

GREEN AUDITING

SR&BGNR GOVERNMENT ARTS&SCIENCE COLLEGE

(AUTONOMOUS)

KHAMMAM 507002



Village No.
గ్రామం నెం.

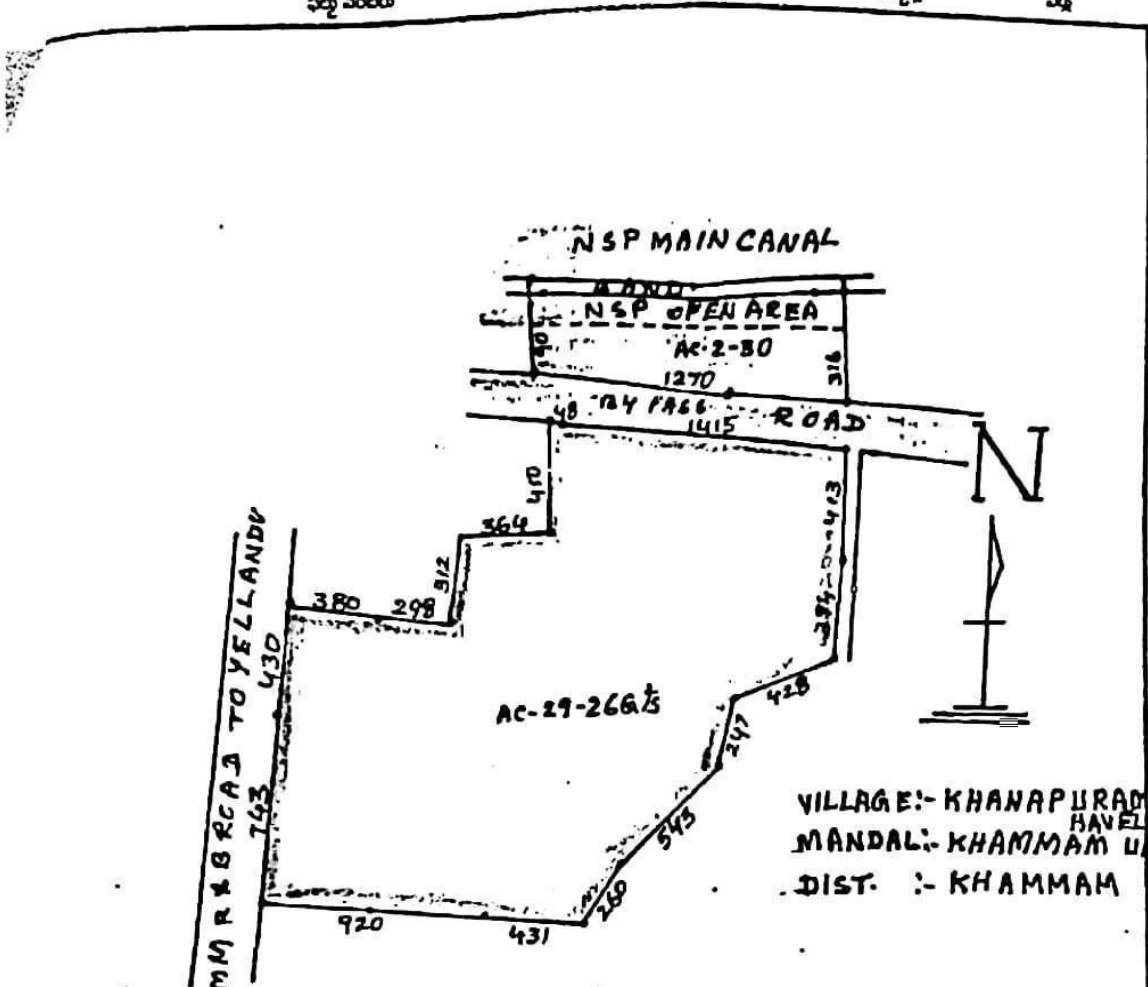
Name
నెం

Field No
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Area
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Hectares
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Area
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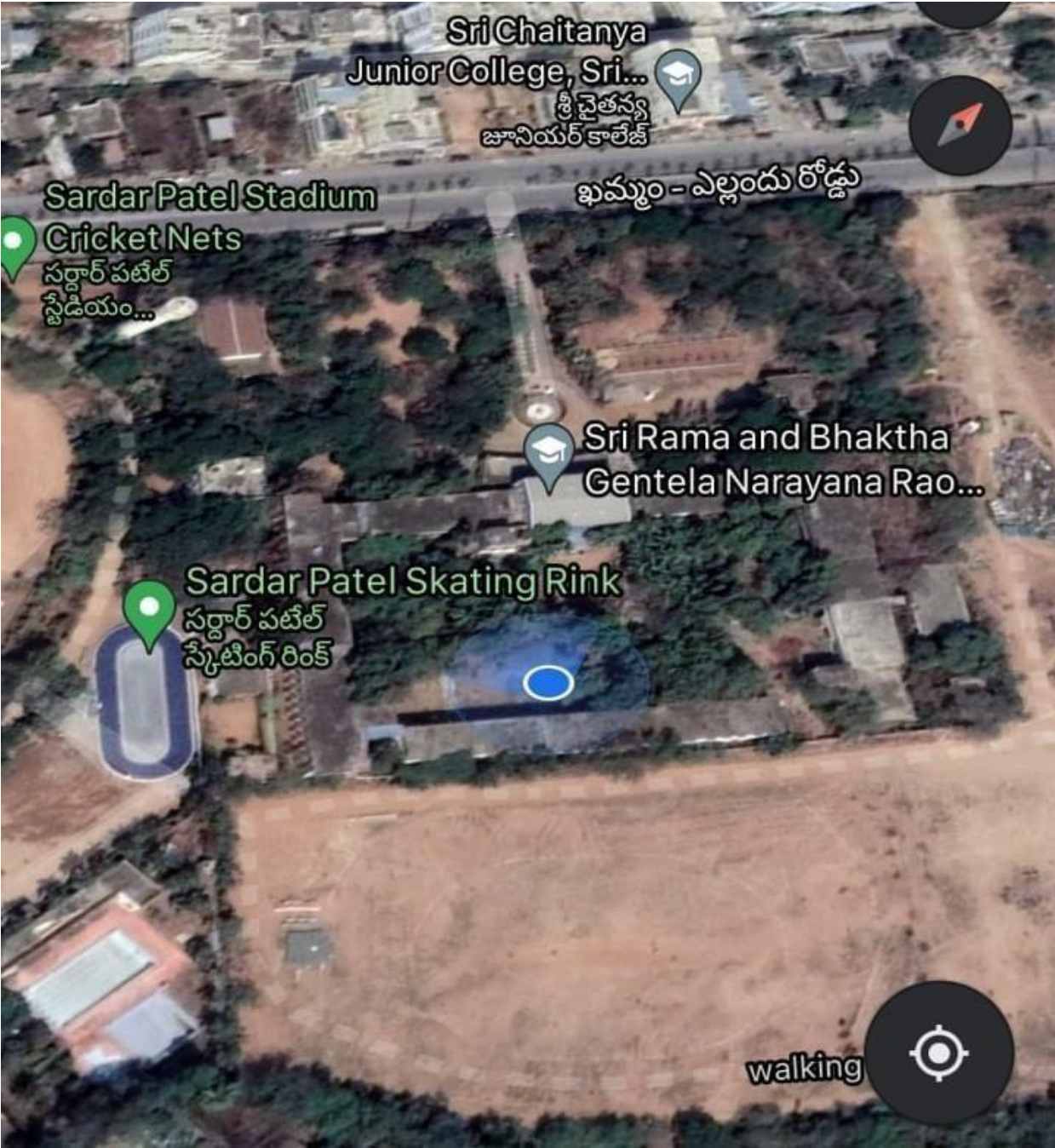
VILLAGE:- KHANAPURAM HAVELI
MANDAL:- KHAMMAM URBAN
DIST. :- KHAMMAM

SY. NO.	EX. AC. NO.
221	29-26
222	
223	
227	
228	
229	2-05
	2-30
AC	34-210

SR & BGR COLLEGE EXISTING AREA
BY-PASS ROAD KMM TO SURYAPETA
OPEN AREA BETWEEN NSP CANAL & BYPASS ROAD
TOTAL AREA

[Signature]
MANDAL SURVEYOR
KHAMMAM (U)

[Signature]
TAKSHILAN
KHAMMAM (URBAN) Mandal
Khammam District



Sri Chaitanya
Junior College, Sri...

శ్రీ చైతన్య
జూనియర్ కాలేజ్

Sardar Patel Stadium

ఖమ్మం - ఎల్లందు రోడ్డు

Cricket Nets

సర్దార్ పటేల్
స్టేడియం...

Sri Rama and Bhaktha
Gentela Narayana Rao...

Sardar Patel Skating Rink

సర్దార్ పటేల్
స్కేటింగ్ రింక్

walking

Acknowledgement

Green Audit Assessment Team thanks the SR&BGNR GOVERNMENT ARTS &SCIENCE CLLEGE for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to:

- ❖ Principal – Dr. Mohammad Zakirullah
- ❖ Team of colleagues

For giving us necessary inputs to carry out this very vital exercise of Green Audit.

We are also thankful to Dr. A. R. Satyavathi (IQAC Coordinator), and other staff members who were actively involved while collecting the data and conducting field measurements.

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1. INTRODUCTION

2. ABOUT THE COLLEGE

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development. We at SR&BGNR GOVERNMENT ARTS & SCIENCE COLLEGE have taken the initiative to make significant contributions in creating a sustainable eco friendly environment. Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. Green Audit helps us to identify and mitigate the ill effects through a sustained and seamless application of remedial measures identified during the audit, to replenish the environment and make the surrounding conducive for a healthy living. An interdisciplinary board of SR&BGNR GOVERNMENT ARTS & SCIENCE COLLEGE is formed with specific goals towards environmental substance in the campus. The total area of the campus is 34.27 acres in the heart of the city. SR&BGNR GOVERNMENT ARTS & SCIENCE COLLEGE from its time of establishment to date maintains flora and fauna in the campus to maintain the ecological balance and also an eye feast to stake holders.

