No: AEC/GAC/23-66 25-09-2023

Audit Certificate

This is to certify that that **M/s Mahatma Gandhi Govt Arts College Mahe Puducherry** have successfully completed the **Green Audit** of their buildings and campus conducted on 20th & 21st September 2023 for the Academic year 2023-2024. They have submitted all necessary data and credentials for scrutiny.

We, **Athul Energy Consultants Pvt Ltd**, Thrissur congratulate the Director DHTE Govt of Puducherry Principal, staff members and students for the successful completion and participation in the audit report process.

ATHUL ENERGY CONSULTANTS PVT LTD THRISSUR 680 020

Managing Director

Athul Energy Consultants Pvt Ltd

GREEN AUDIT

MAHATMA GANDHI GOVERNMENT ARTS COLLEGE
MAHE, PUDUCHERRY

EXECUTED BY

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September 2023

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PREFACE

Every institution should be imparting knowledge about the campus environment and its surroundings through activities that follows the principles of sustainability. Hence an evaluation is needed to understand where it stands in the path to be an environment friendly, talent nurturing educational institution. This Green Audit was done with the aim to assess and rate the sustainable nature of the campus. The college vision is "to enlighten and empower students in rural and suburban society and enable them to act as agents of social transformation and acquire knowledge of self and surroundings and to make the world a better place". Climate change adds to the global challenge of bio diversity conservation. This college has made education to become generate about values for bio diversity prepare data base about bio diversity information and its distribution mechanism. It was observed by us from the students' participation during the green audit.

This report is compiled by the Certified GRIIHA rated Professional along with the project engineers who are experienced in the field of energy, environment and management. The student volunteers made a mammoth contribution with data collection and preparing an initial skeleton for the report.

ACKNOWLEDGEMENTS

We express our sincere gratitude to the **Mahatma Gandhi Govt. Arts College Mahe**, for giving us an opportunity to carry out the project of Green Audit. We are extremely thankful to all the staffs for their support to carry out the studies and for input data, and measurements related to the project of Green audit.

1	Dr. C A Assif	Principal
2	Dr. K M Gopinathan	IQAC Coordinator

Also congratulating our Green audit team members for successfully completing the assignment in time and making their best efforts to add value.

GREEN AUDIT TEAM

1. **Mr. Ashok K M P**
   Registered Energy Auditor of Bureau of Energy Efficiency (BEE – Govt. of India)
   Energy Manager No – EA34760/22 & Certified GHRIHA rated Professional,

2. **Mr.Harikrishnan K,**
   Project Engineer

Yours faithfully

Managing Director
Athul Energy Consultants Pvt Ltd

EXECUTIVE SUMMARY

- The entire campus having area of 12acre having rich in bio diversity with various verities flora and fauna
- The college adopted a sustainable building construction in its buildings. This will gave minimum environment impact to the nature.
- Building have maximum ventilation and natural light in all areas. This drastically reduces the usage of celling fans and tube lights in the class rooms/ labs.
- Having an oxygen park and natural theatre to reduce the academic stress
- Well maintained indoor garden provided in the botany area veranda with various verities of plants which are have herbal importance.
- Terracing is done in the college sloppy areas to reduce the soil erosion and for ground water recharging.
- Lot of student initiates are in college through Nature club, various seminars, workshops are conducted by NSS &nature club of College
- All the trees in the campus are identified and given the vernacular and botanical name.
- College have well known personalities in various departments connected with bio diversity environmental impact assessment and sustainability.

BASIC DETAILS

The general details of the Mahatma Gandhi Govt. Arts College is given below in table based on the data availed from the college.

SL. NO	PARTICULARS	DETAILS
1	Name & Address of college	Mahatma Gandhi Government Arts College, Mahe. Mount Vera, Chalakkara, New Mahe Post 673311
2	Contact person	Dr. Asif C.A **Principal** 0490 233 2319
3	Location: Latitude & Longitude	10.1066° N, 76.4115° E
4	No. of Teaching staff	53
5	No. of Non-Teaching staff	22
6	No of students	838
7	Building area	6695m^2
8	Land area	12acres 9Cent
9	Number of UG programs	11nos
10	Number of PG programs	02nos
11	Hostel mates	150 nos
12	Average annual working days	263 days

