

# GREEN AUDIT REPORT

2019-20

Government Pt. J.L.N. Arts & Science P.G. College Bemetara



Surveyed & Audited

By:

1. Department of Botany
2. Department of Zoology
3. ECO Club of College

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### **Introduction -**

Govt Pt. J.L.N. Arts and Science P.G. College, Bemetara is one of the leading institution in the field of higher education in district Bemetara. It recognized as lead college of district by Department of Higher Education Chhattisgarh. Campus has 34.33 Acre land with green practices such as pond, plantation in 4 acre, a front side garden with seasonal trees and small herbal garden in Department of Botany. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. With this in mind, the specific objectives of the audit were to evaluate the adequacy of the management control framework of Environment Sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. During the initial planning of the audit, an analysis was conducted in order to identify, evaluate and prioritize the risks associated with the environmental sustainability. The analysis was based upon an examination of the policies, manuals and standards that govern the environmental sustainability, on data analysis, and on the results of preliminary interviews with personnel considered key in the environmental management in the campus. The criteria and methods used in the audit were based on the identified risks. The methodology used included physical inspection of the campus, review of the relevant documentation, and interviews. The IQAC of the college asked the Principal to find a suitable organization to provide training and support regarding Green Audit and the Principal in the Staff Meeting authorized the Eco Club along with Botany department to find and conduct the audit process.

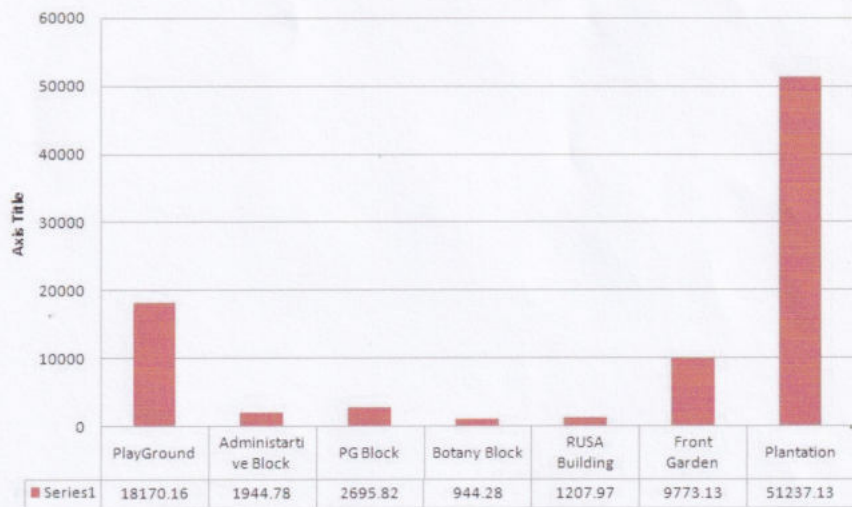
### **Overview of Land Use Patterns:**

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape (Howarth 1981). Remote sensing and GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning, and change in the local, regional as well as at global

scales over time .Satellite imagery particularly is a valuable tool for generating land use map. It is a graphical representation of land use –

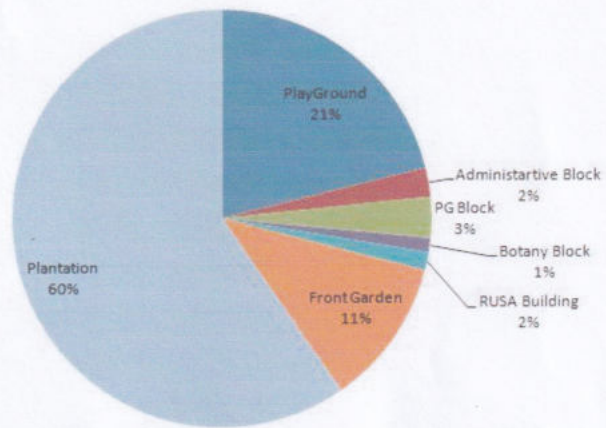
Sno.	Area/Building	M <sup>2</sup> (Area)
01	PlayGround	18170.16
02	Administartive Block	1944.78
03	PG Block	2695.82
04	Botany Block	944.28
05	RUSA Building	1207.97
06	Front Garden	9773.13
07	Plantation	51237.13

**Land Use - Meter Square**



**Graph - 01**

### Land Use - %



Graph - 02



**Scope of Audit-**

Green audit serve as a means to identify opportunities to sustainable development practices, enhance environmental quality, improve health, hygiene and safety, reduce liabilities and save money and achieve values of virtue. Environmental audits can be a highly valuable tool for college in a wide range of ways to improve their environmental and economic performance and reputation -- while reducing wastages and operating costs. Once a baseline data is prepared after the auditing process, the data can serve as a point of departure for further action in campus greening. It will also help the college to compare its programmes and activities with other peer institutions, identify areas for improvement and prioritize the implementation of future projects.

