GREEN CAMPUS AUDIT REPORT
2020-21

DADI INSTITUTE OF ENGINEERING & TECHNOLOGY
NH-16, ANAKAPALLE
VISAKHAPATNAM-531002
ANDHRAPRADESH

Green Campus Audit Assessment Team

1	Dr Challa Narasimham Principal, DIET	Audit Chairman	
2	Dr K S Eswara Rao Vice Principal, DIET	Member	
3	Dr Madhavi K Assoc. Professor DIET	Green Campus Coordinator	
4	Mr. B Sudheer Kumar Asst. Professor DIET	Member	
5	Mr. A. Kiran Kumar Asst. Professor DIET	Member	
6	Mr. K. Soma Sekhar Asst. Professor DIET	Member	
7	Mr. M. R Guptha Asst. Professor DIET	Member	
8	Dr L Prasanna Kumar Assoc. Professor & HOD DIET	Member	
9	Mr. A Krishna Nag Assoc. Professor & HOD DIET	Member	
10	Mr. N Ramu HOD DIET	Member	
11	Mr. P Srinivas AO DIET	Member	
12	Mr. B Srinivas PD, DIET	Member	
13	Dr Rekhapalli Srinivasarao REST Pvt Ltd	Environmental Consultant	
14	Mr. Sathish Varupula REST Pvt Ltd	External Auditor	
15	Mr. A Rama Akhilesh REST Pvt Ltd	External Auditor	

CONTENTS

1. INTRODUCTION:

Green Campus Audit assessment is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience. Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important

issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green audit is a potential tool which can be used effectively by an educational institution for resource usage identification and optimization. 'Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable'. The main objective to carry out green audit is to check green practices followed by the college and to conduct a well formulated audit report to understand where it stands on a scale of environmental soundness.

2. OBJECTIVES:

The Green Campus Audit assessment of an institution is becoming a paramount important these days for self-assessment of the institution, which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep the environment clean since its inception. But the auditing of this non-scholastic effort of the college has not been documented. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Campus Audit are:

1. To document practices and implementation of rain water harvesting
2. The document the quality of recycled waste water for gardening, Zero Liquid Discharge Concepts
3. To document the solid Waste disposal system and e-waste management
4. To document the ambient environmental condition of air, water and noise in the campus.
5. More efficient resource management, paperless offices
6. To provide basis for improved sustainability and biodiversity
7. To create a green campus

8. To enable waste management through reduction of waste generation, solid- waste and water recycling
9. Recognize the cost saving methods through waste minimizing and managing
10. Impart environmental education through systematic environmental management approach and benchmarking for environmental protection
11. Financial savings through a reduction in resource use

Benefits of Green Campus assessment:

Green Campuses can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 - 30 % and water savings around 30 - 50%. Intangible benefits of green campus include health & well-being of the occupants, enhancing air quality & promoting biodiversity, safety benefits and conservation of scarce national resources. To provide basis for improved sustainability and to create a green campus.

Benefits to the Environment

- Environmental impacts of the campus are quantified
- Improves overall environmental performance
- Improves waste management
- Decreases resource use
- Improves management of environmental aspects

Benefits to the Institute

- Good publicity-Green campus flag flies over the Quad throughout the year
- Empowers students and staff
- Encourages innovation and change

- Reduces associated costs
- Prevents and reduces environmental impacts
- Creates a more balanced campus community
- Sets an example in the locality
- Institute becomes a better neighbor, Enhancement of college profile

Benefits to the Students

- Improves learning outcomes
- Research skills (developing an action plan, investigation, setting targets, monitoring programme and reporting progress)
- Introduction to new topics
- Transferrable skills to work place-Communication, facilitation, team work, committee services.
- Developing an environmental ethic and value systems in youngsters.

Steps to be followed in making of a successful Green Campus: The motivation for a successful Green Campus must begin at the top and originate throughout the rest of the campus. Without a strong message of commitment and involvement from both the management and the administration, well-intentioned initiatives may be too fragmented to allow for campus-wide participation and too easily undermined by nay Sayers and other obstacles. Once the decision to become a Green Campus is made, then the real work begins.

The following features plays a key role in making a campus green:

I. Strategic Planning: Institutions that cultivate a vision of sustainability must adopt sophisticated strategic planning to allow their top management to assess the full arrange of the institution's effect on the environment. The institutions auditing, and forecasting techniques use by these firms help them anticipate a wide range of external influence on the institution, not just ecological influence.

II. The Administration of Management: The administration of management has a very important impact on the business decisions they make relating to building design, repair and renovation, building operations and maintenance, procurement practices, waste management, custodial services, energy management, transportation, food service and dining operations and hostel management.

III. Academic Departments: The learning model is very well suited to the institutions environment and is a way to integrate knowledge base with local requirements and applications. This can have an immediate benefit depending on the nature of the service requirement. Further educational opportunities exist with developing courses on sustainable development, informal workshops and training as well as distance learning. The evolution of a learner friendly class room in environmental and long-term issues is a perspective to solve the question of sustainability.

IV. The Institutions Research Activity: The research activity of the institution has a significant role in terms of its short and long-term impacts. The research activity includes publication of papers, magazines, journals, research articles, conducting workshops, seminars, awareness programs on environmental and sustainability issues. Areas for research could also include large scale composting, procurement practices, production methods, alternative energy sources, and any number of building design, construction, operations, and maintenance practices.

V. The Local Society: The local society can also provide variety of resources to support the sustainability endeavor and which includes alumni, the business community, local public, transportation providers, vendors, utility suppliers, local organizations and associations.

3. METHODOLOGY OF GREEN AUDITING:

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. The criteria, methods and recommendations used in the Eco-audit, Green Audit and Energy audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations.

The methodology adopted for this audit was a three-step process comprising of:

Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

Data about the general information was collected by observation and interview.

The power consumption of appliances was recorded by taking an average value in some cases (Ref Appendix).

Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus. Data related to water usages & waste management were also analyzed using appropriate methodology.

Recommendation – On the basis of results of data analysis and observations, detailed recommendations given in Section-6.

4. ABOUT DIET:

Dadi Institute of Engineering and Technology is approved by A.I.C.T.E, accredited by NAAC and permanently affiliated to JNTUK-Kakinada. DIET received UGC 2(f) & 12 (b) inclusions. It is a premier educational institute founded by well-known Academician and Philanthropist Sri Dadi Veerabhadra Rao with an objective of providing qualitative education to the people of Visakhapatnam and its suburbs in the year 2006. Since inception the institution is strictly following the founder's perspective and it rose to one of the top preferred institutes in the north coastal districts of Andhra Pradesh for quality education. The highlighting feature of the institute is that, it is the only institute in the state to have highest number of professional bodies of National and International chapters, functioning effectively and helping student fraternity in their holistic development.

National Bodies like NRDC have inked MOA with DIET for Providing IP & Technology Commercialization Services-An agreement in the form of MOA was signed between National Research Development Corporation (NRDC), an Enterprise of Department of Scientific & Industrial Research, Ministry of Science & Technology, Govt. of India and Dadi Institute of Engineering and Technology.

The institute has produced about two thousand and five hundred engineers during last 14 years. Many of DIET alumni are placed across the globe in reputed multi –national companies and are doing a considerable service and playing their part in 'Nation Building'.