TABLE 1: BASIC DATA SHEET

INTRODUCTION

Mahatma Gandhi Government Arts College is the premier higher educational institution of the Mahe region and the present campus is located in a serene, picturesque and sprawling area at Mount Vera, Chalakkara, Mahe. It blossomed as the outcome of the efforts of the Puducherry administration with the avowed objective of imparting quality education in Arts, Humanities and Science to all the constituent units of the Union Territory the College was inaugurated on the 11th of December 1967 by His Excellency, Shri. B.D. Jatti, then Lt. Governor of Puducherry. Prof. M.M. Ghani, then Vice Chancellor of the University of Calicut, unveiled the plaque during the inaugural ceremony that was presided over by Shri. M.O.H. Farook, the Honorable Chief Minister of Puducherry Initially, the institution was started as a Junior College that offered Pre-Degree courses with affiliation to the University of Calicut. It attained the status of a full-fledged Degree College in the year 1973 and later in the year 1992it gained the present status of Post Graduate Institution. The college is presently affiliated to the Pondicherry University since 1986 and is re-accredited with 'B' Grade by NAAC (National Assessment and Accreditation Council). The college has good infrastructural facilities, well equipped laboratories, and good collection of books as well as highly qualified and experienced Faculties. The college is the only higher educational institution in the Government of Puducherry to adopt a completely automated and centralized Students Attendance Monitoring System developed by the National Informatics Centre, Mahe. Similarly, the entire process of conducting the University Examination is also automated using the software developed and maintained by the National Informatics Centre, Mahe

VISION

To prepare the young students of rural background hailing from a small culturally distinct region of India to face the challenges of the modern world and to enable them to contribute constructively to the emerging new economy and to the growing needs of an egalitarian society

MISSION

- To provide quality higher education to all the students of the region in basic sciences, humanities and commerce
- To undertake research studies and result-oriented projects, specific to the region, that may contribute to the economic development of the country.
- To enhance and develop the technological skill of the student and to make them globally competitive.
- To make the students realize their roles in serving the cause of social justice and to contribute their share to the national development

GREEN AUDIT

The whole world is on the road to a sustainable development, and the environment conservation is the top priority among the list as every human activity has its effect on their surroundings, which is the environment. Hence be it a house, a commercial building, an industrial building, or any other construction will disturb the balance of the environment .Engineers are increasingly expected to play leadership roles when it comes to sustainable development, working to solve global challenges such as the depletion of resources, pollution, ecosystem damage, and the effects of rapid population growth. It is very important to do a detailed study about the effects on the environment. This is conducted under the name of *Green Audit*, which can be defined as *the official examination of the effects a company or other organization has on the environment, especially the damage that it causes*. The objectives of the green audit can be listed as follows:

- Including participants from every section of the organization in the auditing process.
- Understanding the environment by drawing a simple sketch of the total area.
- Identifying the activities in the premises and listing them
- Calculating the resource consumption like the land and water.
- Identify the good practices.
- Suggest the viable solutions to improve the sustainable nature of the organization.
- Compile the report with the above-mentioned details.
- Conduct a walkthrough audit to check the suggestions implemented by the institution and suggest for further improvements
- Verify all the points with actual measurements is it is meeting the performance and gave suggestions for improvement
- The foremost point is presence and depth bio diversity in the college and the formation of bio diversity register (BR) in the college.

Demands for energy, drinking water, cleaner air, safe waste disposal and transportation issues are increasing day by day. This needs new infrastructure development for protecting the environment. Engineers have a critical role to play for this sustainable development. In this audit we aim to identify the areas of positive development done by the college and to point out the suggestions for improvements.

BIO DIVERSITY IN THE CAMPUS

Mahe a part of Puduchery administration is rich in bio diversity as it forms a part of Western Ghats in turn it is the hottest spot in the world. This college can considered as typical cross section of Mahe of its undulating terrain with hill rocks and valleys with full of trees .The environment in and around the college campus plays an important part in maintaining a healthy atmosphere in nurturing talents. Trees are the major source of the oxygen we breathe, and receiver of the carbon dioxide we exhale. The sustainability of an ecosystem depends on the number of plants and trees in and around the surroundings. The campus building is located in a center of lush greenery with ample free space. The main building and other buildings have ample ventilation.

Ultimately the campus is maintaining natural equilibrium with trees, birds and animals along with human interactions.