**Objective of Green Audit -**

The general objective of green audit is to prepare a baseline report on biodiversity and other resources, measures to mitigate resource wastage and improve resource quality and sustainable practices. The specific objectives are:

- To prepare a checklist of flora and fauna diversity in and around the college campus.
- To suggest measures to improve biodiversity within the college campus.
- To assess the quantity of water usage within the college campus.
- To suggest sustainable energy usage and water conservation practices.
- To find out various sources of organic and solid waste generation and mitigation possibilities
- To inculcate values of sustainable development practices through green audit mechanism.

All plant and animal species - including humans - are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears. The trees work hard to keep the air we breathe clean and healthy. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. In this process, the plants with the help of sunlight, water, minerals and the

green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) of fertile soil covering it.

**Preparation –**

Green auditing was done by involving different student in Eco Club and Department of Botany supported by teaching and non-teaching staff of the college. The green audit began with the teams walking through all the different wings, seeking plant and their structure. They find the botanical name, local name and their number of presence in our campus.

**Eco Club Team**

Sno	Name of Member	Concerned Department
01	Lokeshwari Sahu	Department of Mathematics
02	Neelmani	Department of Mathematics
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06	Preeti Nishad	Department of Botany

**Site Inspection-**

Site inspection was done by Faculty and students. The process of green audit was an enriching environmental awareness programme for the students who participated in the green auditing. The experience of green auditing was a first time experience for most of the students.



They shared their expectations about a green campus and gave suggestions for the audit recommendations. It encompasses an area of about 33.21 acre. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many animals are dependent on these trees mainly for food and shelter. Flowers and fruits are eaten by monkeys, and nectar is a favorite of birds and many insects. Leaf – covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colors. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day. A thick belt of large shady trees in the periphery of the college have found to be bringing down noise and cut down dust and storms. The following are the tree species with whom we are being attached-

Sno.	Botanical Name	Local Name	Family	No. of Plants
1	Abelmoschus Maschatus	Kastur	Malvaceae	05
2	Abrus Precaatorius	Gunga	Fabaceae	06
3	AcaciaCatechus u(L.F)wild	katha	Fabaceae	07
4	Acalypha indica linn	Kuppi ,khokl;	Euphorbiaceae	03
5	Acacia Arabica (Lamk) Wild	Babul	Fabaceae	17
6	Achyranthes aspera L,	Lal bhaji	Amaranthaceae	10
7	Acoras calamus L,	Beewort	Acoraceae	05
8	Allium cepa L.	Onoon	Alliaceae	20
9	Aloe	Ghikumari	Liliaceae	10
10	Alstonia Scholaris R.Br	Devil tree	Apocynaeae	03