The institute has provided individual cubicles to the staff in the staff rooms, waiting halls for girls, and spacious sheds for vehicle parking, mineral water plant for drinking water, a well-furnished canteen, and on campus health center with all emergency health equipment. It has its own fleet of buses to help students and faculty to commute from various parts of the city of Visakhapatnam and its suburbs.

The management aims at academic excellence and has left no leaf un-turned to achieve it. DIET has always adopted itself to the changing needs of the technological world and improved its infra-structural facilities to provide the student community the best facilities to excel in the engineering and management programs.

Quality improvement has been the hallmark of the success saga of the institution and is certified by ISO 9001:2008, ISO 14001:2004 & OHSAS 18001: 2007 certifications.

Institute is offering the following courses:

B. Tech (CSE, CSE (AI & ML, DS), ECE, EEE, CIVIL)

M. Tech (Power & Industrial Drives, Systems & Signal Processing, Computer Science & Engineering)

MBA

Polytechnic (EEE, ECE, CIVIL)

DIET having Facilities:

Library and Digital Library

Entrepreneur Development Cell

Diet Literary & Cultural Club

NSS

Students Activity Canter

Laboratories

Model Class Room

Classrooms and Tutorial Rooms

Faculty Cabins

Students Service Centre

Medical Centre

Faculty Dinning Hall

Cafeteria

Conference Hall

Girls Waiting Hall

Transport Facility

5. ECO-SCORE ASSESSMENT:

Based on the three audit (Green, Eco & Energy) checklists, all the 20 components of eco-score calculated. Eco-score on a scale of 1for very poor to 5 an exemplary.

GREEN CAMPUS Eco-Score for DIET		
ECO SCORE ON A SCALE OF 1 FOR VERY POOR TO 5 AN EXEMPLARY		
S.NO	PARAMETER	ECO SCORE
1	Rain Water harvesting:	4
2	Terrace farming:	1
3	Neutralization Tank:	2
4	Zero Liquid discharge	1
5	Hazardous and e-waste management	3
6	Paperless office	3
7	Fire and safety provisions	2
8	Wealth from waste	1
9	Green Curriculum	3
10	Internal Revenue Generation	2
11	Ban on plastics	2
12	Environmental Education	2
13	Energy Efficiency	3
14	International Carbon Trade	2
15	Environmental Self Audit	1
16	Biogas Plant/Vermicompost	2
17	DG Set stack	1
18	Noise	3
19	Green building concepts	2
20	Biodiversity of campus	2
	TOTAL ECO-SCORE	42
IDEAL ECO SCORE =20X5 = 100		

The above score was calculated according to the following observations during audit.

1. Rain Water Harvesting

During the site visit observed that rain water harvesting system practices are good,
Facility having two recharge pits, each having capacity 1.5 KLD.

2. Roof Top Farming

The Entire campus is does not maintained Roof Top Gardening. Part of the building terrace having greenery.

3. Neutralization Tank

College having the Chemistry lab & Environmental Lab, But the effluent water directly discharges into drainage.

4. Zero Liquid Discharge

The college is not maintaining the waste water treatment. Run-off water by storm water channels going to drainage.

5. Hazardous waste & E-Waste management

E-waste: College having valid MoU with Green waves Solutions Visakhapatnam, but the practices were not good, during site visit we found that so much E-waste materials dumped in the Terrace. Hazardous Waste: College having does not maintain Hazardous waste management.

6. Paperless office.

The college having good practices paperless office best practices like online trainings to students, conducting goggle meets with faculty, Google classroom, E-Lectures and E-Reports etc.

7. Fire and Safety Provision

During the site visit we found the there is no Exit routes are not clearly Displayed and building Evacuation plans are not Displayed in each floor and Periodical Inspection of Fire Extinguishers and Fire Hydrants System are not maintained.

We found that there are no Safety precautions and steps to follow in case of fire outbreaks, fire alarm systems are not in working condition, there is no proper checklist for maintenance of the firefighting equipment

The periodical Fire Mock Drills are not conducted, the electrical safety is also very low due to open wiring in Back side of the building.

The maintenance of the solar system is not good condition because the batteries the distilled water levels are drained and flammable materials are kept beside the batteries like paints, wood debris and Papers.

8. Wealth from Waste

College is not maintained any waste management practices.

9. Green Curriculum

The college management shows that there is no separate Green curriculum but they maintained NSS in Adopted Villages.

The seminars and conferences not related to the Environmental Issues,

The Students and Academia should not involve in Eco Tourism.

10. Internal Revenue Generation

The infrastructure in the laboratories in Civil Department was generating the internal income in the name of consultancy works.

11. Ban on plastics

The campus is following the Swachha Bharat guide lines but need to increase the display boards and slogans.

12. Environmental Education

There is no trainings and Awareness Campaigns regarding Environmental Challenges
No documented evidence is found.

13. Energy Efficiency

The College having 2kwp solar energy system is using in main gate. The college also creating the awareness among the students on the Energy efficiency. The college is maintained the LED lighting and there is no CFL and UV lights in campus.

14. International Carbon Trade

There is no policy on the Carbon Trade in the Campus.

15. Environmental Self Audit

There is no internal Environmental self-auditing and ISO 14001 Certification was expired. The college having Environmental policy but it is sub Stranded.

16. Biogas Plant/ Vermicompost

The college is not maintained Biogas Plant/ Vermicompost, As no hostel facility food waste is less, but waste from canteen facility, dumped into open pit, composting not properly happening.

17.DG Set Stack

The college having the Capacity of DG Set 125KVA. The DG Set Stack was not maintained as per standards. And also stack emissions reports are not maintained. Flammable materials stored beside the DG Set. There is no fire safety Equipment near the DG Set.

18. Noise

Noise measured in class room and outside of the campus it is in standard levels. Good initiatives have been taken to control noise pollution by display boards.

19. Green Building Concepts

There is no practices regarding green building concept

20. Biodiversity of the campus

There are no Existing practices; previously in college campus Animals and Birds were there.

6. AUDIT RECOMMENDATIONS

1. Rainwater Harvesting -Eco-score # 4

Rain is the main source of water on the earth. Most of the water is getting drained off in to the drains or streams in the form of runoff. In the coastal regions this runoff enters the sea. To conserve this water, rainwater harvesting is the best technique to be followed locally which in turn will have a great impact globally. Rooftop rainwater/storm runoff can be harvested in campus through:

- Recharge Pit
- Recharge Trench
- Tube well
- Recharge Well

Recommendations at DIET

1. Divert water to proper storm water channel constructed in the campus premises without wastage of any runoff.
2. Divert the water to pits at different positions in the campus such that ground water recharge can be attained.
3. Divert water to harvesting tanks or nearby water bodies in the premises
4. Reuse the collected water for gardening and for domestic uses
5. Use the water as construction water and for raw water in the Treatment plant in the campus

2. Terrace Farming -Eco-score # 1

Rooftop gardens are man-made green spaces on the topmost levels of industrial, commercial, & residential structures. They may be converted into play spaces, give shade and shelter, or simply be there as a living, green area. Besides the benefit, roof plantings may give food for the birds and small creatures, control temperature, hydrological benefits, architectural enhancement, habitats or corridors for wildlife, recreational opportunities, and in large scale, it may even have ecological benefits. The perform of cultivating food on the rooftop of buildings is sometimes referred to

as rooftop farming. Rooftop farming is generally done using the green roof, Hydroponics, Aeroponics or Air-dynaponics systems or container gardens.

