

ENVIRONMENT AUDIT

STUDY PERIOD (TWO YEARS) 2020-2021 AND 2021-2022

Sustainability study

AUDIT REPORT

Studied for

Late Digambarrao Bindu Smarak Samiti's

**Digambarrao Bindu Arts,
Commerce & Science College**

Bhokar, Tamsa Road, Taluka Bhokar 431801,

Dist. Nanded, (MS.) India

Studied in the capacity of

An accredited & Certified Green Building Professional



Studied by

Greenenvia
Solutions

Valid till August 2023

Disclaimer

The Audit Team has prepared this report for the **Late Digambarrao Bindu Smarak Samiti's Digambarrao Bindu Arts, Commerce and Science College** located at *Bhokar, Tamsa Road, Taluka Bhokar 431801, Dist. Nanded, (MS.) India* based on input data submitted by the College analysed by the team to the best of their abilities.

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

These can be implemented phase wise or as a whole depending on the decision taken by the Hon'ble Management and College. 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.

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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 has completed audits of multiple Institutes including Technical, State University, Private University and Single Faculty Colleges for a total of more than 60 lakhs+ sq. ft. of Built-up area audited till date Pan India as an Accredited and Certified Green Building Professional-Architect; ISO Certified 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 in capacity of Accredited & Certified Green Building Professional with extensive experience.

Greenvio Solutions

Developing Healthy and Sustainable Environments

We are an Environmental and Architectural Design Consultancy firm

Sustainable Academe is our department for conducting Audits

Palghar District, Maharashtra- 401208

sustainableacademe@gmail.com

Acknowledgement

The Audit Assessment Team thanks the **Late Digambarrao Bindu Smarak Samiti's Digambarrao Bindu Arts, Commerce and Science College, Nanded** 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 **Dr. Madhavrao Patil Kinhalkar**, President; **Shri Apparao Taterao Deshmukh**, Vice-President; **Shaikh Muradsab Manjramkar**, Secretary; **Shri Narayanraoji Kundgulwar**, Joint Secretary; **Shri Rajeswarrao Deshmukh Deothankar**, Treasurer; **Shri Sunil Manoharrao Joshi**, Member and everyone from the Management.

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Sustainable Academe

Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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DETAILED REPORT

1. Introduction

1.1 About the founder

The Senior Freedom Fighter and social worker Shri. Bhujangrao Patil Kinhalkar founded it. His intention was to make the area as far as possible educationally self-contained. Nanded District in Marathwada region has been declared as educationally backward. Bhokar, one of the Talukas of the district is located on the boundaries of Maharashtra & Andhra Pradesh, it is most backward part of the district. Most of the population in the area belong to tribal & backward communities like SC/ST's who do not have much access even to primary education, then higher education in such a scenario was distant matter.

Therefore, being a visionary person, he laid the objective of Digambarrao Bindu Arts, Commerce and Science college to offer a sound, secular and moral education both for boys & girls. He always emphasized on girl's education. The key to the whole character of the college, therefore, is to produce tolerant, humane & magnanimous people.

1.2 Statements of the Institution

Vision - To Provide value based quality education & generate Human Resource Equipped with contemporary advance skills.

Mission – The College has formulated the following mission to achieve its vision.

- ⇒ To make the students aware about the career opportunities available through the programs offered to them.
- ⇒ To refine the personality of the students with positive approach and purposeful skills.
- ⇒ To mould the character of students through value based education.
- ⇒ To search the students in the area who are eligible but deprived of taking higher education.
- ⇒ To create environmental and social awareness by exposing students to various activities.
- ⇒ To contribute to the development of economically backward area by helping the rural students to get quality education and to facilitate them the global stream of course.

1.3 About the Institution

Digambarrao Bindu Arts, Commerce and Science college, Bhokar Dist. Nanded is run by the parent institution late Digambarrao Bindu Smarak Samiti, Bhokar Dist. Nanded has a glorious history of its own.

Digambarrao Bindu Arts, Commerce and Science college has maintained a dress code not only for students but for employees also. It helps to improve uniformity in diversity.