11	<i>Amaranthus polygamus</i> Linn	Cholai bhaji	Amaran thaceae	15
12	<i>Anacyclus pyrethrum</i> D.C	Akarkra	Asteraceae	15
13	<i>Adrographis paniculata</i> Nees.	Chiraya	Acanthaceae	11
14	<i>Anona squamosa</i> Linn	Sitapahal	Finonaceae	05
15	<i>Artocapus hetrophylls</i>	Kathal	Moraceae	07
16	<i>Asparagus racemosus</i> wild	Shatavan	Liliaceae	10
17	<i>Azadiracta indica</i> lin	Neem	Mediaceae	20
18	<i>Bauhinia variegatal</i> L	Kachnanr	Fabaceae	04
19	<i>Bacopa monnieri</i> (L) Pannell Prac	Bramhi	Plantaginaceae	06
20	<i>Baliospermun monatanum</i> (wild)	Wild castor	Euphorbiaceae	02
21	<i>Bambusa arundinaceae</i> wild	Bans	Graminae	01
22	<i>Barleria prionitis</i> Linn	Vajradanti	Acanthaceae	05
23	<i>Bauhinia purpurea</i> L,	Butterfly tree	Fabaceae	10
24	<i>Bauhinia racemosa</i> Lom	kanchan	Fabaceae	05
25	<i>Bombax cieba</i> L	Semla	Bombacaceae	12
26	<i>Bryophyllum calycinum</i> salisb	Pattarchatta	Crassulaseae	18
27	<i>Buchanania lanzan</i> sprengel J. Bot	Achar	Anacardiaceae	08
28	<i>Butel monosperma</i> (Lamk ) Taub	Palas, teshu	Fabaceae	20
29	<i>Colotropis gigontea</i> (L) R.Br	Arka	Asclepiadaceae	19
30	<i>Calotrophyllum inophyllum</i> Linn	Suttan champa	Clasiaceae	10
31	<i>Calotropis procera</i>	Madar	Anacardiaceae	05
32	<i>Carica papaya</i> L	Papita	Caricaceae	15
33	<i>Carissa carandus</i> aust	Karaunda	Apocunaceae	18
34	<i>Cassia fistul</i> Linn	Amaltas	Fabaceae	08
35	<i>Cassia tora</i> L.	Charota bhaji	Caesal piniaceae	25
36	<i>Catharanthus roseus</i> (L)	Sadabahar	Apocynaceae	30
37	<i>Celosia argentea</i> Linn var	Laal murga	Amoronthaceac	08
38	<i>Cantella asiatica</i> (L) urban	Bramhi	Apiaceae	06
39	<i>Chenipodium album</i> L	Bathua	Chenopodiaceae	20
40	<i>Cicer aritinum</i> Linn	Channa	Fabaceae	25
41	<i>Citrus limonum</i> Linn	Limbo	Rutaceae	10
42	<i>Clitoria ternatea</i> Linn	Aparanjita	Fabaceae	05
43	<i>Cocus nucifera</i>	nariyala	Arecaceae	03
44	<i>Coleus barbatus</i>	Patharchur	Lamiaceae	18
45	<i>Commiphora whightii</i>	Gugal	Burseraceae	05
46	<i>Costus speciosus</i> L	Kevkand, kemuka	Zingiberaceae	08
47	<i>Crotolaria retusa</i>	Kunkuniyan	Fabaceae	09

48	<i>Croton tiglium</i> wild	Croton	Euphorbiaceae	05
49	<i>Curcuma longa</i> Linn	Haldi	Zingiberaceae	35
50	<i>Cuscuta reflexa</i> roxb	Amarvela	Convolvulaceae	23
51	<i>Cymbopogon citrat's</i> stapt	Lemon grass	Graminae	38
52	<i>Cynodon dactylon</i> (L) pres	Durva	Graminae	35
53	<i>Detura metel</i>	Solonaceae	White dhatura	20
54	<i>Diplocyclos palmatus</i>	Sivalingi	Cucurbitaceae	15
55	<i>Eclipta prostrate</i> roxb	Bhrinraj	Asteraceae	03
56	<i>Wmbica offinalis</i> grertn	Amla	Euphorbiaceae	15
57	<i>Euphorbia hitra</i> L.	Asthma plant	Euphorbiaceae	12
58	<i>Euphorbia milli</i> des	Desmoul	Euphorbiaceae	18
59	<i>Euphorbia parviflora</i> Linn	Dhudhi	Euphorbiaceae	20
60	<i>Ficus benghalensis</i> Linn	Bargad	Moraceae	20
61	<i>Ficus religiosa</i> Linn	Pepal	Moraceae	10
62	<i>Gardenia latifolia</i> fton	Papra	Rubiaceae	02
63	<i>Gloriosa superb</i> L.	Kalihari	Liliaceae	08
64	<i>Gmelina arborea</i> roxb	Khamar	Verbenaceae	19
65	<i>Helicteras isora</i> linn	Morar phali	Sterculiaceae	12
66	<i>Hibiscus rosa sinensis</i> Linn	Gudhal	Malvaceae	10
67	<i>Hemidesmus indicus</i> (L) R.Br	Anant mol	Preploceae	05
68	<i>Jasminum sambac</i> L.aiton	Jalpai	Rubiaceae	10
69	<i>Jasminum sambac</i> L. aiton	Moghra	Oleaceae	20
70	<i>Jatraorha curas</i> L.	Safed arand	Euphorbiaceae	12
71	<i>Justicia adhatoda</i> L.	Arusa vasala	Acanthaceae	05
72	<i>Lantana camara</i> L moldenke	Vantulsi	Verbenaceae	20
73	<i>Lawsonia inermis</i> Linn	Mehndi,henna	Lythraceae	12
74	<i>Leontodon taraxacum</i> Linn	Dulal	Asteraceae	09
75	<i>Luffa acutangula</i> (Linn)	Taroi	Cucurbitaceae	14
76	<i>Lycopersicon esculentum</i>	Tamater	Solenaceae	20
77	<i>Madhca indca</i> gmet	Mahua	Sopotaceae	05
78	<i>Mallotus philippensis</i> muell flrg	Rohini	Euphorbiaceae	05
79	<i>Mangifera indica</i> Linn	Aam	Anacardiaceae	10
80	<i>Menthe arvensis</i> Linn	Pudina	Lamiaceae	20
81	<i>Millingtonia hortensis</i> L.F	Akash neem	Bignoniaceae	05
82	<i>Mimosa pudica</i> L.	Lajjavanti	Fabaceae	08
83	<i>Pomordica charantia</i>	Larela	Cucurbitaceae	09
84	<i>Moringa oleifera</i> lam	Sahatuta moraceae	Maringaceae	09

