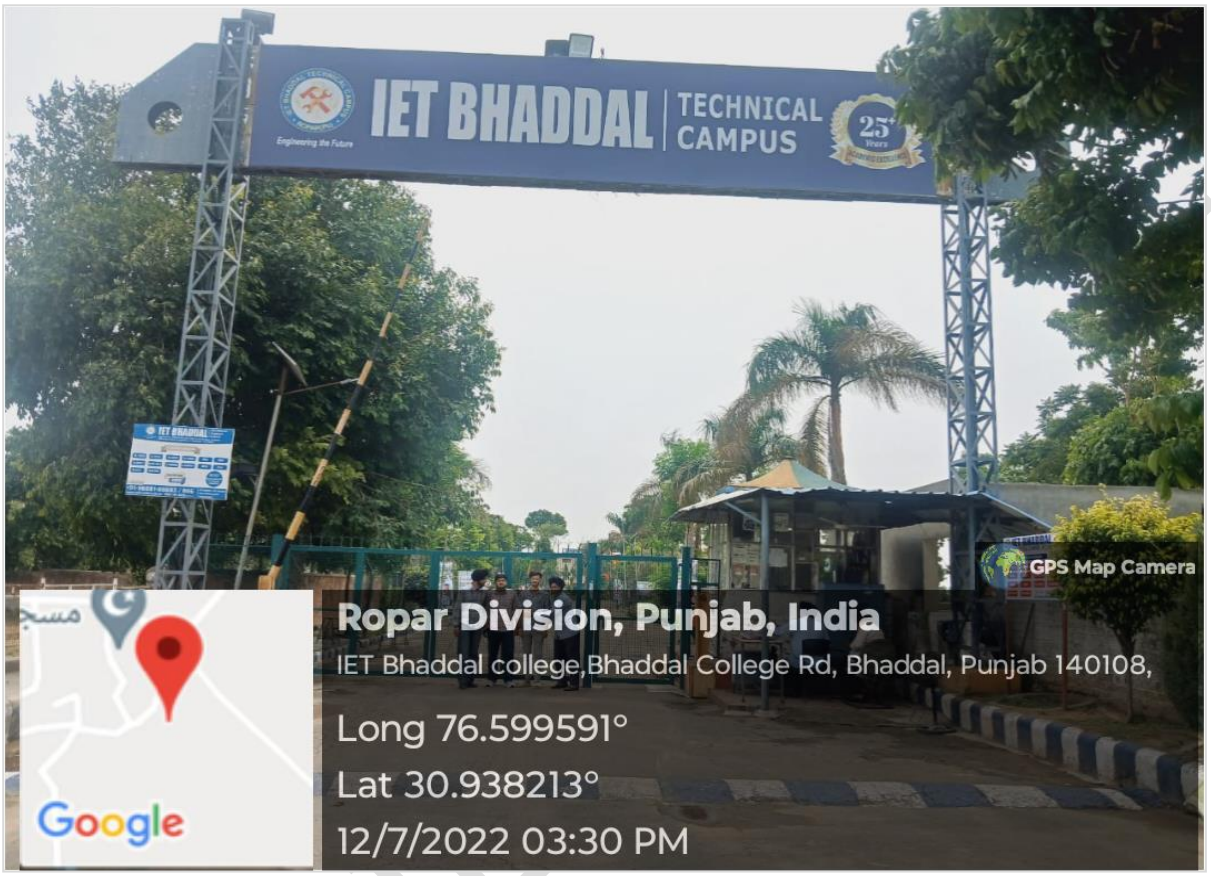


Plate 1: Campus entrance

3.2 Biodiversity audit

3.2.1 Flora audit

The provided information is documented below:

S. No.	Plant name	Type	Nos.	Planted by
1	Oak	Tree	3	By Staff
2	Giloy	Plant	2	By Staff
3	Brahmi	Shrub	Innumerable	By Staff
4	Brahmabuti	Shrub	Innumerable	By Staff
5	Basil tulsi	Shrub	Innumerable	By Staff
6	Curry Patta	Plant	4	By Staff

7	Lemon grass	Shrub	Innumerable	By Staff
8	Ashoka	Tree	5	By Staff
9	Safed musli	Plant	3	By Staff
10	Mahua	Plant	4	By Staff
11	Neem	Plant	3	By Staff
12	Datura	Plant	3	By Staff
13	Kapoor	Plant	4	By Staff
14	Jamun	Tree	4	By Students
15	Kachnar	Plant	3	By Students
16	Shatavari	Plant	3	By Students
17	Sarpagandha	Plant	4	By Students
18	Bahera	Plant	3	By Students
19	Oak	Tree	3	By Staff

Table 1: Plants information

As per above study there are more than 48 nos. of plantations of various typologies.