Apart from the regular curricular activities since its opening it has always attempted to foster and maintain a healthy atmosphere of academic and social discipline and sound education through organizing number of co-curricular, extra-curricular and extension activities to develop students in all round way. Like the students our teaching & Non-teaching staff in their corporate life participates in number of activities to update and upgrade themselves.

From its opening to still today Digambarrao Bindu Arts, Commerce and Science college prepared number of students to meet the challenges of the millennium and acquires better career opportunities both in private, government & public sectors. The credit of it goes directly to the disciplined administration, hardworking teaching & non-teaching staff, healthy support in the form of text, reference books, journals, subject periodicals, magazines from the central library.

As a result of its continuous efforts and smooth conduct Digambarrao Bindu Arts, Commerce and Science college has been accredited and assessed in January-2004 for first cycle and Reaccredited in 2016 with B grade with CGPA 2.40 for second cycle by NAAC, Bengaluru.

The Aim of the College "To Provide value based quality education & generates Human Resource Equipped with contemporary advance skills."

The Objectives (Goals) of the College are as follows:

1. To provide quality education by offering the skill base course in rural area.
2. To mould and shape the rural students for their all-round development according to demands of local, state and national level and to instil self confidence in them.
3. To inculcate patriotism and the realization of their responsibility towards their environment and society.

The Institution offers the following courses.

- **Junior College**
 - ⇒ Arts
 - ⇒ Science
- **Senior College**
 - ⇒ Commerce
 - ⇒ Science
- **UGC Course**
 - ⇒ M. Com – BIS
 - ⇒ COC/ COP
 - ⇒ Study centre
 - ⇒ HRE
 - ⇒ M.R.P./ F.I.P./ F.D.P.
- **Distance Education courses**
 - ⇒ Undergraduate courses
 - ⇒ Post-graduate courses
 - ⇒ HRE
 - ⇒ CPCT

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

1.4 The surrounding premises around the Institution

The Premises is situated amidst the landscape serene of **Nanded district of Maharashtra** with immense peace and calmness in the surroundings. There is a frontal approach which provides quite a beautiful appreciation space while approaching the premises; this area is surrounded by huge trees which positively complement the background-foreground aspect in terms of Natural space and built-form Architecture. It also provides ample shade which enhances the micro climate of the region. The location of College is feasible to the nearby essential amenities such as Public Health Center, Fire Station, Civic body-Public administrative buildings, Recreational gardens and Police Station which are not too close but nearby.

1.5 Assessment of the College

1.5.1 Affiliations

The College has all its courses approved and affiliated to **the S.R.T.M.U. Nanded, Maharashtra state.**

1.5.2 Certification

- **AISHE** – The College has the AISHE Code since 2015-16
- **ISO** – The College is ISO 9001:2015 Certified.

1.5.3 Accreditation

NAAC - The following are details of the reaccreditation of the College.

Cycle	First	Second
CGPA	-	2.40
Grade	C	B
Year	2004	2016

Table 1: NAAC Accreditation details of the Institute

The College is due to enter its Third cycle of NAAC.

1.5.4 Recognitions

The College has achieved the following recognition from **University Grant Commission (UGC) under section 2 (f) and 12 (b) of the UGC Act by University Grants Commission, New Delhi.**

1.6 Achievements of the College

The College has a tremendous track record of excellence in Built form and educational services provided, below are some of the achievements of the prestigious Institute.

- ⇒ **Best College Award** by SRTM University, Nanded
- ⇒ **Jagar Janivancha Award** for Vedan an Annual magazine of College by State Government of Maharashtra.
- ⇒ **Best Annual Magazine Awards** by SRTM University, Nanded consecutively.

2. Institution overview

2.1 Populace analysis for Academic year 2021-2022

2.1.1 Students data

The student data (shared by the College) shows there were a total of **588 Boys and 416 Girls, thus a total of 1,004 students** in the premises.