Figure 1: CAMPUS BACK

Scientific studies are proved that the nature can able to cure any diseases and this will reduce the stress among students during theirs studies and also increase the compassion among them and to nature. Ultimately the campus is maintaining natural equilibrium trees, creatures with human beings. Greenery and landscape are an aesthetic delight and it promotes attentiveness of students. Persons exposed to plants have higher level of positive feelings (pleasant, calm) as opposed to negative feelings (anger, fear).

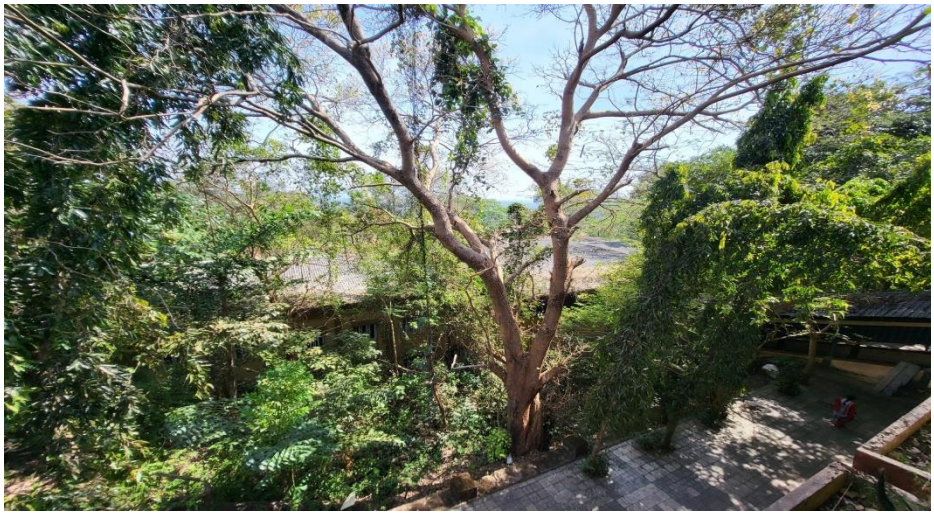
This college taken many initiatives to protect the bio diversity which they got by nature and taken steps to overcome the complexity of issues faced by bio diversity due to construction and expansion or modification of land, increase in human interactions and recent drastic climate changes.

SUSTAINABLE CONSTRUCTION OF BUILDINGS

The college constructed all buildings without affecting the geographical nature of land with less impacts in the topography. The location of college is hilly rock area and used its maximum advantage without affecting the equilibrium and vibrancy if nature. Buildings are thus the major pollutants that affect the urban air quality and contribute to climate change. Buildings are the major consumers of energy during their construction, operation and maintenance.

Mahatma Gandhi Govt. Arts College has developed an ecological design in their buildings and adopted minimum negative impact on ecosystem. Their approach to the constructional activities consciously is to conserve energy and ecology and avoid the adverse effects of ecological damage. Thus the college maintaining its bio diversity in its college and developed a master plan for further developments in future with very less impacts in the bio diversity in the college.

Directorate of education department of Puduchery government constructed the building to optimum utilisation of land and classrooms and with abundant light and natural ventilation. Maximum day light ingression and natural ventilation increases the indoor air quality and avoid the sick building syndrome. The whole facility is very much fond with nature.



There are 4 major buildings in the campus. The purpose of usage of these buildings are given below. All these buildings are placed in a lush green of trees and also constructed as of without affecting the ecological system

	Particulars	Purpose Details
1	A block (Main Block)	Adm. office, Class rooms, English & Hindhi Departments and Seminar hall
2	B Block	Class rooms, Maths, Physics, Computr scoence, Botany departments ,and Lab
3	C block	Class rooms,Ecconomics, Malayalam Departments and Libraray
4	D Block	Class rooms, and Commerce. Chemistry and Zoology Departments.

TABLE 2: BUILDING USAGE

1. VENTILATION AND CARBON DIOXIDE LEVELS

Ventilation moves outdoor air into a building or a room, and distributes the air within the building or room. The general purpose of ventilation in buildings is to provide healthy air for breathing by both diluting the pollutants originating in the building and removing the pollutants from it. The college is designed to provide maximum natural ventilation with abundant flow of light into class rooms. Due to The natural light ingression and breeze of fresh air and lush green campus reducing the sick building syndrome and stress generated from the study.