As a major step towards controlling green house gases, the Principal of SR&BGNR Arts & Science College encourages NCC,NSS, students to conduct awareness campaigns on plantation under the" Haritha Haram" program, a plantation drive initiated by the Government of Telangana State. Every Year saplings are collected from TS Forest Department Khammam nursery for the plantation drive. Under the audit process the II&III B.Sc. Life Sciences group students andbotany faculty members conducted a survey and audited the plant species in the campus.

3. OBJECTIVES OF THE STUDY

- More efficient resource management
- To provide basis for improved sustainability.
- To create a green campus.
- To enable waste management through reduction of waste generation, solid- waste and water recycling

- To create plastic free campus and evolve health consciousness among the stakeholders
- Recognize the cost saving methods through waste minimizing and managing Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws.
- Empower the organizations to frame a better environmental performance. Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental. Management approach and improving environmental standards benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the College and its environment Enhancement of college profile.
- Developing an environmental ethic and value systems in youngsters.]
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college

GREEN AUDIT COMMITTEE:

NAME	DESIGNATION
Dr. MD. Zakirullah	Convener, Principal
Sri. N. Srinivasa Rao	NSS District Officer, HOD Physics
Dr. A.R. Satyavathi	IQAC Coordinator,
Dr. NVB Sharma	HOD English
Dr. Ch. Srinivasulu	HOD Zoology
Dr. G. Valya	HOD Botany
Dr. P. Ramesh	HOD Chemistry
Dr. J. Ramesh	NCC Officer
Dr. K. John Milton	NSS PO, Asst Prof of Economics
Dr. P. Sarveshwarao	NSS PO, Asst Prof of Commerce
Sri. G. Surendra Reddy	Green Audit Member, Asst. Prof of Botany

4. METHODOLOGY

In order to perform green audit, the methodology included collection of information related to College Building, laboratories, office - based environmental impacts like built-up area, utility bills, energy-saving devices and IT equipments etc. Hence, physical inspection of the campus, observation and review of the documentation, interviewing key persons were carried out. This information needs to be documented and tabulated for arriving at a clear picture of the Institution's annual greenhouse gas emissions and impact of the reduction measures to be undertaken.

Green Audit Process:

- ❖ Teams were formulated with clear instructions and scope of the Audit to collect the data.
- ❖ Documentation of physical evidences based on the verification and valuation of the resources and assets.
- ❖ Analysis of the data to identify the areas of improvement
- ❖ Discussion with subject matter experts and relaying the information to the stakeholders for further analysis and its implementations with action plan to meet the desired standards.

5. OBSERVATIONS

PHYSICAL STRUCTURE

The college is located in about 34.27 acres of land approximately. The built-up area of the college is 3 acres approximately. The Arboretum area is thickly spread with greenery. Approximately 1 acre excluding play ground and parking areas. Well ventilated class rooms and laboratories.

Class rooms	31
Staff rooms	9
Laboratories	16
Auditorium	1
Library	1
Administrative Office	1
Principal's Office	1
Examination Cell	1
Washrooms	10
Canteen	1

Water Use and Management

Water Management in the College

Sources of Water in the College:	Municipal, Tube well water
Storage Facility	Tanks-10 for other usage Tanks-4 for Drinking Water (Approx 30000 liters)
Number of bore wells	01(200 ft depth-5Hp capacity motor)

The study observed that Municipal connection and tube well are major sources of water in college. Water is used for drinking purpose, toilets and gardening. There is one RO plant on the premises that cater to the drinking water requirements. The waste water from the RO plants is redirected to the washrooms and for uses in the labs for cleaning purposes and at times for watering the open ground to prevent dust from infiltrating into the air. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 30,000 L/day, which include domestic, gardening and drinking purposes. Three rain water harvesting units are also functional for recharging ground water level

Activity	Average use /person	Number of activity	Water use / Person/day	Number of personsusing water	Total water (Litre)
Washing hands/face	1L	1time per day	1L	4287	4287
Toilet flesh	6L	Once	6lit	2000	12000
Drinking	0.25lit	Twice	0.5lit	4287	2144
Leaking	100lit	Continuous	10	..	100
Garden	100lit	Once	100	..	100
Labs	250	Once(05 Labs)	1250	..	1250
Canteen	250	Twice	500	..	500
Total					20381(Lite rs)

Total water use 20381 liters of water is used per day by the college for its different uses. The main source of water is ground water. Water from the public water supply is also utilized. 100 L of water is lost per day through the leaking of pipes and other misuses. This can be prevented. If water treatment system is installed at canteen and chemical laboratories the amount of water lost through outlets can be recycled and utilized for gardening and toilet uses. Awareness programs for the management of sustainable water use will be highly beneficial in this college.

Water Conservation Strategies:



- Water consumption in laboratories is minimized by closing the main valves to avoid any kind of leakage.
- Used organic solvents after physical experimentation are not let into the drains; they are recovered and reused for cleaning.
- Organic compound prepared in the II/IV semester students are bottled and issued during V semester organic compound analysis.
- College campus had three (03) rain water harvesting pits for conservation of rainwater.
-

Energy Use and Conservation



This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

Energy source utilized by the campus is electricity only. Total average energy consumption is determined as 3500 KWH/month. The entire campus including common facility centers are equipped with tube lights and bulbs, except for the cement pathway. It is lightened by the LED lighted lights. Campus administration runs switch-off drill on regular basis.

Annexure: 1

S.No	ITEMS/ Equipments	Numbers
1	Tubes & Bulbs	443
2	Fan	375
3	LED Bulbs	16
4	Air Conditioners	8
5	Projector	4
6	Photocopier	2
7	Computers	256
8	Printers	15
9	Other Electrical equipments/ gadgets	
	i. Fridge	5
	ii. Oven	
	iii. Freezer	1
	iv. Amplifier	3
	v. Microwave	0
	vi. Geyser	0
	vii. LCD/Television	1
	viii. Ice cube maker	0
	ix. Ro plant	1
	x. Water cooler	2
	xi. Cyclostyling Machine	0
	xii. UPS	10
	xiii. CC TV SYSTEM	1

During the covid-19 pandemic situation the power consumption is less and due to online classes only 50% of fans and tubs are being utilized.

ENERGY AUDIT REPORT									
Sl. No	Electrical appliance	Number	Power/unit	Total power	KW	Operation/day	KW/Hr	No, of days in month	Total consumption per month
1	Tubes	250	38	9500	9.5	4	38	24	912
2	Fans	220	60	13200	13.2	4	52.8	24	1267
3	LED Bulbs(fled lights)	16	9	144	0.14	6	0.864	30	25.92
4	Air Conditioners	1	7000	7000	7	4	28	24	672
5	Projector	4	280	1120	1.12	1	1.12	25	28
6	Photo copier	2	650	1300	1.3	1	1.3	24	31.2
7	Computer	200	250	50000	50	1	50	10	500
8	Printers	15	60	900	0.9	1	0.6	20	12
9	Fridges	5	150	750	0.75	6	4.5	15	67.5
10	Amplifier	3	100	300	0.3	1	0.3	10	3
11	LCD Television	1	120	120	0.12	1	0.12	10	1.2
12	Water Cooler	2	80	160	0.16	4	0.64	25	16
13	CCTV System	1	15	15	0.02	24	0.36	30	10.8
14	UPS	10	1000	1000	1	1	1	20	20
15	Laminar Air Flow	2	600	1200	1.2	1	1.2	4	8.8
									3575.42

The total energy utilization of the college for different purposes is approximately 3500 units per month. Electricity charges per month are Rs.43000 rupees.

Power Saving Methods Adopted In the College

- Turn off electrical equipments when not in use.
- Maintain appliances and replace old appliances.
- Use computers and electronic equipments in power saving mode
- Energy saving through the replacement of incandescent bulbs, CFL lamps and tube lights to LED light could be a good option.
- Energy efficient electrical equipments especially fans and pump sets can be replaced against old ones.
- Awareness programs for the stakeholders to save energy may also increase sustainability in the utilization of various energy sources.
- The college administrative staff should carry out a lock down of the building at the end of every day and switch off any lights or equipment that has been left on.
- The college building is nearly 46 years old, therefore wiring maybe replaced from electricity leakage and to protect college and its appliances from potentially dangerous or expensive damage that may arise due to faulty wiring
- Solar power is a very important energy source in the move to clean energy production.

**Air quality determination Air quality index
(parameters studied/recorded/seasonal)**

NO2	14.6ug/m3:AQI 18 Good
PM2.5	10.0ug/m3 AQI 10 Good
SO2	10.6 ug/m3,AQI 10 Good
PM10	50.0 ug/m3,AQI 50,Good
Humidity	66.0
Barometric pressure	1006.0 hpa
Wind speed	5.53m/s
Wind direction	56.0 degree

Date: 05-10-2021. Source: Telangana State pollution control board.

MEASUREMENTS OF NOISE LEVEL IN AND AROUND THE COLLEGE

Sl.No	Place	Measurement duration	Minimum	Maximum	Average
		in seconds	(d BA)	(d BA)	(d BA)
1	Library	120	30	60	45
2	Canteen	120	40	70	55
3	Play Ground	120	45	70	57.5
4	Auditorium	120	40	70	55
5	Science Block	120	30	70	50
6	Arts Block	300	30	70	50

CARBON FOOT PRINT REPORT
For The Academic Year 2022-23

S.No.	Description	Numerals	
1.	Total number of students and staff	Students	4,183
		Teaching Staff	86
		Non-Teaching Staff	17
		Total	4,287
2.	Total number of vehicles used by the stakeholders	400	
3.	Number of bicycles used	60	
4.	Number of Two Wheelers used	350	
5.	Number of Four Wheelers used	50	
6.	Public transport used	3,000	
7.	College conveyance used	0	
8.	Number of parent – teacher meetings per year (Approximate Parents turn out)	3 (1,200)	
9.	Number of visitors with vehicles per day	150	
10.	Number of generators used	1	
11.	Number of LPG cylinders used	1	
12.	Quantity of kerosene used	0	
13.	Amount of taxi/auto charges paid and amount of fuel used per month for the transportation of materials for canteen usage	0	
14.	Amount of taxi/auto charges paid and amount of fuel used per month for the transportation of office goods	Rs. 18,000/-	
15.	Average taxi/auto charges paid by the stakeholders per month	Rs. 60,000/-	
16.	Any other fossil fuels used	No	
17.	Are the rooms in the campus are well ventilated?	Yes	
18.	Window/ Floor ratio of the rooms (Good/Not enough)	Good	
19.	Suggestions to reduce the fuel consumption :		

S.No.	Description	Details
1.	Petrol used by Two-Wheelers/day	180 litres
2.	Fuel used by Four-Wheelers/day	50 litres
3.	Common Transportation Fuel/day	300 litres
	Total Fossil Fuel / Day	530 litres
	Total fuel cost per day for transportation (530 litres X Rs. 100/- =53000/-)	Rs. 53,000/-
4.	Cost of transportation of stakeholders per month	Rs. 12,72,000/-

Suggestions:

- Encouraging Bicycles transportation.
- Encouraging Public transportation.
- Car and Two-wheeler pooling of stake holders.
- Planning to implement “No Vehicle Day” once in a week.