2.1.2 Staff data

Type	Male	Female	Total
Admin Staff	01	00	01
Teaching Staff	30	01	31
Non-Teaching Staff	11	01	12
Total Staff Members	42	02	44

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

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

2.2 Populace analysis for Academic year 2020-2021

2.2.1 Students data

The student data (shared by the College) shows there were a total of **594 Boys and 489 Girls, thus a total of 1,083 students** in the premises.

2.2.2 Staff data

Type	Male	Female	Total
Admin Staff	01	00	01
Teaching Staff	30	01	31
Non-Teaching Staff	11	01	12
Total Staff Members	42	02	44

Table 3: Staff data of the Institution for 2020-21

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

2.3 Total College Area & College Building Spread Area

The **total site area is 9 Acres** and the **total Built-up area of College is 40,659 sq. ft.** for a **total of 1,048 footfalls.**

2.4 College Infrastructure

2.4.1 Establishment

The College was established in 1989. The college is located pretty close to nature and hence has very fresh environment which is absolutely pollution free and healthy. The Building is a Reinforced Cement Concrete (RCC) framework building. **Overall the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat.**

2.4.2 Spatial Organisation

The overall ambience of the College is warm and inviting. The classrooms and other spaces have ample natural ventilation in the form of clear glass windows with fresh air ventilation. The architecture of the building is quite well designed. The colour palette not just helps the building to stand out but also provides an Institutional arena. It balances with the local architecture with the natural landscapes of huge trees all around. The design emphasis on providing calmness to the built form and gradually merges with the serene landscape.

The floor to floor height is more than 10 feet. There is no provision for lifts in the premises, whereas there are amenities such as CCTV, Fire extinguishers, Library and first aid box.

2.4.3 Operation and maintenance of the premises

The interview session with the staff regarding the operation and working hours is summarized in the table. The Institution is open from Monday to Saturday. The detail wise timing for each is mentioned below.

S. No.	Section	Days	Time	Hours/day	Days in a year
1	All Lectures and Library	Monday to Saturday Except Holidays	10.00 am to 4.20 pm	6.5	280
2	Administration	Monday to Saturday Except Holidays	10 am to 5 pm	7	300

Table 4: Schedule of the timings of the premises

DETAILED REPORT

3. Green Building Study Audit

3.1 About the Green Building Study Audit

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

3.2 Analysis for the Green Building Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment
- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the campus

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of campus; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

3.3 Strategy adopted for Green Building Study Audit

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

3.4 Timeline of the activities for Green Building Study Audit

- 08 August 2022 – Allotment and Initiation by the College
- 08 August 2022 – Induction Meeting
- 08 August 2022 – Survey of the Student and staff submitted
- 10 August 2022 – Data submitted by College
- 13 August 2022 – Submission of the report

4. Site Study

The following listed are some of the positive site elements which are beneficial to the College in terms of tangible and intangible benefits.

- **Location** - The Late Digambarrao Bindu Smarak Samiti's Digambarrao Bindu Arts, Commerce and Science College located at Bhokar, Tamsa Road, Taluka Bhokar 431801, Dist. Nanded, (MS.) India and falls under the Bhokar Municipal Council.
- **Neighbourhood context** - The premises is surrounding by open spaces and Residential, Commercial and Educational areas on the immediate surroundings of the site.
- **Natural physical features** – The premises includes a rich biodiversity and huge number of plants in the adjacent open space. The site does not have major difference in the land levels (contours).
- **Manmade features** – The premises is situated in an urban area amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance. The materials used for construction are RCC and the landscaping includes innumerable natural trees as well as potted plants.
- **Circulation** – There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate and the huge open space where vehicles of students and staff are parked.
- **Climate** – The best time to visit Bhokar in India is from January and September through December. In this period you have a warm temperature and little precipitation. The highest average temperature in Bhokar is 41°C in May and the lowest is 29°C in December.