Air quality is a major area of concern inside a building. The percentage share of oxygen and carbon dioxide should be such that the occupants are able to perform their tasks without any discomfort. For the human comfort, production of carbon-dioxide (CO2) within a building space is the prime area of consideration. This is associated with respiration which produces CO2. As a result, the carbon-dioxide levels will increase if ventilations are not provided.

As per various standards (like the ASHRAE Standard 62.1-2016), indoor CO2 concentrations up to 1200 ppm is considered acceptable. For a typical outdoor condition, this value may change from 300 to 500 ppm.

The measurements were recorded along different locations inside the campus and the peak values are given in the following sections. The key concentration was on the study of carbon dioxide levels.

Sl. No.	AREA	Measured CO_2	Standard CO_2 level(Range)	Remarks
1	Administration Block inside	600	300-500	Good
2	Dept. of English	425	300-500	Good
3	Class room in main block	600	300-500	Good
4	Computer science Dept,	650	300-500	Good
5	Computer lab	340	300-500	Good
6	Class room in B block	390	300-500	Good
7	Library	350	300-500	Good
8	Economics departments	390	300-500	Good
9	Class room in C block	550	300-500	Good
10	Class room in D block	450	300-500	Good
13	Dept. of Chemistry	460	300-500	Good
14	Veranda in	480	300-500	Good

TABLE 3: CARBON DIOXIDE LEVELS

FIGURE 2: OPEN SPACE AND INDOOR PLANTS

ACOUSTICSIN BUILDINGS

Building acoustics is the science of controlling noise in buildings. This includes the minimisation of noise transmission from one space to another and the control of the characteristics of sound within spaces themselves. It is very hard for students to learn in noisy class rooms. Building Acoustics are an important consideration in the design, operation and construction of most building and it has significant impact on health, wellbeing, communication, and productivity and learning capabilities. The building acoustics influenced by many factors such as geometry and volume of buildings, reflection and absorption of surface of materials used for buildings, air born noise etc. While designing class rooms the building should have low reverberation time and thus it will not produce echo or noise for sound. Indoor plants and open spaces inside the buildings increase the absorption of sound and it will not return as echo. The leaves of plants absorb the sound waves and kept the building as less noisy

Acoustics and indoor plants are playing vital role while designing buildings for office and educational institutions. In addition to aesthetics the indoor plants provide the calmness and stress-free atmosphere to the students. The comfort level is increased by proper ventilation, oxygen level, less noise and soothing atmosphere.

All the buildings including administration office, classrooms and workshops are away from road and it is surrounded by lush green trees. The noise to the buildings by the transportation, other noises from other buildings are also heavily reduced and it is not affected to the inhabitants.

FIGURE 3: OUTDOOR GARDEN

2. HERBAL PROMOTION

The literal meaning of Ayurveda is "science of life," because ancient Indian system of health care focused on views of man and his illness. It has been pointed out that the positive health means metabolically well-balanced human beings. Ayurveda is also called the "science of longevity" because it offers a complete system to live a long healthy life. It is an interactive system that is user-friendly and educational. It teaches the patient to become responsible and self-empowered. It is a system for empowerment, a system of freedom, and long life. A significant part of knowledge and tradition is currently being eroded due to modernization, acculturation and availability of alternatives. Therefore, it is urgent to inculcate young minds to realize the fascinating knowledge and tradition associated with these resources and help them understand the immense potentials the medicinal plants possess for the future.

The "Promoting Herbal Plants in Schools and colleges" has been a fun-filled learning activity for the students where they got the opportunity to learn about the medicinal plants by actually planting the medicinal herbs and watching them grow in their gardens, and by exploring information about them from various sources.

The task of making the garden itself has been enriching in terms of making students realize the importance of teamwork such as detailed planning, and allocation of tasks within a team. For the teachers, herbal garden project has been useful in terms of ease with which they could integrate the

concept with other subject matter activities, such as writing essays, poems and stories, making posters, drawing and painting, making herbariums, and even preparing food recipe using some of the culinary herb's students have planted in their gardens. Kerala Government is also making lot of initiatives to developing and inculcating the herbal gardens in schools and colleges.

There is lot of trees in the Mahatma Gandhi Govt. Arts College having medicinal properties in the college which is protected by the college NSS club and the management. By preserving and nurturing the nature beauty of college, the management sends the message to society as its commitment to the environment. The students also get a practical experience in their academic life for the adaptation of green engineering in their future carrier life.