WASTE GENERATION AND DISPOSAL

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. Waste generation from tree droppings is a major solid waste generated in the campus. These dried leaves were collected and placed in compost pits for compost preparation. The waste is segregated at the source by providing separate dustbins for Bio-degradable and Plastic waste.

Single sided used papers reused for writing and printing in all departments and recently both side printing is carried out as per requirements. Very less plastic waste is generated by the department, office, garden etc. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing.

The solid waste is collected by the municipal corporation and disposed by their methods. E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. E-waste generated in the campus is very less in quantity. Administration conducts the awareness programs regarding E-waste Management with the help of various departments. The E-waste and defective item from computer laboratory is being stored properly. The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

Annexure: 5: Waste management:

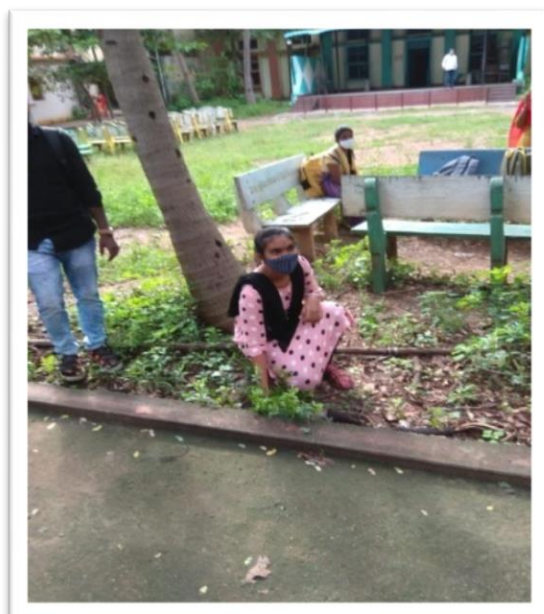
Type of Waste	
Dry Waste	15kgs
Wet Waste	5kgs per day
Plastic Waste	1/2kg per day
E waste	1/4 per day
Total	20.3/4kgs per day

GREEN CAMPUS MANAGEMENT

This includes the plants, greenery, arboretum, and sustainability of the campus to ensure that the buildings conform to green standards. Campus is located in the vicinity of many trees (species) to maintain the bio-diversity. Various tree plantation programs are being organized at college campus with the help of NSS (National Service Scheme) units and NCC unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species.

ECO CLUB:

Department of Botany organized a series of activities under the banner of Eco club to create social awareness about the importance of trees. Our college made human chain of student representative from B,Sc students and they planted trees in the college premises. The lecturers enlightened the students to take a an oath for planting trees as well as nurturing trees to protect future environment





Students Eco club activities in college premises

Annexure: 2 FLORA

Plants type	Total Nos
Tree	550
Shrubs	15
Climbers	2
Total	567

Annexure 6: List of plants growing in College premises.

Sl. No	Common name	Technical name	Family	Habit	No	Type of plant
1.	African tulip tree	<i>Spathodeacampanulata</i>	Bignoniaceae	Tree	1	Ornamental
2.	Fish Tail Palm	<i>Caryota urens</i>	Arecaceae	Tree	1	Ornamental
3.	Royal palm	<i>Roystonea oleracea</i>	Arecaceae	Tree	3	Ornamental tree

4.	False Ashoka Tree	<i>Polyalthia longifolia</i>	Annonaceae	Tree	33	Ornamental tree
5.	Women's tongue tree	<i>Albizia lebeck</i>	Mimosoideae	Tree	2	Ornamental tree
6.	Black plum	<i>Syzygium cumini</i>	Myrtaceae	Tree	4	Fruit Yeilding
7.	Jungle flame (Rama Banam)	<i>Ixora coccinea</i>	Rubiaceae	Shrub	2	Ornamental plant
8.	Mango	<i>Mangifera indica</i>	Anacardiaceae	Tree	13	Fruit Yeilding
9.	Southern silk/Silver oak	<i>Greivllea robousta</i>	Proteaceae	Tree	1	Ornamental
10.	Sago palm	<i>Cycas revoluta</i>	Cycadaceae	Tree	4	Ornamental
11.	Fiji fan palm	<i>Pritchardiapacific a</i>	Arecaceae	Tree	3	Ornamental
12.	Money plant	<i>Epipremnumaure m</i>	Areceae	Climber	1	Ornamental
13.	Coconut tree	<i>Cocus nucifera</i>	Arecaceae	Tree	36	Fruit Yeilding
14.		<i>Dypsispembana</i>	Arecaceae	Tree	9	Ornamental
15.	Yellow oleander	<i>Cascabelathevetia</i>	Apocynaceae	Shrub	3	Ornamental
16.	Devils tree	<i>Alstoniascolaris</i>	Apocynaceae	Shrub	6	Ornamental
17.	Yellow trumpet brush	<i>Tecomastans</i>	Bignoniaceae	Shrub	5	Ornamental
18.	Indian gooseberry /Amla	<i>Phyllanthus emblica</i>	Euphorbiaceae	Tree	1	Fruit Yeilding
19.	Poonga Oil tree (Ganuga)	<i>Pongamia pinnata</i>	Fabaceae	Tree		Ornamental
20.	Gulmohar	<i>Delonix regia</i>	Caesalpinaceae	Tree	2	Ornamental
21.	China rose/Mandaram	<i>Hibiscus rosa sinensis</i>	Malvaceae	Shrub	1	Ornamental

22.	<i>Jack fruit/ Panasa Pandu</i>	<i>Artocarpus heterophyllus</i>	<i>Moraceae</i>	Tree	2	Fruit Yeilding
23.	<i>Custard apple/ Sitaphal</i>	<i>Annona squamosa</i>	<i>Annonaceae</i>	Shrub		Fruit Yeilding
24.	<i>Teak</i>	<i>Tectona grandis</i>	<i>Verbanaceae</i>	Tree	1	Ornamental
25.	<i>Paper flower</i>	<i>Bougainvillea glaba</i>	<i>Nyctaginaceae</i>	Shrub		Ornamental
26.	<i>Sky flower</i>	<i>Duranta erecta</i>	<i>Verbenaceae</i>	Shrub	40	Ornamental
27.	<i>Tamarind</i>	<i>Tamarindus indica</i>	<i>Caesalpinaceae</i>	Tree		Fruit Yeilding
28.	<i>She oaks</i>	<i>Casuarina equisetifolia</i>	<i>Casurianace</i>	Tree	1	Ornamental
29.	<i>Guava</i>	<i>Psidium guajava</i>	<i>Myrtaceae</i>	Tree		Fruit Yeilding
30.	<i>Indian cork tree</i>	<i>Millingtonia hortensis</i>	<i>Bignoniaceae</i>	Tree		Ornamental
31.	<i>Indian almond tree</i>	<i>Terminalia catappa</i>	<i>Combretaceae</i>	Tree	3	Fruit Yeilding
32.	<i>Neem tree</i>	<i>Azadirachta indica</i>	<i>Meliaceae</i>	Tree	18	Medicinal Plant
33.	<i>Thuja</i>	<i>Thuja occidentalis</i>	<i>Cupressaceae</i>	Shrub	2	Ornamental
34.	<i>Yellow flame tree</i>	<i>Peltophorum pterocarpum</i>	<i>Cesalpiniaceae</i>	Tree		Ornamental



Arboretum plants:



S.no	Common name	Botanical name	family	no
1	Mahagani	Swietenia mahagani	Meliaceae	3
2	Rudraksha	Guazuma tomentosa	Sturculiaceae	3
3	Enugu tondam	Adensonia digitata	Malvaceae	3
4	Ashoka	Saraca ashoka	Caesalpinaceae	3
5	Jungle badam	Sterculia foetida	Sterculiaceae	3
6.	Red sandal	Pterocarpus santalinus	Fabaceae	2
7	Devakanchanam	Bauhinia varigeta	Caesalpinaceae	3

8	Egisa	<i>Pterocarpus marsupium</i>	Fabaceae	3
9	Woodapple	<i>Feronia elephantum</i>	Rutaceae	3
10	Karakaya	<i>Terminalia chebula</i>	Combretaceae	3
11	Tanikaya	<i>Terminalia bellerica</i>	Combretaceae	3
12	Almand	<i>Terminelia catapa</i>	Combretaceae	3
13	Bandi gurivinda	<i>Adenantha pavana</i>	Mimosaceae	3
14	Palakodisa	<i>Holarrhena antidysenterica</i>	Apocynaceae	3
15	Musti	<i>Strichnnus nuxvomica</i>	Loganiaceae	3
16	pogada	<i>Mimusops elengi</i>	Sapotaceae	1
17	Burma teak	<i>Radermachera xylocarpa</i>	Bignoniaceae	1
18	Devils tree	<i>Alstonia scolaris</i>	Apocyanaceae	2
19	Rose wood	<i>Dalbergia latifolia</i>	Fabaceae	2
20	Sara pappu	<i>Buchanania ianzan</i>	Anacardiaceae	1
21	Putra jevi	<i>Puntranjeva roxburghi</i>	Euphorbiaceae	3
22	ficus	<i>Ficus benghalensis</i>	Moraceae	3
23	Peepal	<i>Ficus religiosa</i>	Moraceae	2
24	Jammi chettu	<i>Prosopis cineraria</i>	Mimosaceae	2
25	Nalla maddi	<i>Terminalia alata</i>	Combretaceae	2
26	Yepi	<i>Hardwickia binata</i>	Caesalpinaceae	2
27	Bhilludu	<i>Chloroxylon sweitenia</i>	Meliaceae	2
28	Pedda manu	<i>Ailanthus excelsa</i>	Simaroubaceae	2
29	sandalwood	<i>Santalum album</i>	Santalaceae	2

30	orange	Citrus sinensis	Rutaceae	2
31	Bael	Aegle marmelous	Rutaceae	3
32	Danthi	Baliospermum montanum	Euphorbiaceae	2
33	Indian Ash tree	Lannea coromandelica	Anacardiaceae	2
34	Indian gum Arabic tree	Acasia nilotica	Mimosaceae	2
35	Sima thangedu	Cassia siamea	Caesalpiaceae	2
36	Deva ganneru	Plumeria alba	Apocyanaceae	2
37	Ponna	Calophyllum inophyllum	Calophyllaceae	2
38	juvvi	Ficus racemosa	Moraceae	2
40	Velvet apple	Diospyros discolor	Ebanaceae	2

Faunal diversity in the college campus.