(Source: <https://www.besttimetovisit.co.in/india/bhokar-1882445/>)

Ecological (Environment) Audit



Background reference image Yugal Shrivastava on pexels

5. Ecological (Environmental) Audit

Environment is an essential part for human survival. We co-exist with the environment and it cannot be termed as a separate entity. The Ecological audit helps to understand the flora, fauna that exists and steps that can be taken to improve the same. To denote if there are problems related to sound in and around the surrounding. In terms of the carbon footprint it helps in keeping a tab on the eco-friendly habits incorporated by the inhabitants of the premises. Health today is the topmost priority, a general understanding of the initiatives undertaken along with sufficient hygiene practices adopted. Universal design is applicable to all built and unbuilt spaces.

As part of our study we could state that the Institution has developed eco-friendly practices and sustainable solutions which are well reflected in the rich biodiversity of the Premises. Being situated near the city the appreciation space towards the main entrance provides a welcoming approach to the College.

The College has huge open space used by all. The students use it as a leisure place for study and College ground is used for sports activities. There are ample resting spaces as part of building design which provide a resting and warm welcoming approach in the premises.

5.1 Open Spaces

There is a beautiful balance of natural and open spaces in the premises and the open/vegetation spaces are balanced overall. The ground is used by students at present for sports and cultural gatherings. The design on the entire is such that the landscape and softscape spaces are very well oriented and located thus being extremely useful to Institutions in the site. **There are provisions for natural plantations which have enhanced the beauty of the space.**

There are adequate numbers of Maintenance staff allotted for the upgrading the open spaces and they have done an excellence job in terms of the duty allotted. The infrastructure committee too is involved in this process. The traditional tap and pipe facility is adopted for watering and the College has taken special provisions for the same. The spaces are watered daily in summer. **The efforts to maintain the existing space are commendable.**

5.2 Flora and fauna audit

5.2.1 Flora Audit

A flora survey was carried out to identify the total numbers of plants and trees every year. The landscape area has a variety of plantations constituting hundreds of surveyed trees in premises in the last few years as follows with detail description of each.

S. No.	Plant name	Type	Nos.	Planted by
1	<i>Phyllanthus emblica</i> (Awla)	Tree	10	planted by staff and students
2	<i>Leucaena leucocephala</i>	Tree	8	planted by staff and students
3	<i>Ficus benghalensis</i>	Tree	40	planted by staff and students
4	<i>Alestonia scholaris</i>	Tree	38	planted by staff and students
5	<i>Polyalthia longifolia</i>	Tree	32	planted by staff and students
6	<i>Nyctanthes arbor-tristis</i>	Tree	3	planted by staff and students
7	<i>Azadirachta indica</i>	Tree	70	planted by staff and students
8	<i>Hyophorbe langenicaulis</i>	Tree	5	planted by staff and students
9	<i>Dalbergia sissoo</i>	Tree	55	planted by staff and students
10	<i>Madhuca longifolia</i>	Tree	8	planted by staff and students
11	<i>Thuja occidentalis</i>	Shrub	15	planted by staff and students
12	<i>Tectona grandis</i>	Tree	30	planted by staff and students
13	<i>Pterocarpus santalinus</i>	Tree	2	planted by staff and students
14	<i>Cycus circanalis</i>	Shrub	1	planted by staff and students
15	<i>Eucalyptus globulus</i>	Tree	4	planted by staff and students
16	<i>Bambusa vulgaris</i>	Tree	7	planted by staff and students
17	<i>Bougainvillea spp</i>	Shrub	5	planted by staff and students
18	<i>Millettia pinnata</i>	Tree	35	planted by staff and students
19	<i>Tamarindus indica</i>	Tree	5	planted by staff and students
20	<i>Pithecellobium dulce</i>	Tree	2	planted by staff and students
21	<i>Semecarpus anacardium</i>	Tree	6	planted by staff and students
22	<i>Butea monosperma</i>	Tree	15	planted by staff and students
23	<i>Delonix regia</i>	Tree	42	planted by staff and students
24	Albezia lebbeck	Tree	3	planted by staff and students
25	Artocarpus heterophyllus	Tree	2	planted by staff and students
26	Combretum indicum	Climber	1	planted by staff and students
27	Adathoda vasaca	Shrub	5	planted by staff and students
28	<i>Psidium guajava</i>	Tree	5	planted by staff and students