Plate 2: Plantations in and around campus

Plate 3: Green cover and shaded plantations within site

3.2.2 Further understanding

Query	Yes/ No	If yes then details
Any research carried about flora?	No	
Any Publication presented about flora of campus?		
Any book prepared about flora of campus?		

Table 2: Technical data about the flora

3.2.3 Fauna audit

The data shared documents sparrows and ants as part of campus fauna.

3.3 Carbon Footprint Audit – Heat Island Reduction

The heat island effect refers to the study of micro climatic feature within a site. There are multiple factors that add on to feature such as external temperature, internal temperatures, site context including available and site adjacent facilities. Observed features include:

Plate 4: Light colored interior and exteriors

Plate 5: Shaded spaces with architectural elements providng aesthetically sound spaces

4. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner.

- Conduct the 'Before' and 'After' study with photos
- Document the same in 'Action taken report'

S. No.	Aspect with evidence if any	Suggestion
1.	Ecological aspect **Aspect area:** **Plant as an extension of 'Green motto'**	External resource persons visiting the premises can share the goal of green environment in the following ways: 1. Plant a sapling within the premises 2. Handover a sapling as a gesture
2.	Biodiversity aspect **Aspect area:** **Numbering the plantations in the premises**	Make a list of all the plantations in the premises and start numbering the plantations in either of the ways: 1. Paint the nos. on iron plates and nail the same 2. Print nos. on paper, laminate and paste the same 3. Paint the nos. directly Sample image for 3 examples are noted below.  ***Options for numbering the plantations*** 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.

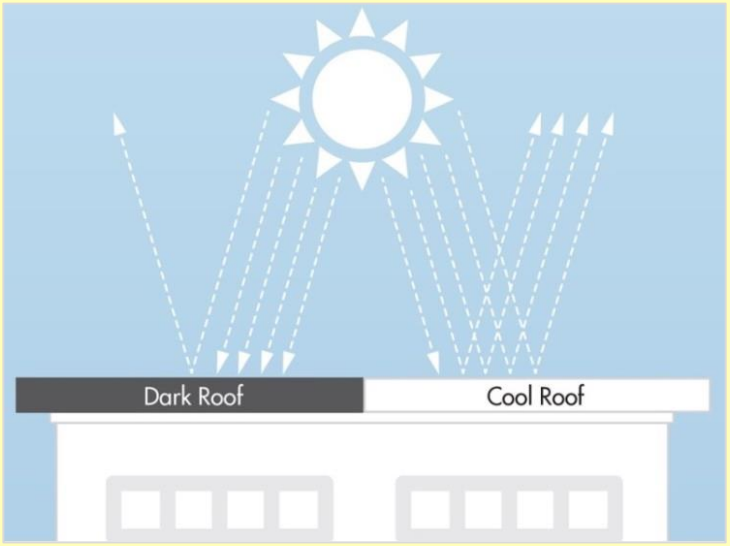
3.	Biodiversity aspect **Aspect area:** **Water and food feeders**	At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.  ***Food and water feeder*** Waste plastic bottles can be recycled & used as a student activity
4.	Carbon footprint aspect **Aspect area:** **Environment monitoring**	Install CO_2 monitor in public areas of indoor areas such as porch and AQI meter in outdoor areas near compound wall
5.	Carbon footprint aspect **Aspect area:** **Cool rooftops**	Terrace rooftops can be painted with Cooltop (Reflective material) to reflect the harsh sunrays and reduce the heat absorption in the top most floor and surrounding areas of the building. Introduce signboards about 'No students are allowed to enter' Undertake feasibility study of before - after temperature reading.  ***Cool roof comparative analysis (For reference purpose only)*** Source: Image by https://www.gaf.com/en-us/blog/six-truths-about-cool-roofs-281474980105387

Table 3: Observation based suggestion study of the campus

5. 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/heatislands/what-you-can-do-reduce-heat-islands