Recommendation at DIET:

- Generate income and can provide some local employment for the poor-can be educated to the local people
- Utilizing otherwise unused roofs to make an income internally.
- Engaging in low time-consuming work that can be shared with other jobs.
- Establishing food security by providing fresh, safe, & healthy produce for the hostels.
- Contributing to environmental sustainability & natural resource management.
- Reducing heat on residents living on the top floor of buildings, which helps them save electricity by means of fans or AC less.

3. Neutralization Tank-Eco-score # 2

Chemistry labs effluent has variation in its pH on a large scale. The lab effluent from an educational institute generally comprises of acids like HCl, HNO3, H2SO4, EDTA and bases like NaOH, CaOH, Na2CO3, NH3 whose pH ranges from 2 to 13. This effluent causes adverse effects when disposed directly onto land or water bodies.

As per effluent standards, Schedule VI of Environment (Protection) Act, 1986 all the parameters should be in the prescribed standards. Neutralization is a chemical reaction in which acid and base react to form salt and water bringing the pH near to 7. This principle is used to control the variation of pH of the lab effluent.

Recommendation at DIET:

Employing a neutralization tank is found to be the more suitable method to achieve neutralization. Recycle this neutralized water, after Ph correction into waste water tank. Avoid drainage the laboratory waste water into storm water channel.

4. Zero Liquid Discharge-Eco-score # 1

Educational Institutes should follow Zero liquid discharge to meet with the environmental regulation in a challenging way. The institute has to identify potentially recyclable streams and applicability of four R's (Reduce, Reuse, Recycle and Recover). By achieving ZLD status and due to recycling of wastewater, the fresh water consumption of the campus can be reduced.

Recommendations:

The treated water can be used in the campus for gardening purpose, watering plants and lawns, in toilets flushes, in HVAC Cooling, Sludge generated from the Sewage Treatment Plant shall be rich in organic content and an excellent fertilizer for horticultural purposes.

5. Hazardous and e-waste management-Eco-score # 3

Hazardous Waste Management Rules are notified to ensure safe handling, generation, processing, treatment, package, storage, transportation, use reprocessing, collection, conversion, and offering for sale, destruction and disposal of Hazardous Waste. These Rules came into effect in the year 1989 and have been amended later in the years 2000, 2003, 2008 and with final notification of the Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016.

Recommendations:

1. Segregate different types of wastes as dry and wet waste
2. Hazardous waste collection into separate waste yellow-colored bags

3. E-waste collection bins
4. Initiate disposal methods with approved contractors (already DIET having MoU)

6. Paperless Office-Eco-score # 3

Educational Institutes will deal with a lot of paper work throughout the year. This creates a demand for paper which in turn needs a lot of pulp for the manufacture of paper.

Recommendations at DIET:

Digital Display boards: Digital display boards helps the students to know the updates in the college and will reduce the paper load in the campus. And also helps to know about the events happening in the campus.

Paper Recycling: The campus should collect all the waste paper and should go for paper recycling on half yearly or yearly basis, such that the recycled paper can be used for preparing logbooks or attendance registers, etc.,

Environmental Data display: Every campus should go for environmental data display such that pupil and the visitors should aware of the ambient conditions in the campus, such that there will be a clear idea of the environment in which the students are surviving.

Digital classes by zoom, google meet, Microsoft teams etc.,

7. Fire and safety provisions-Eco-score # 2

According to the code, "Every building shall be constructed, equipped, maintained and operated as to avoid undue danger to the life and safety of the occupants from fire, smoke, fumes or panic during the time period necessary for escape."

According to the National Disaster Management Authority of India (NDMA) every school/Institute has to strictly abide by certain rules and regulations to prevent fire outbreak and ensure safety. Fire Prevention and Fire Safety

measures should be part of the initial design, and also require regular maintenance and testing.

Recommendations at DIET:

1. Flammable and hazardous materials sources are limited, isolated, eliminated, or secured: This includes electrical lines and appliances, heaters and stoves, natural gas pipelines and LPG canisters, flammable or combustible liquids.
2. Exit routes are clear to facilitate safe evacuation in case of fire or other emergencies.
3. Detection and alarm systems (especially urban setups) are working.
4. Fire extinguishers are regularly refilled.
5. Other firefighting materials and equipment is maintained.
6. Electrical systems are maintained and operable, in compliance with fire safety design criteria.
7. Fire drills must be held regularly while Institute is in session.
8. Every room in the school should have a map posted identifying two ways
9. Safety audits such as electric safety audit such as checking of the electrical system by an electrician and fire safety audit which involves checking for possible sources of fire and identifying inflammable items within the Institute must be done regularly.

8. Wealth from waste-Eco-score # 1

Wealth from waste is a best technique to be implemented in the educational institutes to promote and make the pupil aware of the sustainable practices. This brings a clear idea of what we are wasting instead of making it in to a good resource. Anything of value is called a resource, whereas the waste which in turn be converted in to a valuable resource is being kicked off in to the bins.

Recommendations at DIET:

The wastes such as Demolition waste, garbage from the kitchens, remaining food from the canteens, paper from the offices, Water from Kitchens, water from STP and Neutralization Tank can be converted into useful products. Encourage students to make innovative projects.

Eco-friendly pavements.

Rubber tire benches at play grounds and at open classroom

Sitting benches with used plastic bottles.

Life saver boats with used plastic bottles.

9. Green Curriculum-Eco-score # 3

The current global energy and environmental crisis, the possible impact it might make on future generations, the fact that energy demand is increasing, and oil prices that have risen steadily have brought the demand for more efficient buildings, homes, cars, and consumer products to the fore.

Recommendations at DIET:

Existing **Open classroom** to be developed fully and operational.

Seminars and Conferences to be conducted on Environmental Issues and expert lectures and discussions be made regular in the curriculum.

Eco Tourism: The Indian Government has its views on conserving the environment and has given ministry for Tourism. The Department of tourism is encouraging the ecotourism everywhere in the country. The students and the academia should be involved in the ecotourism.

10. Internal Revenue Generation-Eco-score # 2

Revenue generation is an art every institute has to adopt. Along with technical education the institute should be in a position to earn income to the institute with the help of the laboratories in the institute itself. The infrastructure in the laboratories should be in a position to generate internal income in the name of Consultancy works. The infrastructure in the laboratories in Civil Department was generating the internal income in the name of consultancy works.

Recommendations at DIET:

Existing Civil and Environmental Laboratories can be used for consultancy services.

11. Ban on plastics -Eco-score # 2

The University Grant Commission (UGC) on Friday, August 30, 2019, issued guidelines to ban the use of plastic in universities and educational institutions. **Swachhata Hi Sewa Campaign** is being launched by the Government of India from September 11, 2019, to October 02, 2019 with an aim to eliminate the use of plastic and to dispose of plastic waste.

Recommendations at DIET:

1. Strive to make the campus 'plastic-free' by systematically banning the use of plastic and replacing the same with suitable environment-friendly substitutes.
2. Ban use of single-use plastics in canteens, shopping complexes in the institution's premises and hostels, etc.
3. Carry out awareness drives and sensitization workshops on the harmful impacts of single-use plastics.
4. Mandate all students to avoid bringing non-bio-degradable plastic items to the institutions.
5. Encourage students to sensitize their respective households about the harmful effects of plastics and make their households 'plastic-free'.

6. Install necessary alternative facilities like water units to avoid the use of plastic water bottles, and encourage the use of alternative solutions like cloth bags, paper bags, etc, instead of plastic bottles, bags, cover, and other goods on campuses.