3. STAR GARDEN(NAKSHTHRAVANAM)

In Vedic astrology, the zodiac is divided into 27 Nakshatras or stars. An individual is born under a particular star, known as his or her birth star. From ancient times, particular trees have been associated with birth stars. The concept of a Nakshatra Vanam involves the planting of these trees in a grove and nurturing them, to help develop a place of sanctity. Gardening can provide students with hands-on learning opportunities while increasing environmental awareness and vital experience in problem-solving. Every student and staff has a birth star which is related to a tree, animal and bird in Nature. Gardens are a wonderful way to use the college campus as a classroom, reconnect students with the natural world and the true source of their food, and teach them valuable gardening and agricultural concepts and skills that integrate with several subjects, such as math, science, art, health and physical education, and social studies, as well as several educational goals, including personal and social responsibility Star plants are planted on the way to ladies hostel. All these plants are having name boards with star, vernacular and botanical name

Sl No:	**Star name**	**Vernacular Name**	**Botanical Name**
1	Aswathy	Kanjiram	*Strychnosnux-vomica*)
2	Bharani	Nelli	*Emblicaofficinalis*)
3	Karthika	Aathi	Ficusracemosa
4	Rohini	Njaval	*Syzygiumcumini*)
5	Makayiram	Karngali	*Acacia catechu*)
6	Thiruvathira	Karimaram	*Diospyrosebenum*)
7	Punartham	Mula	*Bambusabambos*)

8	Pooyam	Arayal	*Ficusreligiosa*)
9	Ayilyam	Nangu	*Mesuaferrea*)
10	Makam	Plassu	*Butea monosperma*)
11	Uthram	Ithi	*Ficustinctoria*)
12	Atham	Ambazham	Spondiaspinnata
13	Chithira	Koovalam	Aegle marmelos
14	Chothi	Nerrmaruthu	Terminalia arjuna
15	Visakham	VayamKaitha	Flacourtiajangomas
16	Anizham	Elanji	*Mimusopselengi*)
17	Triketta	Vetti	Aporusalindleyana
18	Moolam	Vella Pine	Vateriaindica
19	Pooradam	Vanchi	Salix tetrasperma
20	Uthradam	Plavu	Artocarpusheterophyllus
21	Thiruvonam	Erukku	Calotropisgigantea
22	Avittam	Vanni	Prosopisjuliflora
23	Chathayam	Kadambu	Anthocephaluscadamba
24	Pooruttathy	Mavu	Mangiferaindica
25	Uthrattathy	Karimbana	Borassusflabellifer
26	Revathi	Elippa	Madhucalongifolia

4. BIO DIVERSITY IN COLLEGE CAMPUS

The main objective of convention of biological diversity (CBD) are conservation of bio diversity, sustainable use of its components and the fair distribution of benefits from the use of generic resources, Mahatma Ghandi Govt. Arts college surrounded by lush green forest. The total area of 12acres of land is covered with trees and it is well protected by college. Educational institutions serve as important incubators for developing a 'green 'sense among students and teachers and create a new generation of professionals to drive the future change. Green sense is the sensitivity towards environment that is addressed in our decisions, practices and general lifestyle. In Mahatma Gandhi Govt. Arts College teaching sustainability and environment not in books but it is demonstrated in the campus. The college have departments of Botany and Zoology with well known personalities in the as teachers in that sector changed the culture of college towards sustainability into their breathe. The college made draft bio diversity register and made well

acclaimed studies about bio diversity in various areas in outside of college by students and teachers of college.

Figure 4 GREEN COVERGAE OF COLLEGE

Such a place can have following benefits to the ecosystem.

1. **Maintain the equilibrium of air and food:** Humans and animals need food and oxygen and excrete carbon dioxide and water. The plants, algae, etc, in the forest use carbon dioxide and water and release or produce oxygen and food.
2. **Filter and store water, and drastically reduce storm-water runoff:** Forests filter and regulate the flow of water. The litter over the forest floor acts as a sponge which filters, stores and gradually releases the water to natural channels and ground water.
3. **Conserve valuable topsoil and reduce soil erosion:** A forest is like a protective green cloth over Mother Earth's fragile body.
4. **Conserve biodiversity and balance ecology:** In a natural environment, the populations of species are balanced to an optimum minimum level
5. **Reduce pollution:** Plants can remove and/or Phyto remediate pollutants and contaminants from soil and water.
6. **Acoustics of the college will gave comfort zone for academic purpose.** : Green coverage around the building reduces the sound by absorption by leaves thus the echo and reverberation of sound will come down.
7. **Master plan for further developments:** College already spared its area for Govt. Ayurveda College. Now they developed Skelton master plan for further buildings in the college for advancement in academic sector. This master plan is developed with very less impacts into m the bio varsity and topography of this terrain land. College started to planting more fruit trees naïve in nature and planting samples which are having more carbon sequestration and produce more oxygen.