85	<i>Morus alba</i> Linn	Sahatuta	Maraceae	05
86	<i>Murraya kocnigi</i> spreng	Curry leaf	Rutaceae	19
87	<i>Musa paradisiacal</i> Linn	Kella	Scitamineaceae	05
88	<i>Nerum indicum</i> Mill.	Chandani	Apocynaceae	10
89	<i>Nyctanthes arbortristis</i> Linn	Harsingan	Oleaceae	08
90	<i>Ocimum basilacum</i> Linn	Bantulsi	Labiatae	12
91	<i>Ocimum gratissimum</i> Linn	Ramtulsi	Labiatae	15
92	<i>Ocimum sanctum</i> Linn	Tulsi	Labiates	20
93	<i>Operculina turpetham</i> (L)	Pitohari	Convolvulaceae	12
94	<i>Phyllanthus niruri</i>	Bhuiamla	Euphorbiaceae	10
95	<i>Plumbago zeylanica</i> Linn	Chirchitta	Plumbaginaceae	22
96	<i>Pongamia pinnata</i> pier	Karanj	Favaceae	24
97	<i>Psidium guajaum</i> Linn	Jam	Myrtaceae	15
98	<i>Pterospermum acerifolium</i> wild	Kanak champa	Sterculiaceae	18
99	<i>Punica granaria</i> Linn	Anar	Punicaceae	20
100	<i>Pueraria tuberosa</i> wild Dc	Patal kumhara	Fabaceae	12
101	<i>Rauwolfia serpentina</i> benth	Sarpgandha	Apocynaceae	18
102	<i>Rosa centifolia</i> Linn	gulab	Rosa ceae	15
103	<i>Salmalia malabarica</i> shott & Endl	Semla	Bo,bacaceae	06
104	<i>Sacra indica</i> auct non Linn	Ashoka	Caesalpinaceae	03
105	<i>Achlechera olesa</i> (Lowr)	Kusum	Sapindaceae	05
106	<i>Suda acuta</i> burm	Jangali methi	Malvaceae	18
107	<i>Solanum nigrum</i> L	Makoi	Solanaceae	12
108	<i>Syzygium cumini</i> (L) skeel	Jamun	Myrtaceae	15
109	<i>Tabernaemontana coronaria</i> R. Br	Chandhni	Apocynaceae	08
110	<i>Apilanthus calva</i> Dc	Akkalkara	Asteraceae	08
111	<i>Tagetus erecta</i> Linn	Genda	Asteraceae	20
112	<i>Tamarindua indica</i> Linn	Imali	Fabaceae	05
113	<i>Tectona grandis</i>	Sagon	Verbenaceae	02
114	<i>Terminalia arjuna</i>	Arjun	combretaceae	08
115	<i>Terminalia bellerica</i> Roxb	Bahera	Combretaceae	03
116	<i>Terminalia chebula</i> (Retz)	harra	Aprocynaceae	04
117	<i>Thevetia peruviana</i> (pers)	Kaner	Apocynaceae	10
118	<i>Trachyspermum anmi</i> (L) spargue	Ajwain	Apiaceae	12
119	<i>Tridex procumbens</i> Linn	Baramasi	Ateraceae	30
120	<i>Ziziphus jujube</i> Lam	Ber	Rhamnaceae	15
121	<i>Azadirachta indica</i>	Neem	eliaceae	457