29	<i>Annona squamosa L</i>	Shrub	5	planted by staff and students
30	<i>Muntiggia calabura</i>	Tree	10	planted by staff and students
31	<i>Sapota</i>	Tree	3	Planted by staff and students
32	<i>Citrus limon</i>	Shrub	4	Planted by staff and students
33	<i>Cordia dichotoma</i>	Tree	2	Planted by staff and students
34	<i>Magnolia(Chapha)</i>	Tree	2	Planted by staff and students
35	<i>Cisus quadraangularis</i>	Climber	5	Planted by staff and students
36	<i>Tinospora cardifolia</i>	Climber	5	Planted by staff and students
37	<i>Aloe vera</i>	Herb	10	Planted by staff and students
38	<i>Ficus racemosa</i>	Tree	5	Planted by staff and students
39	<i>Prunus dulcis</i>	Tree	2	Planted by staff and students
40	<i>Anthocephalus kadamba</i>	Tree	2	Planted by staff and students
41	<i>Nerium indicum.</i>	Shrub	2	Planted by staff and students
42	<i>Cassia fistula</i>	Tree	5	Planted by staff and students
43	<i>Aegel marmelos</i>	Tree	2	Planted by staff and students
44	<i>Limonia acidissima</i>	Tree	2	Planted by staff and students
45	<i>Ficus religiosa</i>	Tree	37	Planted by staff and students
46	<i>Mangifera indica</i>	Tree	25	Planted by staff and students
47	<i>Ziziphus jujuba</i>	Shrub	5	Grown naturally
48	<i>Capparis moonil</i>	Climber	7	Planted by staff and students
49	<i>Syzygium cumini</i>	Tree	15	Planted by staff and students
50	<i>Amorphophallus Paeoniifolius</i>	Shrub	5	Planted by staff and students
51	<i>Carissa carandas</i>	Shrub	5	Planted by staff and students
52	<i>Thevetia peruviana</i>	Shrub	1	Planted by staff and students
53	<i>Ocimum sanctum</i>	Shrub	15	Planted by staff and students
54	<i>Curcuma longa</i>	Herb	10	Planted by staff
55	<i>Tridax procumber</i>	Herb	plenty	Grown naturally
56	<i>Plectranthus Amboinicus</i>	Herb	10	planted by staff
57	<i>Calatrophis procera</i>	Shrub	12	Grown naturally
58	<i>Cassia tora</i>	Herb	plenty	Grown naturally
59	<i>Abrus precatorius</i>	Climber	10	Planted by staff

Table 5: Details of the Flora in the premises

At present there are 677+ plantations comprising of plants, trees, shrubs. All of these are planted on various occasions while some have grown naturally. Timely maintenance with sufficient care has resulted in positive benefits for the surroundings.

5.2.2 Fauna Audit

It is a beautiful site to have the birds chirping around the College premises. It highlights the ecological co-existence concept in the most beautiful way. The surveyed data of the fauna is represented below.

Sr. no.	Common Name	Scientific Name
1	Indian Pond heron	<i>Ardeolaq grayii</i>
2	Cattle egret	<i>Bubulcus ibis</i>
3	Little egret	<i>Egretta garzetta</i>
4	Indian Pond heron	<i>Ardeolaq grayii</i>
5	White breasted water hen	<i>Amauronisphoenicurus</i>
6	Red-wattled lapwing	<i>vanellusindicus</i>
7	Yellow –wattled lapwing	<i>Vanellusmalabaricus</i>
8	Eurasian collard-dove	<i>Streptopeliadecaocta</i>
9	Spotted dove	<i>Streptopeliachinensis</i>
10	Rose ringed parakeet	<i>Psittaculakrameri</i>
11	Asian koel	<i>Eudynamysscolopacea</i>
12	Greater coucal	<i>Centropussinensis</i>
13	White-breasted kingfisher	<i>Hylcyaosmyrmensis</i>
14	Small bee eater	<i>Meropsorientalis</i>
15	Indian roller	<i>Coraciasbenghalensis</i>
16	Common myna	<i>Acridotherestrictis</i>
17	Black drongo	<i>Dicrurusmacrocer</i>
18	Red vented bulbul	<i>Pycnonotuscafer</i>
19	House sparrow	<i>Passer domsticus</i>
20	House crow	<i>Corvuscorax</i>
21	Indian Robin	<i>Saxicoloidesfulicata</i>
22	Oriental Magpie Robin	<i>Copsychus saularis</i>
23	Common Hoopoe	<i>Upupaepops</i>
24	Baya Weaver	<i>Ploceusphilippinus</i>
25	Purple Rumped Sun Bird	<i>Nectariniazeylonica</i>
26	Purple sun bird	<i>Nectariniaasiatica</i>
27	Common tailor bird	<i>Orthotomussutorius</i>