12 Environmental Education-Eco-score # 2

Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions.

Recommendations at DIET:

1. **Eco-club** should be established
2. **Awareness and sensitivity** to the environment and environmental challenges
3. **Knowledge and understanding** of the environment and environmental challenges
4. **Attitudes** of concern for the environment and motivation to improve or maintain environmental quality
5. **Skills** to identify and help resolve environmental challenges
6. **Participation** in activities that lead to the resolution of environmental challenges

13. Energy Efficiency-Eco-score # 3

The goal of green building is to increase the efficiency of resource use (including energy, water and materials) and reduce the building's negative impacts on the environment during the building's lifecycle. “Zero energy” buildings achieve one key green building goal of reducing energy use and greenhouse gas emissions. The College having 2kwp solar energy system is using in main gate. The college also creating the awareness among the students on the Energy efficiency. The college is maintained the LED lighting and there is no CFL and UV lights in campus.

Recommendations at DIET:

1. Building energy efficiency is key to a clean energy future, roof top solar power to be adopted fully.
2. Environmental Awareness: Environmentally conscious students, faculty and staff should be eager to develop and implement energy efficiency solutions.
3. Innovation Hubs: Campuses should provide testing grounds to save energy, using “intelligent” information technology and experimenting with zero-net energy and passive building techniques.
4. College fertile grounds for building energy efficiency improvements
5. widespread adoption of low-energy LED lighting, and undertake building retrofits to improve insulation and upgrade heating and cooling equipment.

14. International Carbon Trade- Eco-score # 2

Greenhouse gas emissions – a new commodity was created in the form of emission reductions or removals. Since carbon dioxide is the principal greenhouse gas, people speak simply of trading in carbon. Carbon is now tracked and traded like any other commodity. This is known as the "carbon market."

Recommendations at DIET:

1. Encourage transportation in such a way that to reduce CO2 emissions.

2. Increase awareness among the students and staff to reduce CO2 emissions per person

3. Encourage carpooling by the staff

15. Environmental Self Audit-Eco-score # 1

Environmental auditing used to be conducted only by firms that were already in the environmental "fishbowl", such as large chemical manufacturers and hazardous waste disposal companies. But recent days it's applicable to institutions as well. **Systematic discovery** of the violation through an environmental audit or a compliance management system. ISO 14001 Certification was expired. The college having Environmental policy but it is sub Stranded.

Recommendations at DIET:

Environmental self-audit should be conducted once in a month as per prescribed check lists.

ISO-14001 certification to be renewed.

16. Biogas Plant/Vermicompost-Eco-score # 2

A biogas plant is where biogas is produced by fermenting biomass. The substrate used for the production of this methane-containing gas usually consists of energy crops such as corn, or waste materials such as manure or food waste.

There are regular waste disposal problems in almost all Institutions like hostels, hospitals, convents, old age-homes, etc. where more peoples are staying together. In the same time the cooking fuel consumption of these Institutions is also very high. Fairly large quantities of firewood and other cooking fuels are consumed for routine cooking purposes.

Recommendations at DIET:

Vermicomposting is applicable for DIET.

Existing open collection pit should be changed into ditch, so that canteen and wet waste can be converted into manure by vermi composting process.

17. DG Set Stack-Eco-score # 1

Installation of stack as per norms

Every Organization will be equipped with a backup power or power generating devices in the absence of normal power supply. A stack of reasonable height be constructed to the DG sets to eliminate the smoke and the gases from the DG sets.

Recommendations at DIET:

The college having the Capacity of DG Set 125KVA.
The DG Set Stack was not maintained as per standards.

Diesel Generator exhaust stack height should be increased to as per the below calculation.

Exhaust stack height: In order to dispose exhaust above building height, minimum exhaust stack height should be, as per latest CPCB/ local pollution control board norms.

For DG set below 800 kW

$$H = h + 0.2 \times \sqrt{kVA}$$

Where H = height of exhaust stack h = height of building.

For DG set above 800 kW - Minimum 30 meter

In case building height is more than 30 meter

Stack Height = Building height + minimum 6 meter.

Note: Exhaust stack height should be considered of maximum value of the above.

18. Noise -Eco-score # 3

Noise generation in any campus or institutions are mainly from vehicular and DG sets. Noise measured in class room and outside of the campus it is in standard levels.
Standards:

Acceptable Noise levels, IS 4954-1968

Acceptable outdoor Noise in residential areas			Acceptable indoor Noise levels for various types of buildings		
S. No	Location	Noise level dB(A)	S. No	Location	Noise level dB(A)
1	Rural Region	25-35	1	Radio and TV studio	25-30
2	Suburban Region	30-40	2	Music Room	30-35
3	Residential Region	40-50	3	Hospitals, class room, Auditorium	35-40
4	Urban Region (residential and business)	40-50	4	Apartments, Hotels, homes, conference rooms, small offices	35-40
5	City/Town	45-55	5	Court rooms, private offices, libraries	40-45
			6	Large public offices, banks, stores, etc.	45-50
			7	Restaurants	50-55

Recommendations at DIET:

1. Construction of barriers

   The plants are the best absorbers of sound, it was experimented with some traditional plants like Mango, Neem, Sapodilla Plant (Sapota), Berry Tree (Neredu), Rose Plant, Almond Tree (Badam), Goose Berry Plant (Usiri), Lemon and Some bushes.

Name of the Plant	Sound Pressure Levels dB(A)	
	At 5m	At 3m
Mango Tree	64.0	63.0
Bushes	62.0	60.5
Berry Tree (Neredu)	65.0	64.2
Rose Plant	66.2	65.8
Sapodilla Plant (Sapota)	66.5	66.0
Almond Tree (Badam)	65.2	65.0
Goose Berry Plant (Usiri)	66.5	66.0
Lemon	66.3	66.8
Neem	65.4	65.0

2. Develop Isopleths for the campus.
3. Conduct Noise Survey in and around campus.

19. Green Building Concepts-Eco-score # 2

As per the National Green Building Standard, 7 components of green buildings are

- Life cycle assessment.
- Siting and structure design efficiency.
- Energy efficiency.
- Water efficiency.
- Materials efficiency.
- Indoor environmental quality enhancement.
- Operations and maintenance optimization.
- Waste reduction

Recommendations at DIET:

Open classroom to be developed

Solar power to be adopted, all 5 star rating A/C to be used, LED lighting should be adopted in all building and street lights.