Spiders

<i>Latrodectus hesperus</i>	Spider	Arthropod
<i>Micrimmata virescens</i>	Green Huntsman spider	Arthropod
<i>Heteropoda venatoria</i>	Giant crab spider	Arthropod

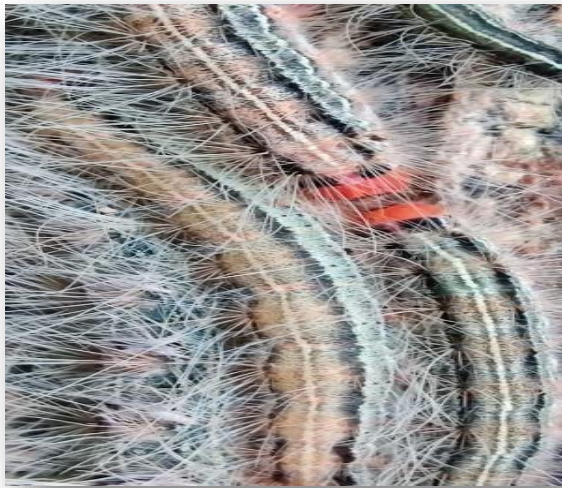
Moths & Butterflies

<i>Daphnis nerii</i>	Army green moth	Arthropod
<i>Diplacodes trivialis</i>	Dragon fly	Arthropod
<i>Papilio liomedon</i>	Butter fly	Arthropod
<i>Spinx pinastri</i>	Pine hawk moth	Arthropod
<i>Spirama recessa</i>		Arthropod
<i>Agrilus convolvuli</i>	Convolvulus hawk moth	Arthropod
<i>Batocera rusomaculata</i>	Mango tree borer	Arthropod
<i>Junonia lemonias</i>	Lemon pansy	Arthropod
<i>Dantana integerrima</i>	Walnut caterpillarmoth	Arthropod
<i>Prinoxystus robiniae</i>	carpenterworm moth	Arthropod
<i>Acherontia styx</i>	bee robber	Arthropod
<i>Catopsilia pyranthe</i>	Mottled emigrant	Arthropod
<i>Agonopterix arenella</i>	Moths	Arthropod
<i>Lepisma saccharinum</i>	Silver fish	Arthropod

Other Insects

<i>Coptotermes formosanus</i> (Formosan subterranean)	Termites	Arthropod
<i>Anopheles</i>	Mosquitos	Arthropod
<i>Julus abbreviatus</i> Mikan	Julus	Arthropod
<i>Solenopsis geminata</i>	Fire ant	Arthropod
<i>Acantherus</i> Scudder	Grass hopper	Arthropod
<i>Scorpio maurus</i>	Scorpion	Arthropod
Praying mantises	Praying mantis	Arthropod
<i>Onthophagus gazella</i> Fabricius	Dung beetles	Arthropod
<i>Vespula vulgaris</i>	wasps	Arthropod
<i>Gryllus pennsylvanicus</i>	Cricket	Arthropod
<i>Coccinella magnifica</i>	Lady beetles	Arthropod
Lampyridae	Fire fly	Arthropod
<i>Trombidium holosericeum</i>	Red velvet mite	Arthropod
<i>Hierodula patellifera</i>	Giant asian mantis	Arthropod
<i>Actias luna</i>	Luna moth	Arthropod
<i>Therea petiveriana</i>	indian domino cockroach	Arthropod
<i>Apis mellifera</i>	Honey bee	Arthropod
<i>Prenolepis imparis</i>	winter ant or False honey pot ant	Arthropod
<i>Trigoniulus corallinus</i>	rusty millipede	Arthropod
<i>Amoeba proteus</i>	Amoeba	Protozoa
<i>Euglena caudata</i>	Euglena	Protozoa
<i>Paramecium caudatum</i>	Paramecium	Protozoa
<i>Pheretima posthuma</i>	Earth worm	Annelid
<i>Pilaglobosa</i>	Snail	Molluscan

Bufo bufo	True toad	Amphibia
Rana tigreana	Indian bull frog	Amphibia
Hyla arborea	Tree frog	Amphibia
Duttaphrynusmelanostictus	Asian common toad	Amphibia
Hemidactylus frenatus	Lizards (House)	Reptilia
Calotes versicolor	Garden lizard	Reptilia
Chamaeleo chamaeleon	Garden lizard	Reptilia
Ptyas mucosa	Rat Snakes	Reptilia
Najanaja	Indian cobra	Reptilia
Viper russlii	Raktapinjara	Reptilia
Bangarus	krait	Reptilia
Varanusbengalensis	Monitor lizard	Reptilia
Enhydrisenhydris	Water snake	Reptilia
Dendrophis	Tree snake	Reptilia
Testudo	Land tortoise	Reptilia
Eryn johnii	Indian sand boa/red sand boa	Reptilia
Bubo bubo	Owl	Aves
Bubulcus ibis	Cattle egret-Heron	Aves
Ardea alba	White crane	Aves
Columba liviademestica	Pigeon	Aves
Passer domesticus	Sparrow	Aves
Psittacula krameri	Parrots	Aves
Eudynamys scolopaceus	Indian black koel	Aves
Acridotherestrictis	Myna	Aves
Centropussinensis	Greater coucal	Aves
Corvussplendens	crow	Aves
Clangahastata	Eagle	Aves
Dendrocopus mahrattensis	Wood pecker	Aves
Coracias benghalensis	Indian roller	Aves
Alcedoatthis	King fisher	Aves
Bubalus bubalis	Buffalo	Mammalia
Bostaurus	cow	Mammalia
Canis lupus familiaris	Dog	Mammalia
Funambulus palmarum(Sciuridae)	Squirrel	Mammalia
Rattus rattus(black)	Rats	Mammalia
Bandocota bengalensis	Bandicoot rat	Mammalia
Rhesus macaque(Cercopithecidae)	Monkey	Mammalia
Felis domesiticus	Cats	Mammalia
Herpestes	Mongoose	Mammalia
Susscrofa scrofa	pig	Mammalia









VERMI COMPOST UNIT



Our department is maintaining vermi compost pit for solid waste materials.

Biodegradable materials like leafy wastes, waste papers in our campus are converted onto vermi compost.

There by we are providing the knowledge of vermi compost in waste disposal and recycling.

The biodegradable waste is collected by installing dust bins in every department.

Since our college has dense vegetation, plenty of leafy waste is collected by the sweepers with the help of nature club volunteers.

Glass pieces and coarse material is separated from the waste before making of vermi compost with the help of nature club volunteers.

Water channel is diverted away from the pit so as to maintain the ideal conditions for compost pit.

RESULT OF WATER QUALITY:

Parameter	Bore well water	Standard value(BIS)
Dissolved Oxygen(mg/l)	5	6-8
Acidity(mg/l)		200
Alkalinity(mg/l)	62	200
Chloride(mg/l)	213	250
Hardness(Total)	146	250
Conductivity(μs)	410	
PH	7	6.5-8.5
TDS(Total dissolved solids)-ppm	105	500
Salinity(ppt)		

6. RECOMMENDATIONS

- To dig more compost pits in the campus
- To encourage eco-friendly dustbins.
- To grow herbs that is medicinally important and also purifies the air.
- To establish a solar panel on the campus.
- Installation Biogas plant and Compost units
- Installation of Incinerators to dispose sanitary napkins
- Installation of rain water harvest methods on roof top and ground.
- Dig sufficient rain water pits in the 35 acre campus wherever possible and maintain it regularly.
- Set up water recycling unit where the recycled water can be used for gardening in college and hostels.
- Grow up vegetable garden and medicinal garden and gradually develop it as a nursery.

hazardous substances in the design, manufacture and application of chemical products.

- Install waste water system for chemistry labs.
- Conduct exhibitions for parents and public on environment and sustainable practices.
- Organize earn while learn eco-friendly programmes.
- Arrange training programmes on environmental management system and nature conservation.
- Declare the campus plastic free and implement it thoroughly.
- Adopt an environment policy for the college.
- Establish an E-waste collection centre in campus.
- Ensure participation of students and teachers in local environmental issues.
- Renovation of cooking system in the canteen to save gas.
- Establish a purchase policy that is energy saving and eco-friendly.
- Replace incandescent and CFL lamps with LED lights.
- Replace LCD computer monitors with LED monitors.
- Conduct seminars, workshops and exhibitions on environmental education.
- Establish water, energy and waste management systems.
- Avoid plastic/thermocool plates and cups in the college level or department level functions.
- Introduce add-on courses eco-friendly income generating to all interested students.

6. Conclusions

Considering the fact that the institution is located in the district head quarters, there is significant environmental awareness for both faculty and students. The environmental awareness initiatives are substantial. Besides, environmental awareness programmers initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques. Also installation of a Solar Panel (renewable energy source) would minimize the energy consumption this may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development.



[Signature]
HEAD

DEPARTMENT OF BOTANY
KAKATIYA UNIVERSITY
WARANGAL-506009 (TS)

[Signature]
PRINCIPAL

SR&BGNR Govt. Arts & Science College
(N.A.A.C. Accredited at B)
KAKATIYA MAM - 507 002.

GREEN AUDITING

SR&BGNR GOVERNMENT ARTS&SCIENCE COLLEGE

(AUTONOMOUS)

KHAMMAM 507002



Village No.
గ్రామం నం.