28	Indian Grey Hornbill	<i>Ocycerosbirostris</i>
29	Ashy prinia	<i>Priniasocialis</i>
30	Pariah Kite	<i>Milvismigrans</i>
31	Spotted owlet	<i>Athenebrama</i>
32	Indian scops owl	<i>Otusbakkamoena</i>
33	Indian golden oriole	<i>Orioluskundoo</i>

Table 6: Details of the bird fauna in the premises

Sr. No.	Animal group	Name of the animal	Scientific Name
1	Reptiles	Green keelback	<i>Rhabdophisplumbicolor</i>
2		Russell's Kukri.	<i>Oligodontaeniolatus</i>
3		Monitor lizard	<i>Varanusbengalensis</i>
4	Amphibians	Indian burrowing frog	<i>Sphaerothecabreviceps</i>
5		Asian toad	<i>Duttaphrynusmelanostictus</i>
6	Mammals	Indian squirrel	<i>Funambuluspalmarum</i>
7		House rat	<i>Rattusrattus</i>

Table 7: Details of the other fauna available in the premises

5.3 Noise Audit

5.3.1 Macro level

On a macro level there are open grounds in the site. The approach road too has very minimal traffic. As the College is oriented amidst the residential areas with immense vegetation the noise levels do not affect the students and staff in their day to day functioning. The approach road too is pretty away. **Overall the noise level in terms of bad effect is extremely low and there are positive outcomes as per our analysis on macro level.**

5.3.2 Micro level

The College has an adequate open space covered with huge trees prevailing naturally in the premises which act as a noise barrier; in addition the Institution building is surrounded by Residential Buildings which further act as a benefit in reducing any noise pollution. There are parking provisions provided in the premises which causes minimum noise as they are situated near the entrance which is a bit away from the College building.

There are no particular equipments which cause any noise effect. **Overall the noise levels inside the premises are low which is a good approach.**

5.4 Carbon Footprint Audit

5.4.1 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.
- **Parent's commute** - There are 2 Parent-teacher meetings held in a year and the turn-out is around 40-60%
- **Vehicles details** – The provision provided by College includes vehicle parking is allowed at present as follows.

S. No.	Type	Nos.	For (student/ Staff)
1.	Cars	4-5	Staff
2	Bikes	20-25	Staff and Students
3	Cycles	45-50	Students
4	Electric vehicles	0	Staff and Students

Table 8: Details of the Parking in the premises

- **Commute details** – The students and staff commute from multiple places. The details are summarised below.

Within 5 km	Outside 5 km
1. Borgaon	1. Batala
2. Dhanora	2. Dhawari (kh/ Bk)
3. Bhokar	3. Kinhala
4. Narwat	4. Nagapur
5. Ritha	5. Sonari
	6. Chinchala

Table 9: Details of the places students and staff commute from

5.4.2 Heat Island Reduction

The Institution has **adopted the following practices which are yielding positive results** in terms of Urban Heat Island Effect which refers to increase in temperature of the surrounding because of ineffective strategies.

- **Exposed roof areas** – The terrace is a flat roof which is absolutely clean and well maintained. The Buildings are covered with white paint and the Maintenance staff

along with Management have taken ample measures to maintain the same. **There was no weathering of roof observed.** The current practices are well maintained.