122	Indian Siries	Sirsa	Fabaceae	221
123	Delonix regia	Gulmohar	Fabaceae	25

#### Faunal Diversity –

Our College is located in Bemetara district of Chhattisgarh at the northern bank of river Shvsnath. The area having monsoon type of climate. The highest temperature is recorded just prior to the onset of monsoon (around May early June). The faunal Diversity of this College campus has been studied and documented as below-

Sno.	Faunal Group	Scientific Name
01	SPIDERS	Myrmachne orientalis (Family Salticidae); Nephila plipes (Family-Nephilidae); Heteropoda sp (Family-Sparassidae); Phintella vitatta (Family Salticidae)
02	MOTHS & BUTTERFLIES	Antheria assmensis; Bombyx mori; Philosamia ricini; Junonia atlites atlites ; Commander (Moduza procris procris); pthima baldus ; Acraea terpsicore ; Elymnias hypermnestra undularis ; Mycalesis perseus blasius ; Tanaecia lepidea lepidae
03	AMPHIBIANS	Duttaphrynus melanostictus (Asian common toad), Leptobranchium smithi; Fejervarya pierrei; Hoplobatrachus tigerinus; Hylarana tytleri; Humerana humeralis; Hylarana leptoglossa; Polypedates leucomystax.
04	BIRDS	Acridotheres tristis (Common myna) Athene noctua ( little owl ); Pycnonotus cafer (Redvented Bulbul)

### **Noise Levels –**

The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound, (1) loudness and (2) frequency.

Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels. Just audible sound is about 10 dB, a whisper about 20 dB, library place 30 dB, normal conversation about 35-60 dB, heavy street traffic 60-0 dB, boiler factories 120 dB, jet planes during take-off is about 150 dB, rocket engine about 180 dB . The loudest sound a person can stand without much discomfort is about 80 dB. Sounds beyond 80 dB can be safely regarded as Pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city. For international standards a noise level upto 65 dB is considered tolerate. Loudness is also expressed in Sones. One some equals the loudness of 40 dB sound pressure at 1000 Hz. Frequency is defined as the number of vibration per second. It is denoted as Hertz (Hz). The objectives of the study were as the following:

- To assess the impact on human work efficiency due to road traffic parameters, different noise indices, and attitudinal response.
- To study the temporal pattern of road traffic the study area.
- To study the existing status of noise levels in the study area by recording the noise intensity at various locations.
- Identification and consideration of suitable mitigation and abatement measures.

Noise level meter or noise measuring app, NoiseTube (version: 2.0.2), was used to measure the noise level.



Place	Measurement (Duration)	Minimum dBA	Maximum dBA	Average
Zoology Department	60 Sec.	6.73	56.69	43.68
Botany Department	60 Sec.	6.90	58.98	41.57
Library	60 Sec.	3.14	30.34	20.93
Commerce Department	60 Sec.	28.82	65.33	52.82
Help Desk Area	60 Sec.	50.73	78.08	71.02
Front Gate	60 Sec.	52.23	80.02	72.35
Computer Science	60 Sec.	28.82	65.33	52.82

**Photographs –**



**Pic -1 Small Pond**



**Pic -2 Plantation**



**Pic -3 Playground with PG Block**



**Pic -4 Plantation**



**Pic -5 PG Block**



**Pic -6 Garden Entrance**



**Pic -7 Hanuman Ji Mandir**



**Pic -8 RUSA Building**



**Pic -9 Department of Botany**



**Conclusion-**

As per the above written report, it is found that our P.G. College Bemetara has a lot of land and green plantation. Still, we have to focus on land utilization and go towards using it wisely. We have trees here but lack of boundary wall harms these plants. We are going to build a boundary wall so that the entire campus can be protected.

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