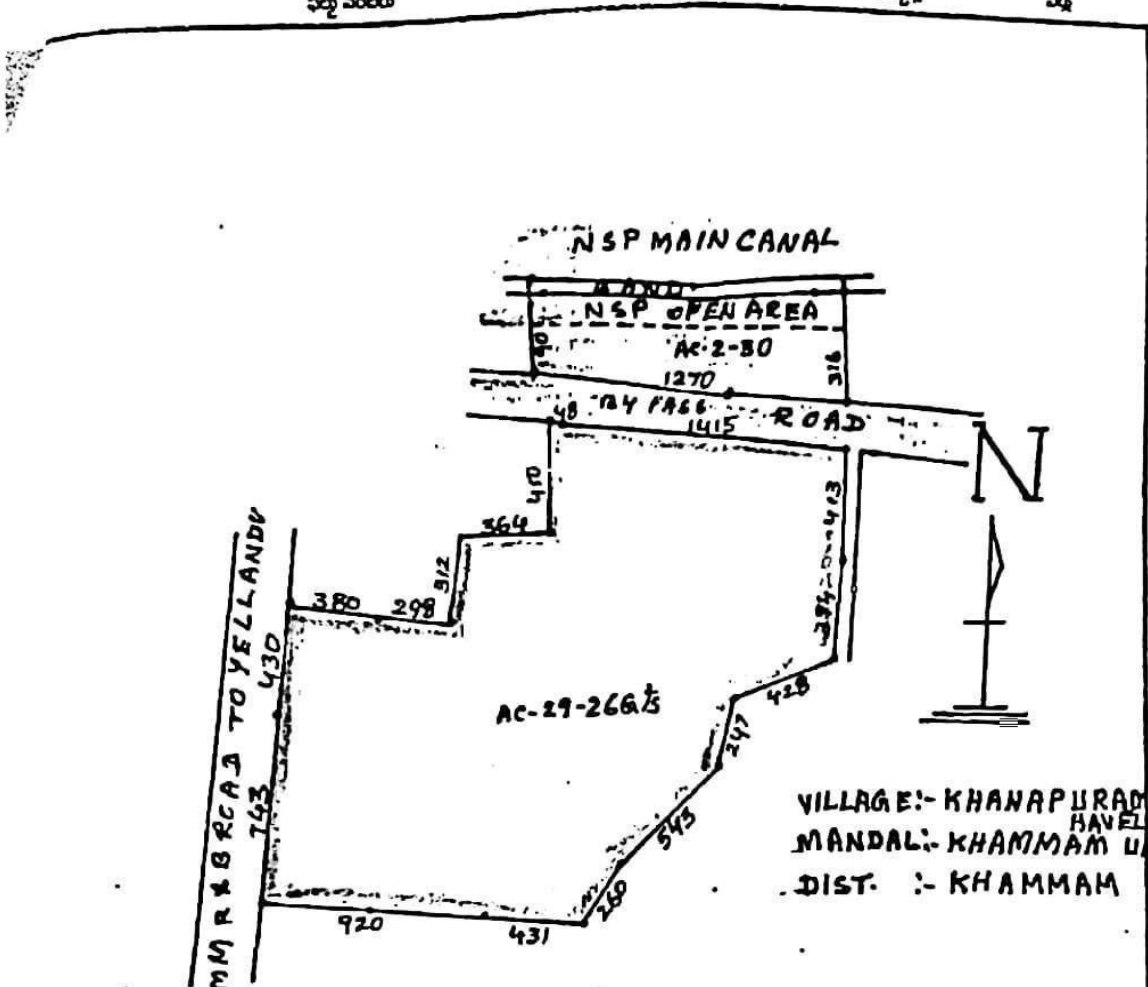
Name
నామం

Field No
ఫీల్డ్ నంబర్

Area
ఎకరాలు

Hectares
హెక్టార్లు

Area
ఎకరాలు



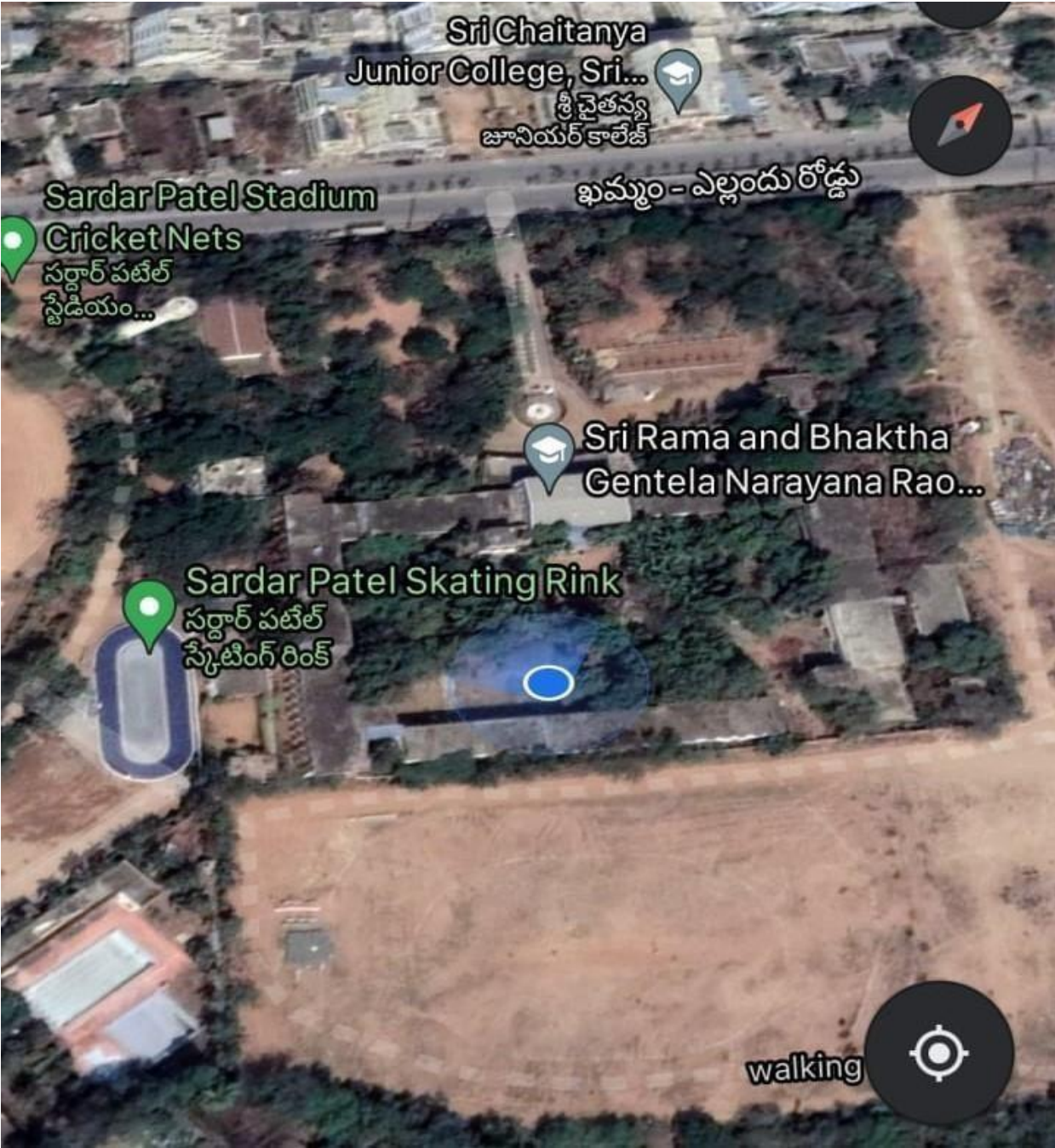
VILLAGE:- KHANAPURAD HAVELI
MANDAL:- KHAMMAM URBAN
DIST. :- KHAMMAM

SY. NO.	EX. NO. AC-013
221	29-26
222	
223	
227	
228	
229	2-05
	2-30
AC	34-210 1/2

SR & BGR COLLEGE EXISTING AREA
BY-PASS ROAD KMM TO SURYAPETA
OPEN AREA BETWEEN NSP CANAL & BYPASS ROAD
TOTAL AREA

[Signature]
MANDAL SURVEYOR
KHAMMAM (U)

[Signature]
TAKSHILAN
KHAMMAM (URBAN) Mandal
Khammam District



Sri Chaitanya
Junior College, Sri...

శ్రీ చైతన్య
జూనియర్ కాలేజ్

Sardar Patel Stadium

ఖమ్మం - ఎల్లందు రోడ్డు

Cricket Nets

సర్దార్ పటేల్
స్టేడియం...

Sri Rama and Bhaktha
Gentela Narayana Rao...

Sardar Patel Skating Rink

సర్దార్ పటేల్
స్కేటింగ్ రింక్

walking

Acknowledgement

Green Audit Assessment Team thanks the SR&BGNR GOVERNMENT ARTS &SCIENCE CLLEGE for assigning this important work of Green Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to:

- ❖ Principal – Dr. Mohammad Zakirullah
- ❖ Team of colleagues

For giving us necessary inputs to carry out this very vital exercise of Green Audit.

We are also thankful to Dr. A. R. Satyavathi (IQAC Coordinator), and other staff members who were actively involved while collecting the data and conducting field measurements.

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 - Green Area
6. Recommendations
7. Conclusions....

1. INTRODUCTION

2. ABOUT THE COLLEGE

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development. We at SR&BGNR GOVERNMENT ARTS & SCIENCE COLLEGE have taken the initiative to make significant contributions in creating a sustainable eco friendly environment. Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. Green Audit helps us to identify and mitigate the ill effects through a sustained and seamless application of remedial measures identified during the audit, to replenish the environment and make the surrounding conducive for a healthy living. An interdisciplinary board of SR&BGNR GOVERNMENT ARTS & SCIENCE COLLEGE is formed with specific goals towards environmental substance in the campus. The total area of the campus is 34.27 acres in the heart of the city. SR&BGNR GOVERNMENT ARTS & SCIENCE COLLEGE from its time of establishment to date maintains flora and fauna in the campus to maintain the ecological balance and also an eye feast to stake holders.