20. Bio-Diversity of campus-Eco-score # 2

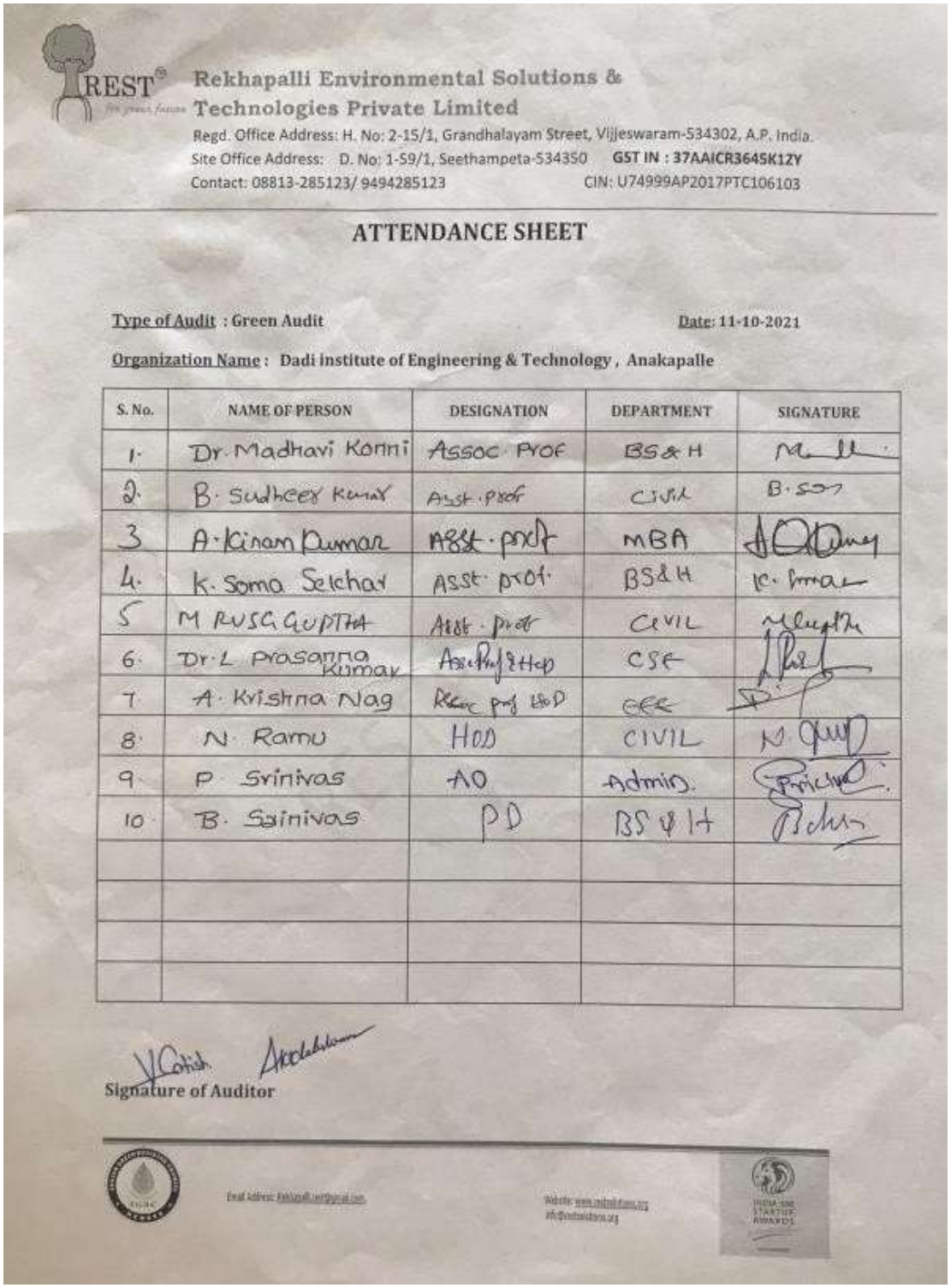
Naming the plants, trees, shrubs, and climbers that are grown in the campus with the common name will enable the public to recognize the plants and its uses in the local traditional practices. Naming the Plants following the IUCN (International Union for Conservation of Nature) is mandatory as it is understandable at the international level. This will help to educate the students and all the stakeholders of the Institution on the scientific name and labelling the uniqueness such as medicinal properties or other uses will also be an added advantage.

Recommendations at DIET:

Waste water collection pond to be developed

Trees plantation around the pond will make the eco-friendly the biodiversity in the campus.

7. APPENDIX



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Contact: 08813-285123/ 9494285123 CIN: U74999AP2017PTC106103

ATTENDANCE SHEET

Type of Audit : Green Audit Date: 11-10-2021

Organization Name : Dadi institute of Engineering & Technology , Anakapalle

S. No.	NAME OF PERSON	DESIGNATION	DEPARTMENT	SIGNATURE
1.	Dr. Madhavi Konni	Assoc. Prof	BS & H	
2.	B. Sudheer Kumar	Asst. Prof	Civil	
3	A. Kiran Kumar	Asst. prof	MBA	
4.	K. Soma Sekhar	Asst. prof.	BS&H	
5	M RVSG GUPTHA	Asst. prof	CIVIL	
6	Dr. L Prasanna Kumar	Asso.Prof & HOD	CSE	
7	A. Krishna Nag	Assoc prof HOD	EEE	
8	N. Ramu	HOD	CIVIL	
9	P Srinivas	AO	Admin.	
10	B. Srinivas	PD	BS & H	

Signature of Auditor

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ATTENDANCE SHEET

Type of Audit : Green Audit Date: 11-10-2021

Organization Name : Dadi institute of Engineering & Technology , Anakapalle

S. No.	NAME OF PERSON	DESIGNATION	DEPARTMENT	SIGNATURE
1.	A. Sai Sasi Kumar	Student	EEE	A. Sai Sasi Kumar
2	D Aravinda	Student	CSE	
3.	M. Shivani	Student	CSE	Shivani
4.	P. Nyleran	Student	CIVIL	
5	B. Charan	Student	CSE	B. Charan
6	K. Dileep Kumar	Student	EEE	K. Dileep
7.	SK. Jalaluddin	Student	E.E.E	
8	D. Thanusha	Student	CSE	D. Thanusha
9	K. Bhavadeeka	student	EEE	K. Bhavadeeka
10.	CH. Sai Jitesh	Student	EEE	
11	N. Jahnavi	Student	CSE	
12	G. Gautham Kumar	Student	EEE	G. Gautham
13.	M. Sai	Student	EEE	M. Sai
14	M. Durga Prasad	Student	CSE	