5. OXYGEN PARK AND NATURE THEATRE

Green space in the college where you can go for morning and evening walks, as well as for picnics. Oxygen Park is a location where we can rest and release all our stress by nature. In this aesthetic location with ample ventilation take us into heaven in the earth. This park just about anyone who wants to spend some quiet time amidst nature. Undisturbed nature along with water bodies enhances your creativity due to comfort feeling to mind along with abundant supply of oxygen.

FIGURE 5: OXYGEN PARK

KUTTIVANAM / GREEN ZONE

This Relaxation Area is designed to help students improve their emotional, mental and physical health. Spending time in green spaces with friends has indeed great psychological and physical impacts on the psyche of the students. This untouched forest cover one of the major oxygen supplier to the nature.

FIGURE 6: GREEN ZONE

SILENT ZONE

Now a day's silent zones are getting important in academic institutions. The noise pollution leads to stress and other medical and neurotic problems to children's and also creativity and absorption capacity of knowledge is also going down. For reduction of academic stress level there is apace for complete relaxation which gives the importance of silence zone. Mahama Ghandi Govt. Arts College have aerated certain silent zones in the college itself.. Natural silence zones are also crated in the college campus where there is no sound other than natures sound.

Figure 7 SILENT ZONE

6. SUGGESTIONS

- Display boards can be kept in the college about new messages connected with green initiatives of college
- A garden library can set up in the college open area of college.
- Present draft bio diversity register to be made into final version of bio diversity register

1. FLORA AND FAUNA OF COLLEGE

Trees release oxygen when they use energy from sunlight to make glucose from carbon dioxide and water, like all plants, trees also use oxygen when they split glucose back down to release energy to power their metabolisms

Sl. No.	Binomial	Family	Vernacular Names
1.	*Acacia auriculiformis* A. Cunn. ex Benth*	Mimosaceae	Acacia
2.	*Adenanthera pavonina* L.	Fabaceae	Manjadi
3.	*Albizia lebbeck* (L.) Willd.	Fabaceae	Vaka/Karivaka
4.	*Alstonia scholaris* (L.) R. Br.	Apocynaceae	Ezhillampala
5.	*Anacardium occidentale* L.	Anacardiaceae	Cashew Mavu
6.	*Araucaria cookii* R. Br. ex Endl.	Araucariaceae	
7.	*Artocarpus heterophyllus* Lam.	Moraceae	Pilavu
8.	*Artocarpus hirsutus* Lam.	Moraceae	Anjili/Ayani Pilavu
9.	*Azadirachta indica* L.	Meliaceae	Veppu
10.	*Bauhinia purpurea* L.	Caesalpiniaceae	Mandaram
11.	*Bombax ceiba* L.	Bombacaceae	Elavu/Ilavu/Poola
12.	*Briedelia retusa* (L.) Spreng.	Euphorbiaceae	Mulluvenga
13.	*Caesalpinia sappan* L.	Casealpiniaceae	Chappangam
14.	*Calamus thwaitesii* Becc.	Arecaceae	Valiyachural/ Vandichooral
15.	*Carallia brachiata* (Lour.) Merr.*	Rhizophoraceae	Vankana
16.	*Caryota urens* L.*	Arecaceae	Aanapana
17.	*Cassia fistula* L.	Casalpiniaceae	Konna
18.	*Casuarina litorea* L.*	Casuarinaceae	Kattadi
19.	*Ceiba pentandra* (L.) Gaertn.	Malvaceae	Panji Maram/Panji Ellavu
20.	*Chrysophyllum roxburghii* G. Don	Sapotaceae	Pulichakka/Aatha
21.	*Cinnamomum* verum Presl.	Lauraceae	Karukapatta
22.	*Citrus X meyeri*	Rutaceae	Naragam
23.	*Citrus limon* (L.) Burm.f.	Rutaceae	Cherunarakam
24.	*Cocos nucifera* L.	Arecaceae	Thenga
25.	*Cycas circinalis* L.	Cycadaceae	Eenthu
26.	*Cycas revoluta* Thunb.	Cycadaceae	Eenthu
27.	*Delonix regia* (Boj. ex Hook.) Rafin.	Caesalpiniaceae	Poomaram/Gulmohar
28.	*Erythrina variegata* L.*	Fabaceae	Mullu muruku
29.	*Ficus benghalensis* L.	Moraceae	Peral