As a major step towards controlling green house gases, the Principal of SR&BGNR Arts & Science College encourages NCC,NSS, students to conduct awareness campaigns on plantation under the" Haritha Haram" program, a plantation drive initiated by the Government of Telangana State. Every Year saplings are collected from TS Forest Department Khammam nursery for the plantation drive. Under the audit process the II&III B.Sc. Life Sciences group students andbotany faculty members conducted a survey and audited the plant species in the campus.

3. OBJECTIVES OF THE STUDY

- More efficient resource management
- To provide basis for improved sustainability.
- To create a green campus.
- To enable waste management through reduction of waste generation, solid- waste and water recycling

- To create plastic free campus and evolve health consciousness among the stakeholders
- Recognize the cost saving methods through waste minimizing and managing Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws.
- Empower the organizations to frame a better environmental performance. Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental. Management approach and improving environmental standards benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the College and its environment Enhancement of college profile.
- Developing an environmental ethic and value systems in youngsters.]
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college

GREEN AUDIT COMMITTEE:

NAME	DESIGNATION
Dr. MD. Zakirullah	Convener, Principal
Sri. N. Srinivasa Rao	NSS District Officer, HOD Physics
Dr. A.R. Satyavathi	IQAC Coordinator,
Dr. NVB Sharma	HOD English
Dr. Ch. Srinivasulu	HOD Zoology
Dr. G. Valya	HOD Botany
Dr. P. Ramesh	HOD Chemistry
Dr. J. Ramesh	NCC Officer
Dr. K. John Milton	NSS PO, Asst Prof of Economics
Dr. P. Sarveshwarao	NSS PO, Asst Prof of Commerce
Sri. G. Surendra Reddy	Green Audit Member, Asst. Prof of Botany

4. METHODOLOGY

In order to perform green audit, the methodology included collection of information related to College Building, laboratories, office - based environmental impacts like built-up area, utility bills, energy-saving devices and IT equipments etc. Hence, physical inspection of the campus, observation and review of the documentation, interviewing key persons were carried out. This information needs to be documented and tabulated for arriving at a clear picture of the Institution's annual greenhouse gas emissions and impact of the reduction measures to be undertaken.

Green Audit Process:

- ❖ Teams were formulated with clear instructions and scope of the Audit to collect the data.
- ❖ Documentation of physical evidences based on the verification and valuation of the resources and assets.
- ❖ Analysis of the data to identify the areas of improvement
- ❖ Discussion with subject matter experts and relaying the information to the stakeholders for further analysis and its implementations with action plan to meet the desired standards.

5. OBSERVATIONS

PHYSICAL STRUCTURE

The college is located in about 34.27 acres of land approximately. The built-up area of the college is 3 acres approximately. The Arboretum area is thickly spread with greenery. Approximately 1 acre excluding play ground and parking areas. Well ventilated class rooms and laboratories.

Class rooms	31
Staff rooms	9
Laboratories	16
Auditorium	1
Library	1
Administrative Office	1
Principal's Office	1
Examination Cell	1
Washrooms	10
Canteen	1

Water Use and Management

Water Management in the College

Sources of Water in the College:	Municipal, Tube well water
Storage Facility	Tanks-10 for other usage Tanks-4 for Drinking Water (Approx 30000 liters)
Number of bore wells	01(200 ft depth-5Hp capacity motor)

The study observed that Municipal connection and tube well are major sources of water in college. Water is used for drinking purpose, toilets and gardening. There is one RO plant on the premises that cater to the drinking water requirements. The waste water from the RO plants is redirected to the washrooms and for uses in the labs for cleaning purposes and at times for watering the open ground to prevent dust from infiltrating into the air. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 30,000 L/day, which include domestic, gardening and drinking purposes. Three rain water harvesting units are also functional for recharging ground water level

Activity	Average use /person	Number of activity	Water use / Person/day	Number of personsusing water	Total water (Litre)
Washing hands/face	1L	1time per day	1L	4287	4287
Toilet flesh	6L	Once	6lit	2000	12000
Drinking	0.25lit	Twice	0.5lit	4287	2144
Leaking	100lit	Continuous	10	..	100
Garden	100lit	Once	100	..	100
Labs	250	Once(05 Labs)	1250	..	1250
Canteen	250	Twice	500	..	500
Total					20381(Lite rs)

Total water use 20381 liters of water is used per day by the college for its different uses. The main source of water is ground water. Water from the public water supply is also utilized. 100 L of water is lost per day through the leaking of pipes and other misuses. This can be prevented. If water treatment system is installed at canteen and chemical laboratories the amount of water lost through outlets can be recycled and utilized for gardening and toilet uses. Awareness programs for the management of sustainable water use will be highly beneficial in this college.

Water Conservation Strategies:



- Water consumption in laboratories is minimized by closing the main valves to avoid any kind of leakage.
- Used organic solvents after physical experimentation are not let into the drains; they are recovered and reused for cleaning.
- Organic compound prepared in the II/IV semester students are bottled and issued during V semester organic compound analysis.
- College campus had three (03) rain water harvesting pits for conservation of rainwater.
-

Energy Use and Conservation



This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

Energy source utilized by the campus is electricity only. Total average energy consumption is determined as 3500 KWH/month. The entire campus including common facility centers are equipped with tube lights and bulbs, except for the cement pathway. It is lightened by the LED lighted lights. Campus administration runs switch-off drill on regular basis.

Annexure: 1

S.No	ITEMS/ Equipments	Numbers
1	Tubes & Bulbs	443
2	Fan	375
3	LED Bulbs	16
4	Air Conditioners	8
5	Projector	4
6	Photocopier	2
7	Computers	256
8	Printers	15
9	Other Electrical equipments/ gadgets	
	i. Fridge	5
	ii. Oven	
	iii. Freezer	1
	iv. Amplifier	3
	v. Microwave	0
	vi. Geyser	0
	vii. LCD/Television	1
	viii. Ice cube maker	0
	ix. Ro plant	1
	x. Water cooler	2
	xi. Cyclostyling Machine	0
	xii. UPS	10
	xiii. CC TV SYSTEM	1

During the covid-19 pandemic situation the power consumption is less and due to online classes only 50% of fans and tubs are being utilized.

ENERGY AUDIT REPORT									
Sl. No	Electrical appliance	Number	Power/unit	Total power	KW	Operation/day	KW/Hr	No, of days in month	Total consumption per month
1	Tubes	250	38	9500	9.5	4	38	24	912
2	Fans	220	60	13200	13.2	4	52.8	24	1267
3	LED Bulbs(fled lights)	16	9	144	0.14	6	0.864	30	25.92
4	Air Conditioners	1	7000	7000	7	4	28	24	672
5	Projector	4	280	1120	1.12	1	1.12	25	28
6	Photo copier	2	650	1300	1.3	1	1.3	24	31.2
7	Computer	200	250	50000	50	1	50	10	500
8	Printers	15	60	900	0.9	1	0.6	20	12
9	Fridges	5	150	750	0.75	6	4.5	15	67.5
10	Amplifier	3	100	300	0.3	1	0.3	10	3
11	LCD Television	1	120	120	0.12	1	0.12	10	1.2
12	Water Cooler	2	80	160	0.16	4	0.64	25	16
13	CCTV System	1	15	15	0.02	24	0.36	30	10.8
14	UPS	10	1000	1000	1	1	1	20	20
15	Laminar Air Flow	2	600	1200	1.2	1	1.2	4	8.8
									3575.42

The total energy utilization of the college for different purposes is approximately 3500 units per month. Electricity charges per month are Rs.43000 rupees.

Power Saving Methods Adopted In the College

- Turn off electrical equipments when not in use.
- Maintain appliances and replace old appliances.
- Use computers and electronic equipments in power saving mode
- Energy saving through the replacement of incandescent bulbs, CFL lamps and tube lights to LED light could be a good option.
- Energy efficient electrical equipments especially fans and pump sets can be replaced against old ones.
- Awareness programs for the stakeholders to save energy may also increase sustainability in the utilization of various energy sources.
- The college administrative staff should carry out a lock down of the building at the end of every day and switch off any lights or equipment that has been left on.
- The college building is nearly 46 years old, therefore wiring maybe replaced from electricity leakage and to protect college and its appliances from potentially dangerous or expensive damage that may arise due to faulty wiring
- Solar power is a very important energy source in the move to clean energy production.

**Air quality determination Air quality index
(parameters studied/recorded/seasonal)**

NO2	14.6ug/m3:AQI 18 Good
PM2.5	10.0ug/m3 AQI 10 Good
SO2	10.6 ug/m3,AQI 10 Good
PM10	50.0 ug/m3,AQI 50,Good
Humidity	66.0
Barometric pressure	1006.0 hpa
Wind speed	5.53m/s
Wind direction	56.0 degree

Date: 05-10-2021. Source: Telangana State pollution control board.

MEASUREMENTS OF NOISE LEVEL IN AND AROUND THE COLLEGE

Sl.No	Place	Measurement duration	Minimum	Maximum	Average
		in seconds	(d BA)	(d BA)	(d BA)
1	Library	120	30	60	45
2	Canteen	120	40	70	55
3	Play Ground	120	45	70	57.5
4	Auditorium	120	40	70	55
5	Science Block	120	30	70	50
6	Arts Block	300	30	70	50

CARBON FOOT PRINT REPORT
For The Academic Year 2022-23

S.No.	Description	Numerals	
1.	Total number of students and staff	Students	4,183
		Teaching Staff	86
		Non-Teaching Staff	17
		Total	4,287
2.	Total number of vehicles used by the stakeholders	400	
3.	Number of bicycles used	60	
4.	Number of Two Wheelers used	350	
5.	Number of Four Wheelers used	50	
6.	Public transport used	3,000	
7.	College conveyance used	0	
8.	Number of parent – teacher meetings per year (Approximate Parents turn out)	3 (1,200)	
9.	Number of visitors with vehicles per day	150	
10.	Number of generators used	1	
11.	Number of LPG cylinders used	1	
12.	Quantity of kerosene used	0	
13.	Amount of taxi/auto charges paid and amount of fuel used per month for the transportation of materials for canteen usage	0	
14.	Amount of taxi/auto charges paid and amount of fuel used per month for the transportation of office goods	Rs. 18,000/-	
15.	Average taxi/auto charges paid by the stakeholders per month	Rs. 60,000/-	
16.	Any other fossil fuels used	No	
17.	Are the rooms in the campus are well ventilated?	Yes	
18.	Window/ Floor ratio of the rooms (Good/Not enough)	Good	
19.	Suggestions to reduce the fuel consumption :		

S.No.	Description	Details
1.	Petrol used by Two-Wheelers/day	180 litres
2.	Fuel used by Four-Wheelers/day	50 litres
3.	Common Transportation Fuel/day	300 litres
	Total Fossil Fuel / Day	530 litres
	Total fuel cost per day for transportation (530 litres X Rs. 100/- =53000/-)	Rs. 53,000/-
4.	Cost of transportation of stakeholders per month	Rs. 12,72,000/-

Suggestions:

- Encouraging Bicycles transportation.
- Encouraging Public transportation.
- Car and Two-wheeler pooling of stake holders.
- Planning to implement “No Vehicle Day” once in a week.