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ATTENDANCE SHEET

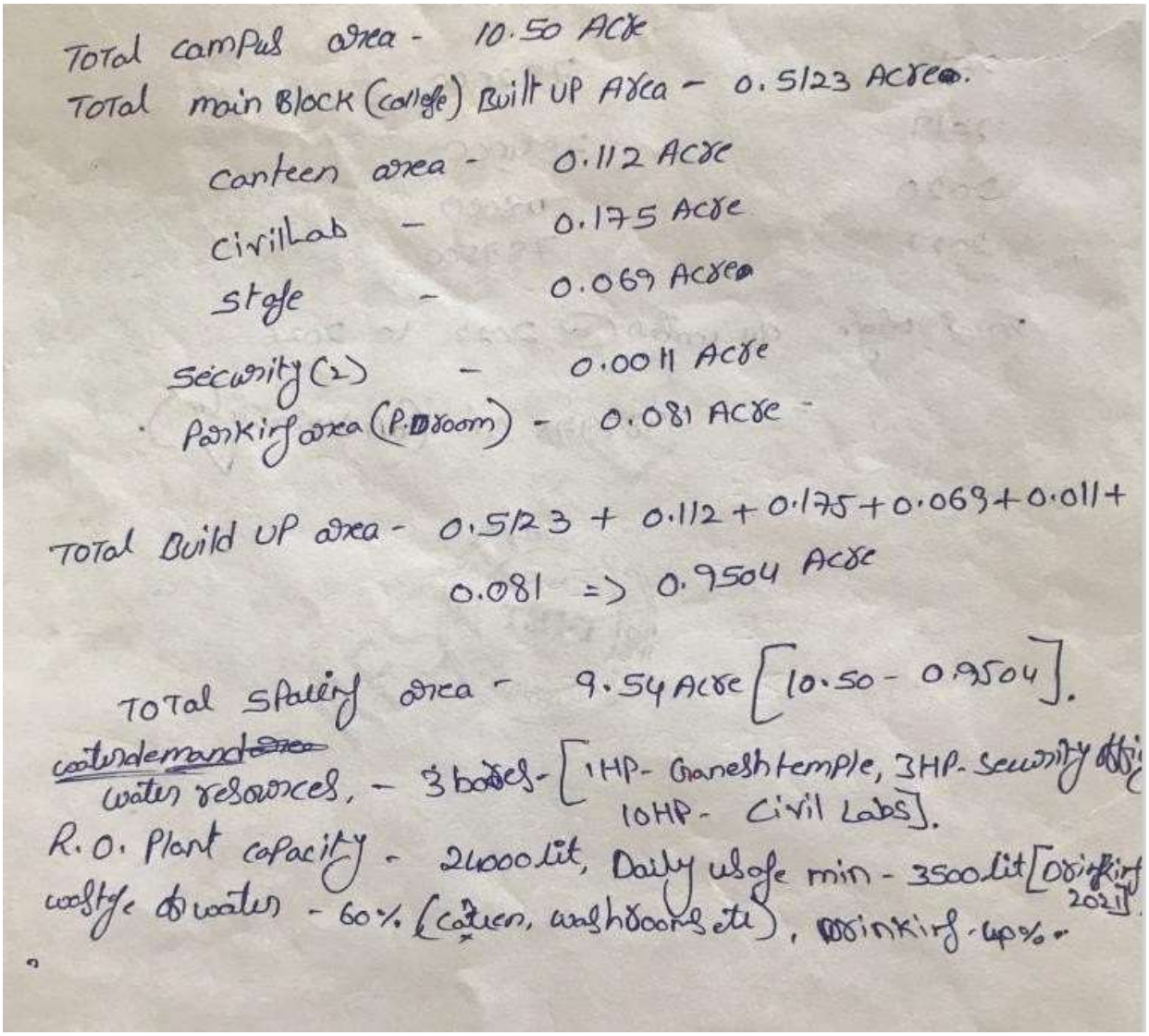
Type of Audit : Green Audit Date: 11-10-2021

Organization Name : Dadi institute of Engineering & Technology , Anakapalle

S. No.	NAME OF PERSON	DESIGNATION	DEPARTMENT	SIGNATURE
15	Y.V.D. Prasad.	Student	CSE	
16	V. Anandaraju.	Student	CSE	
17	B. Eswarkumar.	Student	CSE	
18	T. Tanakesh Naidu	Student	CSE	
19	V. Jaswanth Sai	Student	CSE	
20	V. Jagadeesh	student	CSE	
22	R Sarath Kumar	student	CSE	
22	A. Ravishankar	student	CSE	
23	M. Ramya	Student	CSE	
24	M. Rajya Lakshmi	Student	ECE	
25	K. Lokesh	Student	ECE	
26	Y. Vamsi	Student	CSE	

Signature of Auditor

Topography



Total campus area - 10.50 Acre
Total main Block (college) Built up Area - 0.5123 Acres.

canteen area - 0.112 Acre
CivilLab - 0.175 Acre
stage - 0.069 Acres
Security (2) - 0.0011 Acre
Parking area (P.O room) - 0.081 Acre

Total Build up area - 0.5123 + 0.112 + 0.175 + 0.069 + 0.011 + 0.081 => 0.9504 Acre

Total Stalling area - 9.54 Acre [10.50 - 0.9504].

water demand area
water resources, - 3 bores - [1HP - Ganesh temple, 3HP - Security office, 10HP - Civil Labs].
R.O. Plant capacity - 24000 lit, Daily usage min - 3500 lit [drinking 2021].
wastage of water - 60% [canteen, washrooms etc), drinking - 40%.

Water demand data

Per capita demand.

Year	usage in litres.
2016	777875
2017	787500
2018	792000
2019	784000
2020	48000
2021	787500

Total usage of water @ 2022 to 2026.

= 3987975 lit (approximately).

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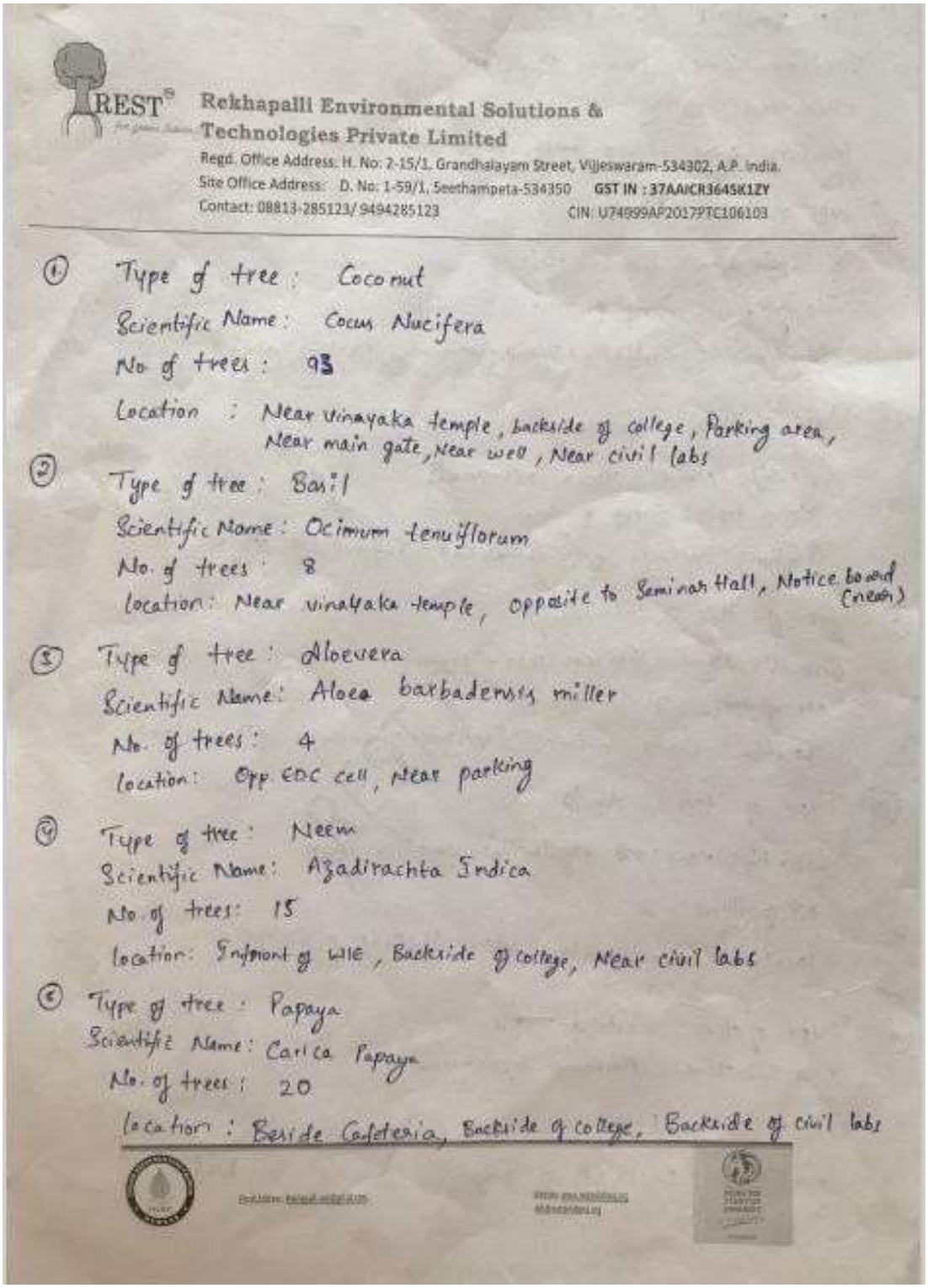
Green belt data