30.	*Ficus exasperata* Vahl	Moraceae	Therakam/Parakam
31.	*Ficus hispida* L.f.	Moraceae	Parakam/Erumanakk u
32.	*Ficus religiosa* L.	Moraceae	Arayal
33.	*Ficus* tinctoria Forst.	Moraceae	Itthi
34.	*Ficus* tsjahela Burm.f.	Moraceae	Chela/Kara
35.	*Helicteres isora* L.	Sterculiaceae	Valampiri Edampiri
36.	*Holigarna arnottiana* Hook. f.	Anacardiaceae	Cheru
37.	*Kleinhovia hospita* L.	Malvaceae	
38.	*Leucaena leucocephala* (Lam.) de Wit*	Fabaceae	Ippilippil/Subaul
39.	*Macaranga peltata* (Roxb.) Muell.-Arg.*	Euphorbiaceae	Uppila
40.	*Madhuca longifolia* (Koenig) J.F. Macbr.	Sapotaceae	Ilupa/Irippa/Madhoo kam
41.	*Mallotus philippensis* (Lam.) Muell.-Arg.*	Euphorbiaceae	Chenkolli/Kuranguma njal
42.	*Mangifera indica* L.	Anacardiaceae	Mavu
43.	*Manilkara zapota* (L.) P. Royen	Sapotaceae	Sapota
44.	*Mimusops elengi* L.	Sapotaceae	Elangi
45.	*Morinda citrifolia* L.	Rubiaceae	Nonni
46.	*Moringa pterygosprma* Gaertn.	Moringaceae	Muringa
47.	*Nageia wallichiana* (Pers.) O. Ktze	Podocarpaceae	
48.	*Olea dioica* Roxb.*	Oleaceae	Edala/Vayala/Palaran a
49.	*Peltophorum pterocarpum* (DC.) Backer ex Heyne*	Caesalpiniaceae	Charakkonna
50.	*Phyllanthus emblica* L.	Euphorbiaceae	Nellika
51.	*Plumeria rubra* L.	Apocynaceae	Arali/Chempakappala
52.	*Polyalthia longifolia* (Sonner) Thw.	Annonaceae	Aranamaram
53.	*Pongamia pinnata* (L.) Pierre	Fabaceae	Ungu/Ponnam
54.	*Pouteria campechiana* (Kunth) Baehni.	Sapotaceae	Egg fruit
55.	*Premna latifolia* Roxb.	Lamiaceae	Puzhamunja

56.	*Psidium guajava* L.	Myrtaceae	Pera
57.	*Pterocarpus marsupium* Roxb.	Fabaceae	Venga
58.	*Roystonea regia* (Kunth) O.F. Cook	Arecaceae	Royal Palm
59.	*Samanea saman* (Jacq.) Merr.	Fabaceae	Mazhamaram/Urakam/Thoongimaram
60.	*Saraca asoca* (Roxb.) de Wilde	Fabaceae	Ashoka maram
61.	*Senna siamea* (Lam.) Irwin & Barneby	Caesalpiniaceae	Cassia
62.	*Simarouba glauca* DC.	Simaraubaceae	Lakshmi Tharu
63.	*Spathodea campanulata* P. Beauv.	Bignoniaceae	Fountain Tree
64.	*Swietenia macrophylla* King*	Meliaceae	Mahogany
65.	*Syzygium cumini* (L.) Skeels	Myrtaceae	Njaval
66.	*Tamarindus indica* L.	Fabaceae	Puli
67.	*Tectona grandis* L.f	Verbenaceae	Thekku
68.	*Terminalia catappa* L.	Combretaceae	Deshi-badam
69.	*Zanthoxylum rhetsa* (Roxb.) DC.	Rutaceae	MulliIllavu

TABLE 4: FLORA AND FAUNA

FAUNA IN THE COLLEGE

This biodiversity is significantly influenced by the unique climatic conditions of the Malabar coast, characterized by high humidity, abundant rainfall during the monsoon season, and warm temperatures throughout the year, creating an ideal habitat for a wide range of species. The hilly terrain and green cover of the campus not only provide shelter for terrestrial species but also create a conducive environment for arboreal and aquatic organisms. Bird species, in particular, benefit from the combination of dense vegetation and open spaces, making the campus a haven for avian diversity. The Zoology department of college conducted an in- depth study of the faunal diversity of college. Verities of butterfly, birds, dragon flies, ants, grass hoppers, beetles etc are recorded which are very important to keep the bio diversity in campus.