- **Exposed non-roof hardscape areas** - There are pathway on all sides of the premises. These include some natural and potted plantations along the pathways. However, the trees are huge and the canopy is wide spread thus providing ample shade to the outdoor areas of the premises. Hence, there are no direct sunrays or similar effect affecting the students and staff. The College has an open space in the form of lush green carpet which acts as a solution for the urban heat island effect. This huge green space is a very good solution for reducing any harmful health consequences which may arise due to harsh sunlight.

There are adequate measures adopted in the premises to reduce heat island effect of Building roofs and in site.

5.4.3 Outdoor Light Pollution Study

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

5.5 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.

There are Ramps, Handrails along staircase and low height risers in the Staircases as part of universally accessible initiatives. The design of the premises is appropriate for access with passages and corridors being wide enough in size and naturally ventilated. The doubly and singly loaded corridors are safe from fire safety aspect. The College has resting places (seating areas) in the outdoor along the trees thereby making it user friendly for the especially abled students. **The College can have plans to install lift in future depending on the situation and facilities like addition of universal toilet.**

5.6 Fire Safety

The Institution has undertaken adequate fire safety measures. Each floor has an open staircase without any barriers for fire safety measures. These staircases are free of any kind of storage or combustible material. The windows in each classroom are at a low height with fresh air and natural light thereby adding to ample ventilation throughout the day. **The College should adopt additional fire safety practices such as fire hydrant, sprinkler, fire alarm and other systems whenever the College undergoes further extension or renovation.**

5.7 Survey Results

An online survey was conducted to analyse the views about the premises, following are some of the reviews.

5.7.1 Participation

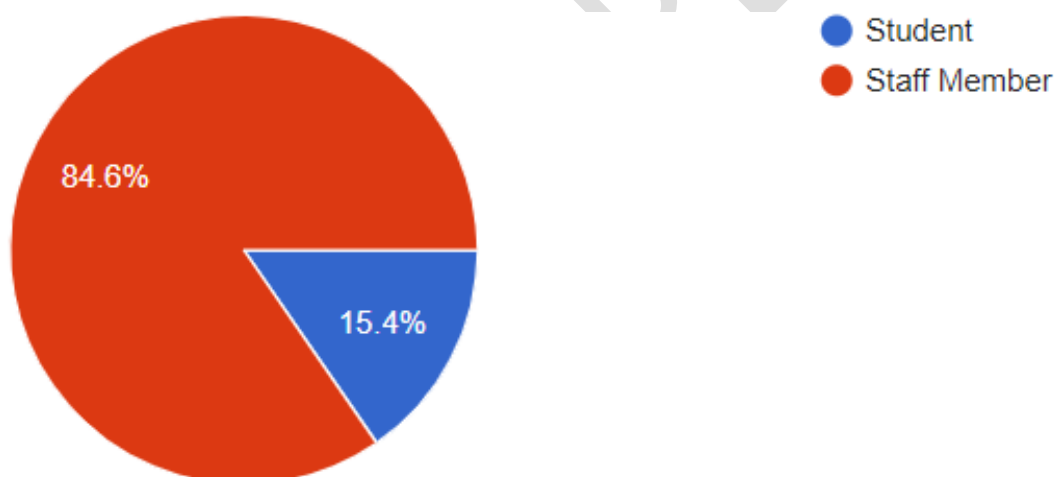


Figure 1: Participation analysis in the survey

A total of **26 responses** were received out of which 15% were students.

5.7.2 What according to you are the positive steps taken by the College towards Green Building/ Good maintenance?

We have listed some of the key responses below.

- Implementation of rain harvesting, Plantation.
- Environment awareness programs, webinars, plantations, college campus cleanliness
- No vehicle day every Thursday, Waste management, Science Club.

5.8 Positive site features as per our study

a) Avoid using plastic in premises

There are provisions for ban on the use of plastic bags or products in the Premises.

b) OPAC system

The system in the library is beneficial for the students.

c) Ample greenery

There are provisions for garden, plenty of open areas with traditional trees and greenhouse in the premises.

d) User friendly movability in premises

There are provisions for Kerb Ramp near the main entrance of the Building premises, also low height hand rail for ease of access.

e) No vehicle day

The no-vehicle day is practised every Thursday in the premises.

