

ENVIRONMENT AUDIT

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

Sustainability study AUDIT REPORT

Studied for
Karnala Sports Academy's
**Barns College of Arts,
Science and Commerce**

Plot No 7, Sector 16, Behind HOC Colony, Thana Naka,
Panvel - 410206, Maharashtra, India.

Studied in the capacity of
Accredited and Certified
Green Building Professional



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Valid till March 2024

Disclaimer

The Audit Team has prepared this report for the **Karnala Sports Academy's Barns College of Arts, Science and Commerce** located at Plot No 7, Sector 16, Behind HOC Colony, Thana Naka, Panvel - 410206, Maharashtra, India based on input data submitted by the Institute 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 a 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 while 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 an Accredited and Certified Green Building Professional-Architect; I.A.(IMS) 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 incapacity of an Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

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Acknowledgment

The Audit Assessment Team thanks the **Karnala Sports Academy's Barns College of Arts, Science and Commerce, Maharashtra, India** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to **Mr. Vivek Patil**, Chairperson; **Dr. Kamble Shivdas Vitthal**, CEO/Member Secretary and everyone from the Management.

Our heartfelt thanks to the Chairperson of the entire process **Mr Kalpesh Krushna Bholr**, I/c Principal, for the valuable input.

We are also thankful to **Institute's Taskforce** who have been instrumental in the data collection – **Mrs. K. D. Shara**, Vice-Principal; **Mrs. Anju Sonkhla**, IQAC Co-ordinator; **Mr. Prashant Patil**, Chairperson D.L.L.E; **Mrs. Mayuri Wadke**, Head of Department (I.T.) and **Mr. Chandrakant Mukadam**, N.S.S Co-ordinator.

We highly appreciate the assistance of **Mrs Mansi Mhatre** and **Mrs. Aparna**, Clerk; **Mrs. Jyoti Mhatre**, Accountant and 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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1. Introduction

1.1 About the Institute

It was established to provide education for marginalized and rural masses in this area. In fact, education, especially higher education, is an “ever changing and never ending process.” In this regard, we have been proactive in picking right signals to ensure that our future endeavours make an impact in developing our students to influence society at large.

The College offers Traditional Courses in Arts (Rural Development, Geography and Economics) and Commerce, also provides Professional courses in Informational Technology, Bachelor of Commerce in Accounting and Finance and Bachelor of Management Studies (BMS) along with this college provides remedial and bridge courses. College provides career guidance and placement for the future development of the students.

In the span of 14 years, the college has brought up success because of its comprehensive development and excellence in academics, sports and cultural at University, State as well as National level.

1.2 Mission Statement of the Institute

1.2.1 Vision

The College proposes *"To provide affordable and excellent quality education, where students can achieve prospects in their academic, physical and overall development with enhanced knowledge, talent and skill, so as to become empowered and worthy citizens in shaping the future of our society and nation."*

1.2.2 Objectives

The College adheres and focuses

- *To impart ethical code of conduct among the students to bring sustainability in society.*
- *To complement the students personality by encouraging their participation in curricular and extracurricular activities*



- To make students responsible stakeholders of the society.
- To engage in on-going assessment of the faculty, students and curriculum so that we continue to build on our strengths and address our concerns in a meaningful way in an ever-changing world
- The motto of our institution is to impart quality education and instil the virtues of being considerate, truthful and disciplined to make optimum efforts for every kind of growth to move ahead in life.
- Provide opportunities for continuously updating the knowledge of faculty through faculty exchange from premier institutions and industry.
- Organizing and participation of staff and students in in-house and outside training programs, seminars, conferences and workshops on a continuous basis.

1.3 Assessment of the Institute

1.3.1 Affiliations

The Institute is affiliated to **the University of Mumbai**, a collegiate, state-owned, public research university in Mumbai and is one of the largest universities in the world.

1.3.2 Certifications

The College uploads the data require for the survey every year through its registered code C-33991 to the **All India Survey of Higher Education (AISHE)**.

1.4 Academic status of the College

The College provides a wide range of courses in following sections:

- **Graduation**
- **Post-Graduation**
- **Certificate Programmes and Courses**

The College works toward training young men and women to be competent, committed, and compassionate, and lead in all walks of life.



2. Institution overview

2.1 Summarised Populace analysis

2.1.1 Research study for 2022-2023

Students data

The data (shared by the Institute) shows there were a total of **527 male** and **230 female students**.

Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	2	4	6
2	Teaching staff	8	18	26
3	Non-Teaching staff	11	1	12
Total Staff Members		21	23	44

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

The staff data shows the University premises had a total of **44 Staff Members**.