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Contact: 08813-285123/ 9494285123 CIN: U74999AP2017PTC106103

① Type of tree : Coconut
Scientific Name : Cocus Nucifera
No of trees : 93
Location : Near vinayaka temple, backside of college, Parking area, Near main gate, Near well, Near civil labs

② Type of tree : Basil
Scientific Name : Ocimum tenuiflorum
No. of trees : 8
location : Near vinayaka temple, opposite to Seminar Hall, Notice board (Green)

③ Type of tree : Aloevera
Scientific Name : Aloea barbadensis miller
No. of trees : 4
location : Opp EDC cell, Near parking

④ Type of tree : Neem
Scientific Name : Azadirachta Indica
No of trees : 15
location : Entrance of WIE, Backside of college, Near civil labs

⑤ Type of tree : Papaya
Scientific Name : Carica Papaya
No. of trees : 20
location : Beside Cafeteria, Backside of college, Backside of civil labs

⑥ Type of Trees: Almond
Scientific Name: Prunus Dulcis
No of trees: 10
location: Near indoor games, Near civil labs

⑦ Type of Tree: Bamboo
Scientific Name: Bambusoideae
No. of trees: Group of trees
location: Civil labs, Near indoor games, Parking area

⑧ Type of tree: Banana
Scientific Name: Musa acuminata
No. of trees: Group of trees
location: Backside of Seminar hall, Infront of office

⑨ Type of tree: Hibiscus
Scientific Name: Hibiscus rosa-sinensis
No. of trees: 9
location: Beside canteen, Backside of college, Near stores

⑩ Type of tree: Amla
Scientific Name: Phyllanthus emblica Linn
No. of trees: 2
location: Near parking area, Backside of college.

) Type of tree: Custard Apple
Scientific Name: Annona Squamosa
No. of trees: 1
location: Backside of college.

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(12) Type of tree : Pomegranate
Scientific Name : Punica Granatum
No of trees : 1
Location : Backside of college.

(13) Type of tree : Mango
Scientific Name : Mangifera Indica
No. of trees : 4
Location : Backside of college

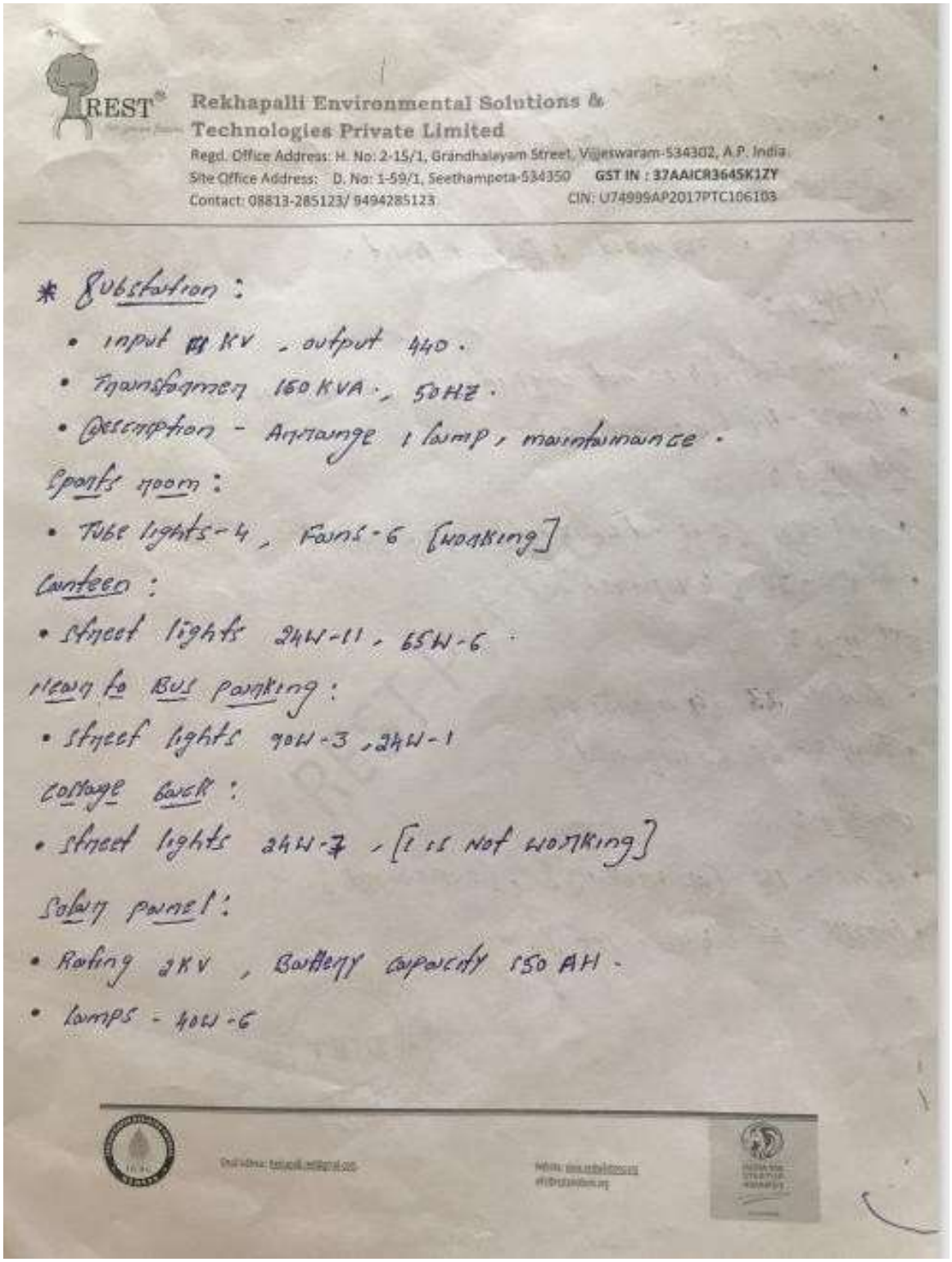
(14) Type of tree : Teak tree
Scientific Name : Tectona Grandis
No. of trees : 8
Location : Backside of college, Near entrance, Civil labs

(15) Type of tree : Chikoo
Scientific Name : Manilkara Zapota
No. of trees : 2
Location : Beside canteen

(16) Type of tree : Sy Zygium cumini
Scientific Name : Black berry
No. of trees : 2
location : Beside canteen, Civil labs

(18) Type of tree : Marigold
Scientific Name : Tagetes
No. of trees : 80
Location : Infront of seminar hall, Infront of Administrative office.

Energy Data



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* Substation :

- input ## KV - output 440.
- Transformer 160 KVA, 50HZ.
- Description - Arrange 1 lamp, maintainance.

Sports room :

- Tube lights - 4, Fans - 6 [working]

Canteen :

- Street lights 24W-11, 65W-6.