OPEN GROUND

Education is incomplete without sports and games. Sports and games are beneficial in teaching us punctuality, responsibility, patience, discipline, and dedication towards our goal. The importance of games and sports in student's life is immense. It has proved to be very therapeutic in nature. Sports help improve stronger social skills, such as dispute management and sport-based interaction. Sports inculcate the feeling of fairness in a child and it encourages them to be committed, taking defeat in a positive manner. It teaches us to be joyful, united, and appreciative in life. Students are the youth of our nation, and they need to be energetic, physically active, and mentally fit. By understanding the responsibility to make its students as healthy Mahatma Gandhi Govt. Arts College Mahe built and maintained football ground, in a greenery surroundings.

GROUND WATER RECHARGING

Depletion of vegetation cover, pollution of water, from different sources, soil erosion `and recession of water table are impacting nature and environment. The nature has been generous in bestowing this region in the form of rain fall but with the absence of scientific management it is becomes waste. But proper collection, routing recharging and recycling of this water will increase the vegetation and increase ground water table level.

Rainwater harvesting (RWH) is a technique of collection and storage of rainwater into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). There are different methods for artificial rain water harvesting. Ground water recharging by different means and collection of rain water for direct use by installation of rain water collection tank. Ground water recharging methods are decided by detailed study of rain fall, geological and hydrogeological mapping of the area etc. Another method of rainwater harvesting is rooftop

harvesting. With rooftop harvesting consists of installation of pipes, filtration unit, by pass valve, tanks pumps etc.

Rainwater harvesting for ground water recharge.

Advantages

- Conservation of water for future use
- Biological purity of water is good
- It is environment friendly, controls soil erosion and flood and provides sufficient soil moisture even during summer months
- It provides a natural distribution system between recharge and discharge points
- Quality improvement by infiltration through the permeable media
- Water stored underground is relatively immune to natural and man-made catastrophes

Mahatma Gandhi Govt. Arts College taken steps to increase the ground water recharging in its campus through different non-conventional methods. This is mainly due to high rain fall of 3ooo to 3700 mm per year and highly undulating terrain with hill rocks.

- Terracing: Steep slopes of the terrain converted to series of steps or terraces to reduce the soil erosion and water runoff allowing more water to infiltrate to soil
- Preparation of small pits in many areas of slopes to harvest the rain water and the soil eroded from top.
- Certain contours are provided to runoff the flood water to avoid total damage of topography of land due to heavy rain.

Facilitate recharge into surrounding ground which in turn improves soil moisture, improves agricultural productivity and mitigates against drought

- Can assist recharge of shallow wells, boreholes and springs
- Can reduce salinity in groundwater

FIGURE 8: TERRACING IN SLOPPY AREA

CONCLUSION

Green Audit is the most efficient & ecological way to solve such an environmental problem. Green Audit is one kind of professional care which is the responsibility of everyone who are the part of economic, financial, social, environmental factor. Green audits can "add value" to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). The green audit reports assist in the process of attaining an eco-friendly approach to the development of the college.

The auditors observed during the campus visit and after the conversation with the staff and students of Mahatma Gandhi Arts College Mahe that they have taken continuous and considerable effort in several years for nurturing and maintaining the green coverage over the campus which is being well appreciated by us. There is still opportunity to attain the perfection some of the identified suggestions are listed in the executive summary.

ANNEXURE-1

GRIHA CERTIFICATE

GRIHA

GREEN RATING FOR INTEGRATED HABITAT ASSESSMENT

GRIHA CERTIFIED PROFESSIONAL CERTIFICATE

This is to certify that

Ashok K M P

has qualified as a **GRIHA** Certified Professional For V. 2015

Date of issue: 19th June 2020

Note : This certification is valid only for GRIHA version 2015.

Chief Executive Officer
GRIHA Council