2.1.2 Research study for 2021-2022

Students data

The data (shared by the Institute) shows there were a total of **561 male** and **194 female students**.

Staff data

S. No.	Type	Male	Female	Total
1	Admin staff	2	4	6
2	Teaching staff	7	16	23
3	Non-Teaching staff	11	1	12
Total Staff Members		20	21	41

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

The staff data shows the University premises had a total of **41 Staff Members**.

2.2 Total Institute & Institute Building Spread Area

The total site area is 12.5 acres and the total Built-up area of the Institute is 20,660 sq. ft. for a total of 801 footfalls.

2.3 Institute Infrastructure

23.1 Establishment

The Institute was established in July 2008.

23.2 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.

2.4 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 07:30 am to 13:30 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
- Site visit at the Institute
- Submission of the files



4. Documentation

4.1 Flora Audit

A flora survey was undertaken by the Institute wherein a detailed counting and documentation of the plants was carried out as part of this activity. The information shared has been further refined and noted below:

S. No.	Plant Name	Type	Nos.	Planted By
1	Coconut	Tree	29	Students
2	Almond	Tree	10	Students
3	Mango	Tree	10	Students & Staff
4	Purple	Tree	10	Students & Staff
5	Amla	Tree	6	Students & Staff
6	Neem	Tree	2	Grown Naturally
7	Champa	Plant	4	Students & Staff
8	Papaya	Tree	2	Students & Staff
9	Guava	Tree	2	Students & Staff
10	Banyan	Tree	1	Students & Staff
11	Jack Fruit	Tree	2	Students & Staff
12	Gulmohar	Tree	19	Students & Staff
13	Karanj	Tree	2	Students & Staff
14	Ashoka	Tree	5	Students & Staff
15	Bauhinia Racemosa	Tree	2	Students & Staff
16	Lemon	Tree	1	Students & Staff
17	Chiku	Tree	5	Students & Staff
18	Betel Nut	Tree	2	Students & Staff
19	Umber	Tree	1	Students & Staff
20	Show Plant	Plant	35	Students & Staff

Table 3: Details of the Flora in the premises

At present there are more than 150 numbers of plantations comprising of plants, trees, shrubs. Timely maintenance with sufficient care has resulted in positive benefits for the surroundings.

In addition to natural plants there are innumerable potted plants all over the premises.

4.2 Open spaces

The premises shares its campus with the Karnala Sports Academy, which is one of its kind sports academy in Panvel city of the Raigad district, Maharashtra. Owing to this innumerable sport activities are undertaken on a daily basis and thus the premises boasts of multiple open spaces and sports related facilities which are good for the well-being of the stakeholders.

4.3 Noise Audit

On a macro level the College being an educational institute falls under silent zone; however the following observations were noted on site:

- It shares its premises (Open and built-up spaces) with Karnala Sports Academy where there are activities undertaken on a daily basis.
- On the opposite site of the premises is a premier educational institute and an on-going construction site for an upcoming tower which creates noise due to the activity.
- The site is adjacent to the local regional RTO office where regular vehicle testing is going on a day-to-day basis.
- Within a 10 min walking distance is the Expressway to Pune on one side and the expressway towards Mumbai on the other side.
- Overall, the location is amidst an urban scenario and thus the noise levels are considered to be high; however the number of huge trees along the boundaries reduces the outside noise to a great extent.
- **We would suggest improving the acoustical aspects of the interiors.**

4.4 Carbon Footprint Audit

4.4.1 Eco-friendly Commuting Practices

Based on data collection and discussion with staff the following points were noted:

Ease of commuting – Owing to close proximity to public transport the access is very feasible and walk able.



4.4.2 Heat Island Reduction

The Institution is geographically located in an urban area, however when the team was interacting on site too much of humidity in the atmosphere was felt. There was a lack of freshness and cool air hence this section requires lot of improvement.

4.4.3 Outdoor Light Pollution Study

The College compound lights are not upward looking thus, these do not cause light pollution.

4.5 Universally accessible premises

As per World Report on Disability, 2011 there are 180 million approx. Persons with Disabilities that makes it 15% of total population of India.

The facilities available on the premises for the specially-abled as part of universally accessible premises initiatives is only the **Handrails along the staircase and Low height risers in the staircases**

4.6 Fire Safety

Only fire extinguishers are available as a Fire and life safety measure.



5. Suggestion

5.1 General suggestions based on the site visit

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.