5.9 Recommendations for a Sustainable Habitat by Greenvio Solutions

Site beautification

a) Additional facilities for birds

There can be provision for drinking water and food facility for birds visiting in the College premise.

b) Nutrition pits

Certain pits can be demarcated as 'Nutrition pits' where the organic food from kitchen and Canteen fruit peels and fruits or vegetables can be degraded for making nutrition rich soil

Universally accessible premises

a) Universal Toilet

There should be minimum 1 toilet for the specially abled people as per guidelines prescribed by National Building Code 2016 with size being minimum or more than 1.5m x 1.5m.

b) Resting places

There should be increased provision for resting places on-premises outdoor and indoors.

Pollution Control

a) Promote the use of Eco-friendly vehicles

There can be provision for battery operated vehicles/ low emission vehicles such as electrically driven vehicles parking in open space along with battery charge points, this would inspire students to change mode of transportation and adopt sustainable practices.

b) Bicycles as a gift

As an appreciation gesture may be the students toppers/ staff best performers can be awarded with a bicycle occasionally.

c) Paperless technologies for offices

The college can go technology-friendly and go paperless in the functioning of the Premise to a certain extent maybe not fully.

d) Avoid paper wastage through books

The College can collect all old semester notebooks; these can either be converted to reusable paper on the premises through a workshop or using a shredder machine or handed over to a vendor for making fresh paper. Additionally, the Students can be motivated to undertake similar practices on an individual note.

Smart and responsible environment systems

Smart Gardening System

The College can undertake a Smart Gardening system using IoT Technology such as an automated watering system. This will result in saving time by scheduling time for watering; Saving money and water as smart irrigation systems have automated water schedules in addition to tracking dampness of soil which helps the irrigation system know when and how much the garden needs. It also helps in healthier plants as with the help of apps, smart irrigation systems, or even smart growing containers, these tasks can be provided evenly and allow the plants to be healthier and more productive. More information on this system can be checked here

<https://www.happysprout.com/inspiration/what-is-smart-gardening/>

On-site investigation and physical verification

The ecologically friendly ambience with facilities such as open spaces, lifts and gardens



Lust green premises



Plantation activity in the premises

6. Towards a Healthy & Sustainable Institution

6.1 Inputs by Greenvio Solutions

Based on the analysis of the study of premises in addition to the recommendations provided in each section of Ecological, Water, Waste and Energy Audit the College can adopt the following strategies towards a Healthy and Sustainable Institution practices.

- a) **Cutlery in the Canteen** – The regular plastic and steel plates, spoons used in Canteen can be replaced with eco-friendly and organic leaves, paper straw, disposable plates, edible spoons and tables made out of sugarcane waste or bamboo. This will be first of its kind initiative to be adopted and practiced thus also inculcating the healthy practices in students.
- b) **Additional fire safety** - Measures such as Hose reel, signages, fire-fighting tank, fire alarm and sprinkler system should be adopted.
- c) **Signages** – In addition to the signages being in regular language there can be additional signages in braille language for the especially abled students.

6.2 Survey Results

An online survey was conducted to analyse the student and staff views about what changes according to you can be undertaken for Green audit improvement in College premise and activity.

Some of the suggestions by the Students and staff are listed below:

- Require Improvement in rain water harvesting. Conduct more activity based awareness programs. By planting some flower plants to be attractive that attracts the attention towards hygiene.
- To keep the classrooms dust free, maintain drinking water (normal & cool), Labs have hard smell as they have laboratory equipments so maintain some fragrance.

However, it should be noted that the College has taken up multiple initiatives and because of Pandemic the students have not practically visited the premises so many of these points are not mandatory at the moment.

7. References

1. Uniform Plumbing Code – India, 2008
2. IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
3. IGBC Green Landscape Rating system, March 2013
4. BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada
5. 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.
6. Climate data <https://www.besttimetovisit.co.in/india/bhokar-1882445/>

DETAILED REPORT