WASTE GENERATION AND DISPOSAL

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. Waste generation from tree droppings is a major solid waste generated in the campus. These dried leaves were collected and placed in compost pits for compost preparation. The waste is segregated at the source by providing separate dustbins for Bio-degradable and Plastic waste.

Single sided used papers reused for writing and printing in all departments and recently both side printing is carried out as per requirements. Very less plastic waste is generated by the department, office, garden etc. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing.

The solid waste is collected by the municipal corporation and disposed by their methods. E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. E-waste generated in the campus is very less in quantity. Administration conducts the awareness programs regarding E-waste Management with the help of various departments. The E-waste and defective item from computer laboratory is being stored properly. The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

Annexure: 5: Waste management:

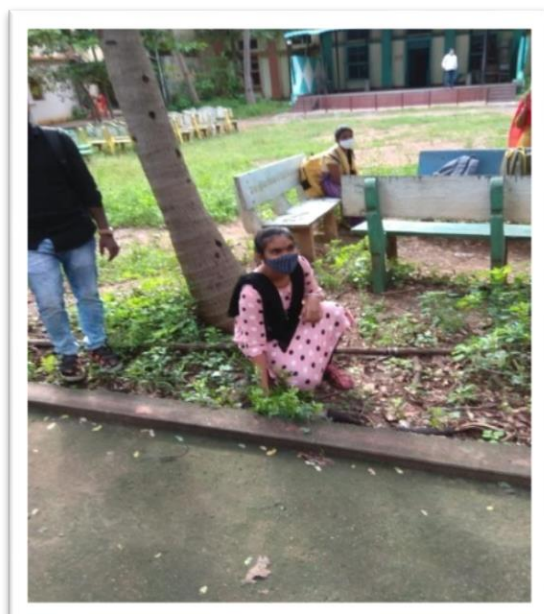
Type of Waste	
Dry Waste	15kgs
Wet Waste	5kgs per day
Plastic Waste	1/2kg per day
E waste	1/4 per day
Total	20.3/4kgs per day

GREEN CAMPUS MANAGEMENT

This includes the plants, greenery, arboretum, and sustainability of the campus to ensure that the buildings conform to green standards. Campus is located in the vicinity of many trees (species) to maintain the bio-diversity. Various tree plantation programs are being organized at college campus with the help of NSS (National Service Scheme) units and NCC unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species.

ECO CLUB:

Department of Botany organized a series of activities under the banner of Eco club to create social awareness about the importance of trees. Our college made human chain of student representative from B,Sc students and they planted trees in the college premises. The lecturers enlightened the students to take a an oath for planting trees as well as nurturing trees to protect future environment





Students Eco club activities in college premises

Annexure: 2 FLORA

Plants type	Total Nos
Tree	550
Shrubs	15
Climbers	2
Total	567

Annexure 6: List of plants growing in College premises.

Sl. No	Common name	Technical name	Family	Habit	No	Type of plant
1.	African tulip tree	<i>Spathodeacampanulata</i>	Bignoniaceae	Tree	1	Ornamental
2.	Fish Tail Palm	<i>Caryota urens</i>	Arecaceae	Tree	1	Ornamental
3.	Royal palm	<i>Roystonea oleracea</i>	Arecaceae	Tree	3	Ornamental tree

4.	False Ashoka Tree	<i>Polyalthia longifolia</i>	Annonaceae	Tree	33	Ornamental tree
5.	Women's tongue tree	<i>Albizia lebeck</i>	Mimosoideae	Tree	2	Ornamental tree
6.	Black plum	<i>Syzygium cumini</i>	Myrtaceae	Tree	4	Fruit Yeilding
7.	Jungle flame (Rama Banam)	<i>Ixora coccinea</i>	Rubiaceae	Shrub	2	Ornamental plant
8.	Mango	<i>Mangifera indica</i>	Anacardiaceae	Tree	13	Fruit Yeilding
9.	Southern silk/Silver oak	<i>Greivillea robousta</i>	Proteaceae	Tree	1	Ornamental
10.	Sago palm	<i>Cycas revoluta</i>	Cycadaceae	Tree	4	Ornamental
11.	Fiji fan palm	<i>Pritchardiapacific a</i>	Arecaceae	Tree	3	Ornamental
12.	Money plant	<i>Epipremnumaure m</i>	Areceae	Climber	1	Ornamental
13.	Coconut tree	<i>Cocus nucifera</i>	Arecaceae	Tree	36	Fruit Yeilding
14.		<i>Dypsispembana</i>	Arecaceae	Tree	9	Ornamental
15.	Yellow oleander	<i>Cascabelathevetia</i>	Apocynaceae	Shrub	3	Ornamental
16.	Devils tree	<i>Alstoniascolaris</i>	Apocynaceae	Shrub	6	Ornamental
17.	Yellow trumpet brush	<i>Tecomastans</i>	Bignoniaceae	Shrub	5	Ornamental
18.	Indian gooseberry /Amla	<i>Phyllanthus emblica</i>	Euphorbiaceae	Tree	1	Fruit Yeilding
19.	Poonga Oil tree (Ganuga)	<i>Pongamia pinnata</i>	Fabaceae	Tree		Ornamental
20.	Gulmohar	<i>Delonix regia</i>	Caesalpinaceae	Tree	2	Ornamental
21.	China rose/Mandaram	<i>Hibiscus rosa sinensis</i>	Malvaceae	Shrub	1	Ornamental

22.	<i>Jack fruit/ Panasa Pandu</i>	<i>Artocarpus heterophyllus</i>	<i>Moraceae</i>	Tree	2	Fruit Yeilding
23.	<i>Custard apple/ Sitaphal</i>	<i>Annona squamosa</i>	<i>Annonaceae</i>	Shrub		Fruit Yeilding
24.	<i>Teak</i>	<i>Tectona grandis</i>	<i>Verbanaceae</i>	Tree	1	Ornamental
25.	<i>Paper flower</i>	<i>Bougainvillea glaba</i>	<i>Nyctaginaceae</i>	Shrub		Ornamental
26.	<i>Sky flower</i>	<i>Duranta erecta</i>	<i>Verbenaceae</i>	Shrub	40	Ornamental
27.	<i>Tamarind</i>	<i>Tamarindus indica</i>	<i>Caesalpinaceae</i>	Tree		Fruit Yeilding
28.	<i>She oaks</i>	<i>Casuarina equisetifolia</i>	<i>Casurianace</i>	Tree	1	Ornamental
29.	<i>Guava</i>	<i>Psidium guajava</i>	<i>Myrtaceae</i>	Tree		Fruit Yeilding
30.	<i>Indian cork tree</i>	<i>Millingtonia hortensis</i>	<i>Bignoniaceae</i>	Tree		Ornamental
31.	<i>Indian almond tree</i>	<i>Terminalia catappa</i>	<i>Combretaceae</i>	Tree	3	Fruit Yeilding
32.	<i>Neem tree</i>	<i>Azadirachta indica</i>	<i>Meliaceae</i>	Tree	18	Medicinal Plant
33.	<i>Thuja</i>	<i>Thuja occidentalis</i>	<i>Cupressaceae</i>	Shrub	2	Ornamental
34.	<i>Yellow flame tree</i>	<i>Peltophorum pterocarpum</i>	<i>Cesalpiniaceae</i>	Tree		Ornamental



Arboretum plants:



S.no	Common name	Botanical name	family	no
1	Mahagani	Swietenia mahagani	Meliaceae	3
2	Rudraksha	Guazuma tomentosa	Sturculiaceae	3
3	Enugu tondam	Adensonia digitata	Malvaceae	3
4	Ashoka	Saraca ashoka	Caesalpinaceae	3
5	Jungle badam	Sterculia foetida	Sterculiaceae	3
6.	Red sandal	Pterocarpus santalinus	Fabaceae	2
7	Devakanchanam	Bauhinia varigeta	Caesalpinaceae	3

8	Egisa	<i>Pterocarpus marsupium</i>	Fabaceae	3
9	Woodapple	<i>Feronia elephantum</i>	Rutaceae	3
10	Karakaya	<i>Terminalia chebula</i>	Combretaceae	3
11	Tanikaya	<i>Terminalia bellerica</i>	Combretaceae	3
12	Almand	<i>Terminelia catapa</i>	Combretaceae	3
13	Bandi gurivinda	<i>Adenantha pavana</i>	Mimosaceae	3
14	Palakodisa	<i>Holarrhena antidysenterica</i>	Apocynaceae	3
15	Musti	<i>Strichnnus nuxvomica</i>	Loganiaceae	3
16	pogada	<i>Mimusops elengi</i>	Sapotaceae	1
17	Burma teak	<i>Radermachera xylocarpa</i>	Bignoniaceae	1
18	Devils tree	<i>Alstonia scolaris</i>	Apocyanaceae	2
19	Rose wood	<i>Dalbergia latifolia</i>	Fabaceae	2
20	Sara pappu	<i>Buchanania ianzan</i>	Anacardiaceae	1
21	Putra jevi	<i>Puntranjeva roxburghi</i>	Euphorbiaceae	3
22	ficus	<i>Ficus benghalensis</i>	Moraceae	3
23	Peepal	<i>Ficus religiosa</i>	Moraceae	2
24	Jammi chettu	<i>Prosopis cineraria</i>	Mimosaceae	2
25	Nalla maddi	<i>Terminalia alata</i>	Combretaceae	2
26	Yepi	<i>Hardwickia binata</i>	Caesalpinaceae	2
27	Bhilludu	<i>Chloroxylon sweitenia</i>	Meliaceae	2
28	Pedda manu	<i>Ailanthus excelsa</i>	Simaroubaceae	2
29	sandalwood	<i>Santalum album</i>	Santalaceae	2

30	orange	Citrus sinensis	Rutaceae	2
31	Bael	Aegle marmelous	Rutaceae	3
32	Danthi	Baliospermum montanum	Euphorbiaceae	2
33	Indian Ash tree	Lannea coromandelica	Anacardiaceae	2
34	Indian gum Arabic tree	Acasia nilotica	Mimosaceae	2
35	Sima thangedu	Cassia siamea	Caesalpiaceae	2
36	Deva ganneru	Plumeria alba	Apocyanaceae	2
37	Ponna	Calophyllum inophyllum	Calophyllaceae	2
38	juvvi	Ficus racemosa	Moraceae	2
40	Velvet apple	Diospyros discolor	Ebanaceae	2

Faunal diversity in the college campus.