- The toilet areas have a stinking and odour issue; initiatives such as potpourri/ camphor tablets, exhaust fans should be undertaken.
- Ramp should be constructed near the entrance.
- There should be an increase in the frequency of cleanliness and odour related issues in premises.
- Undertake certain acoustical barriers within the interiors
- There is withering of certain wall putty in some places (as shown to the team) this needs to be improved.
- The balcony areas can be beautified further
- The interiors can be beautified using the quotes on walls.
- Increase the nos. of dustbins.
- Increase the nos. of potted plantations and vertical gardens on every floor.
- Improve the entrance to the building and the entrance to site.
- Initiative appropriate location and signboards for outsider's convenience.
- Increase the nos. of plantations on the site.
- Increase the nos. of water coolers on the outdoor areas.
- **Undertake a fire audit mandatorily.**



5.2 Section-wise suggestions based on general study

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.

Site beautification

- **Bird house/ Feeders** - At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.
- **Garden development** - Scientific name plates and QR codes – The team should undertake a project to have name plates with QR codes on every plant of the premises.

Heat island reduction

- **Cool rooftops** - It is suggested that the Institute gets the Terrace roofs painted with Cooltop as it will help reduce the temperature of the spaces.
- **Shaded area for walkways** – There should be provisions for shaded walkways and also resting/ breakout zones. A sample of the same is as follows:



Plate 1: Shade structures concept for the Institute (For reference purpose only)

Source: Image by <https://earthbound.report/2021/07/14/5-ways-to-reduce-the-urban-heat-island-effect/>



Universally accessible premises

- **Universal Toilet** - There should be a minimum of 1 toilet in every block for the specially-abled people as per guidelines prescribed by the National Building Code 2016.
- **User-friendly movability on-premises** - There should be the provision of a Kerb Ramp near the main entrance of the Building premises, also a low height handrail for ease of access.

Life safety

- **Fire and life safety practices** – Provisions such as signages, fire alarm, smoke detectors, fire hydrant cabinets, sand buckets, hose reel, fire cabinet, fire water tank and fire pump near the entrance block whichever is applicable should be practiced.
- **Sensitization programs** - Regular seminars/ webinars by experts such as Architects, Govt. Fire department on subjects related to fire and life safety should be organized and the outputs should be adopted and documented.

Pollution Control

- **Vehicle usage** - Restricting the speed limit of vehicles on the premises to 10 km per hour, not honking on the premises will help in maintaining the sound in control and emphasis on a silent zone.
- **Bicycles as a gift** - As an appreciation gesture maybe the student's toppers/ staff best performers can be awarded a bicycle occasionally.
- **Plant more carbon dioxide absorbing plants** - The following plantations should be planted as they will help in Carbon neutralisation.
 - **Neem** – It helps to reduce greenhouse gases through photosynthesis absorbing large quantities of CO₂ and producing oxygen.

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

- **Bamboo** - It can absorb as much as 12 tonnes of carbon dioxide per hectare per year, giving the plant a potentially crucial role in stabilising our planet's atmosphere.

(<https://www.theguardian.com/environment/2003/mar/20/research.science#:~:text=Research%20in%20Japan%20and%20elsewhere,in%20stabilising%20our%20planet's%20atmosphere>) and <https://www.nelda.org.in/15-Indian-trees-that-produce-the-most-oxygen>



On-site investigation and physical verification
Audit Team during the visit and other photos collected during data documentation



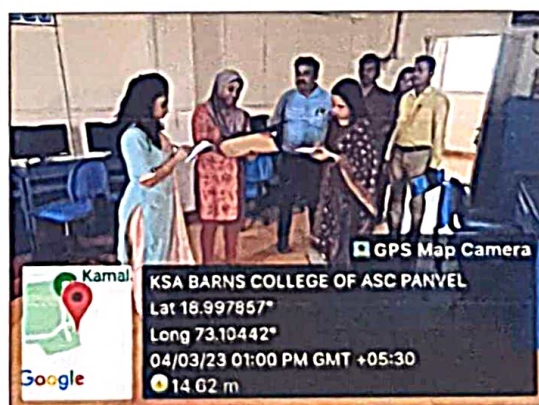
Meeting with Dr. Kamble Shivdas Vitthal, CEO; Mrs. K. D. Shara, Vice-Principal and Mrs. Anju Sonkhla, IQAC Co-ordinator;



Discussion with the core team and group photo with the team



Tree plantation activity undertaken by the team for environmental awareness



On-site investigation of the premises



6. References

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>