Spiders

<i>Latrodectus hesperus</i>	Spider	Arthropod
<i>Micrimmata virescens</i>	Green Huntsman spider	Arthropod
<i>Heteropoda venatoria</i>	Giant crab spider	Arthropod

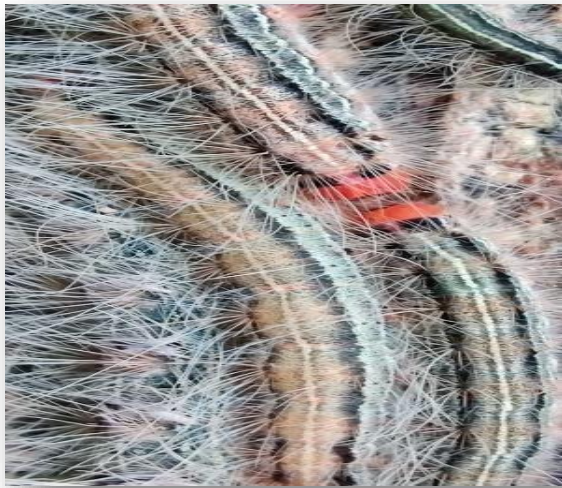
Moths & Butterflies

<i>Daphnis nerii</i>	Army green moth	Arthropod
<i>Diplacodes trivialis</i>	Dragon fly	Arthropod
<i>Papilio liomedon</i>	Butter fly	Arthropod
<i>Spinx pinastri</i>	Pine hawk moth	Arthropod
<i>Spirama recessa</i>		Arthropod
<i>Agrilus convolvuli</i>	Convolvulus hawk moth	Arthropod
<i>Batocera rusomaculata</i>	Mango tree borer	Arthropod
<i>Junonia lemonias</i>	Lemon pansy	Arthropod
<i>Dantana integerrima</i>	Walnut caterpillarmoth	Arthropod
<i>Prinoxystus robiniae</i>	carpenterworm moth	Arthropod
<i>Acherontia styx</i>	bee robber	Arthropod
<i>Catopsilia pyranthe</i>	Mottled emigrant	Arthropod
<i>Agonopterix arenella</i>	Moths	Arthropod
<i>Lepisma saccharinum</i>	Silver fish	Arthropod

Other Insects

<i>Coptotermes formosanus</i> (Formosan subterranean)	Termites	Arthropod
<i>Anopheles</i>	Mosquitos	Arthropod
<i>Julus abbreviatus</i> Mikan	Julus	Arthropod
<i>Solenopsis geminata</i>	Fire ant	Arthropod
<i>Acantherus</i> Scudder	Grass hopper	Arthropod
<i>Scorpio maurus</i>	Scorpion	Arthropod
Praying mantises	Praying mantis	Arthropod
<i>Onthophagus gazella</i> Fabricius	Dung beetles	Arthropod
<i>Vespula vulgaris</i>	wasps	Arthropod
<i>Gryllus pennsylvanicus</i>	Cricket	Arthropod
<i>Coccinella magnifica</i>	Lady beetles	Arthropod
Lampyridae	Fire fly	Arthropod
<i>Trombidium holosericeum</i>	Red velvet mite	Arthropod
<i>Hierodula patellifera</i>	Giant asian mantis	Arthropod
<i>Actias luna</i>	Luna moth	Arthropod
<i>Therea petiveriana</i>	indian domino cockroach	Arthropod
<i>Apis mellifera</i>	Honey bee	Arthropod
<i>Prenolepis imparis</i>	winter ant or False honey pot ant	Arthropod
<i>Trigoniulus corallinus</i>	rusty millipede	Arthropod
<i>Amoeba proteus</i>	Amoeba	Protozoa
<i>Euglena caudata</i>	Euglena	Protozoa
<i>Paramecium caudatum</i>	Paramecium	Protozoa
<i>Pheretima posthuma</i>	Earth worm	Annelid
<i>Pilaglobosa</i>	Snail	Molluscan

Bufo bufo	True toad	Amphibia
Rana tigreana	Indian bull frog	Amphibia
Hyla arborea	Tree frog	Amphibia
Duttaphrynus melanostictus	Asian common toad	Amphibia
Hemidactylus frenatus	Lizards (House)	Reptilia
Calotes versicolor	Garden lizard	Reptilia
Chamaeleo chamaeleon	Garden lizard	Reptilia
Ptyas mucosa	Rat Snakes	Reptilia
Naja naja	Indian cobra	Reptilia
Viper russlii	Raktapinjara	Reptilia
Bungarus	krait	Reptilia
Varanus bengalensis	Monitor lizard	Reptilia
Enhydra inhydris	Water snake	Reptilia
Dendrophis	Tree snake	Reptilia
Testudo	Land tortoise	Reptilia
Eryx johnii	Indian sand boa/red sand boa	Reptilia
Bubo bubo	Owl	Aves
Bubulcus ibis	Cattle egret-Heron	Aves
Ardea alba	White crane	Aves
Columba livia domestica	Pigeon	Aves
Passer domesticus	Sparrow	Aves
Psittacula krameri	Parrots	Aves
Eudynamis scolopacea	Indian black koel	Aves
Acridothera tristis	Myna	Aves
Centropus sinensis	Greater coucal	Aves
Corvus splendens	crow	Aves
Clangula clangula	Eagle	Aves
Dendrocopos major	Wood pecker	Aves
Coracias benghalensis	Indian roller	Aves
Alcedo atthis	King fisher	Aves
Bubalus bubalis	Buffalo	Mammalia
Bos taurus	cow	Mammalia
Canis lupus familiaris	Dog	Mammalia
Funambulus palmarum (Sciuridae)	Squirrel	Mammalia
Rattus rattus (black)	Rats	Mammalia
Bandicota bengalensis	Bandicoot rat	Mammalia
Rhesus macaque (Cercopithecidae)	Monkey	Mammalia
Felis domesticus	Cats	Mammalia
Herpestes	Mongoose	Mammalia
Sus scrofa	pig	Mammalia









VERMI COMPOST UNIT



Our department is maintaining vermi compost pit for solid waste materials.

Biodegradable materials like leafy wastes, waste papers in our campus are converted onto vermi compost.

There by we are providing the knowledge of vermi compost in waste disposal and recycling.

The biodegradable waste is collected by installing dust bins in every department.

Since our college has dense vegetation, plenty of leafy waste is collected by the sweepers with the help of nature club volunteers.

Glass pieces and coarse material is separated from the waste before making of vermi compost with the help of nature club volunteers.

Water channel is diverted away from the pit so as to maintain the ideal conditions for compost pit.

RESULT OF WATER QUALITY:

Parameter	Bore well water	Standard value(BIS)
Dissolved Oxygen(mg/l)	5	6-8
Acidity(mg/l)		200
Alkalinity(mg/l)	62	200
Chloride(mg/l)	213	250
Hardness(Total)	146	250
Conductivity(μs)	410	
PH	7	6.5-8.5
TDS(Total dissolved solids)-ppm	105	500
Salinity(ppt)		

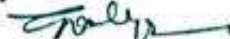
6. RECOMMENDATIONS

- To dig more compost pits in the campus
- To encourage eco-friendly dustbins.
- To grow herbs that is medicinally important and also purifies the air.
- To establish a solar panel on the campus.
- Installation Biogas plant and Compost units
- Installation of Incinerators to dispose sanitary napkins
- Installation of rain water harvest methods on roof top and ground.
- Dig sufficient rain water pits in the 35 acre campus wherever possible and maintain it regularly.
- Set up water recycling unit where the recycled water can be used for gardening in college and hostels.
- Grow up vegetable garden and medicinal garden and gradually develop it as a nursery.

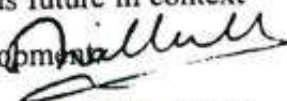
- Develop a butterfly garden that arouses appreciation towards flora and fauna diversity.
- Display boards of fauna diversity to generate enthusiasm for learners
- Layout 'Green Chemistry' that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products.
- Install waste water system for chemistry labs.
- Conduct exhibitions for parents and public on environment and sustainable practices.
- Organize earn while learn eco-friendly programmes.
- Arrange training programmes on environmental management system and nature conservation.
- Declare the campus plastic free and implement it thoroughly.
- Adopt an environment policy for the college.
- Establish an E-waste collection centre in campus.
- Ensure participation of students and teachers in local environmental issues.
- Renovation of cooking system in the canteen to save gas.
- Establish a purchase policy that is energy saving and eco-friendly.
- Replace incandescent and CFL lamps with LED lights.
- Replace LCD computer monitors with LED monitors.
- Conduct seminars, workshops and exhibitions on environmental education.
- Establish water, energy and waste management systems.
- Avoid plastic/thermocool plates and cups in the college level or department level functions.
- Introduce add-on courses eco-friendly income generating to all interested students.

CONCLUSIONS

Considering the fact that the institution is located in the district head quarters, there is significant environmental awareness for both faculty and students. The environmental awareness initiatives are substantial. Besides, environmental awareness programmers initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using eco-friendly and scientific techniques. Also installation of a Solar Panel (renewable energy source) would minimize the energy consumption this may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development.


HEAD

DEPARTMENT OF BOTANY
KAKATIYA UNIVERSITY


PRINCIPAL
SR&BGNR Govt. Arts & Science College
(N.A.A.C. Accredited at B)