Near to Bus parking :

- Street lights 90W-3, 24W-1

Cottage back :

- Street lights 24W-7 - [1 is not working]

Solar panel :

- Rating 2KV, Battery capacity 150 AH.
- Lamps - 40W-6

Food path :

- lamps 40W-6 , 90W-1 .
- Towers 8000W -2 [20 lamps] - 4 is not working .

Generation :

- 125KV , required 1 fan, 1 light.

1st floor :

- fans - 32 [4 is not working] , [6 required]
- lamps - 44 [required 6]

2nd floor :

- fans - 60 [2 is not working] , [4 required]
- lamps - 38 [4 required].

3rd floor :

- fans - ~~33~~ [4 required]
- lamps - 66 [2 required]

4th floor :

- fans - 112 [All working] , [2 required]
- lamps - 55 [4 required].

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5th Floor :

- All labs

Fans :- 66

tubelights :- 32.

Ground Floor :-

LED lamps :- 88 (12 Not working

Fans :- 6 (all work.

Machine lab :-

Fans :- 11 (all working)

lights :- 6 (all working)

RO water plant :-

→ motor 1HP - 2

2HP - 2

capacity :- 25,000 ltrs.

Drinking water storage :- 2000 ltrs.

Waste water capacity :- 5000 ltrs

- Fan - 1 , Tube light - 1 .

Fire water pumping motor :

- 10HP motor
- Description : Fan - 1 ; light - 1 .

Medical room :

- lights - 3, fans - 4

stores :

- lights - 1 , fans - 2
- XEROX machine - 1

Conference hall - 1 :

- Fans - 4
- Tube lights - 2

Conference hall - 2 :

- Fans - 3 , lights - 2 , AC - 1

Saw room :

- lights - 3 , Fans - 5 .

Human resources - HR :-

- Fans - 2 , lights - 2 , printers - 2
- Systems - 2 [1 light is required].

Fluid machines lab :

- lights - 40W - 3

Engineering workshop lab :

- lights 40W - 3, 60W - 1 , Stand fund - 1

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Canteen :

- lights -40W -8 , LED 20W-4 , Fans-19 .

1st floor :

- Computer lab-1 , 11 fans . tube lights-13 [required 2]

3rd floor :

- Computer lab -7.8 ; lights-10 [2 required]
- fans-13 .

4th floor :

- MPB MC lab - 7 lights , Fans-12

5th floor :

- PE lab - Fans-7 , lights-6
- Circuits lab - fans-7 , lights-6 [1 required].
- physics lab - fans-12 , lights-10
- Chemistry lab - fans-11 , lights-12

INSTITUTE OF ENGINEERING & TECHNOLOGY DIET ANAKAPALLE

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No. of ACs :

(1) No. of ACs in Ground floor : 09 → 5 star → 1.5 Tons

(2) No. of ACs in Computer labs :
- 1st floor – 02 + 02 → 5 star → 2 Tons
- 2nd floor – 02 + 02 → 5 star → 2 Tons
- 3rd floor – 02 + 02 → 5 star → 2 Tons
- 4th floor – 02 + 02 → 5 star → 2 Tons

16 ACs.

(3) Library [Digital] → 02 → 1.5 Tons → 5 star

(4) Guest house 03 / Board room → 03 → 1.5 Tons → 5 star.

(5) IQAC (5th floor) → 01 → 1.5 Tons → 5 star.

Total no. of ACs → 36 ACs. [with 2 varies] + 01 Centralized AC in Seminar Hall / (6) Seminar Hall 2 → 02 ACs.

Eco-Audit check list

ENVIRONMENTAL AUDIT CHECK LIST

REST

Auditor name	V. Satish	Audit Date:	11/10/202·
Organization Name & Address	Dadi Institute of Engineering & Technology NH-16, Anakapalle, Visakhapatnam. 9963981111, 9963694444		
Purpose:	To ensure that the environmental management system, maintenance of green campus which lead environment clean and neat, Waste management, recycling of water, disposal of sewage and materials, plastic use in the campus are being implemented effectively by the college.		

PROCEDURE

Procedure	Description	Responsibility
Annual plan	Each year a plan for the environmental audit is prepared by management. This plan serves to ensure that the entire environmental management system is implemented to ensure the campus very clean and neat.	Management
Audit	Based on the checklists, the audit is carried out in the form of observations of campus.	Audit team
Follow-up	Corrective action has to be taken and implemented within the prescribed duration.	Environmental Coordinator
Reporting	Submission of corrective action in the form of report in association with Eco club of the Institute.	Environmental Coordinator

Eco-Audit Environmental Check list

S. No	Requirements	Conformity		
		Y	N	N/A
1	Have internal Eco audit procedures been developed and implemented?	✓		
2	Have environmental aspects identified and evaluated for planned or new developments, or new or modified activities?		✓	
3	Are the following environmental aspects considered in sufficient detail?			
	3.1. Wastewater effluent treatment plant		✓	
	3.2. Waste management and recycling of waste water		✓	
	3.3. Natural resource usage	✓		
	3.4. Hazardous and toxic material disposal	✓		
4	Have responsibilities been assigned for programmes at each appropriate function and level?	✓		
5	Have programmes for the achievement of environmental objectives and targets been established and implemented?		✓	
6	Are the significant evaluation criteria reasonable and adequate?	✓		
7	Are objectives and targets specific, measurable, concrete and understandable?	✓		
8	Has the organization ensured that personnel performing environmental specific tasks have the required knowledge (e.g. education, training experience)?	✓		

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ENVIRONMENTAL AUDIT CHECK LIST

Eco-Audit Environmental Check list					
S. No	Requirements	Conformity			
		Y	N	N/A	
9	Are objectives and targets documented?	✓			
10	Has a Management Representative, Environmental Engineer, Agriculture Staff been assigned?	✓			
11	Have the roles, responsibilities, and authorities for the Management Representative been defined?	✓			
12	Are the required resources (e.g., personnel, technology, finance) for implementation and control of the environmental management system provided by management?	✓			
13	Have training on Eco Audit needs been identified?		✓		
14	Are all monitoring equipment appropriately maintained and calibrated?		✓		
15	Any other environmental specific issues on site such as housekeeping, storage, areas, piping etc.,		✓		

Eco Audit with respect to the Level of status				
S. No	Requirements	Level of Status		
		Good	Satisfactory	Need improvement
1	Waste water treatment facility in the campus	–	–	There is no STP
2	Solid waste management facility in the campus	–	–	Open Burning
3	Renewable energy utilization (Solar energy implementation schemes)		✓	only used in main gate
4	Water facility in the campus	✓		
5	Availability of Biogas plant	–	–	There is no Biogas Plant
6	Implementation of integrated waste treatment facility	–	–	Need to improve
7	Practice of energy audit (Documents and awareness camp)		✓	Good but improve the documents & Records.
8	Any Hygienic audit conducted so far, if yes, number of microbial loads in college canteen, hostel dining hall, etc.		✓	Need to conducted Hygienic audit
9	Practice of water recycling process	✓		Need to improve Pipeline
10	Incorporation of water leakage detection facility		✓	Need to improve
11	Functioning of Eco clubs to ensure college campus.		✓	Not maintained
12	Implementation of Government schemes (Swatch Bharath)		✓	Display boards must be improved.
13	Conduction of awareness programmes for environmental monitoring and Ecosystem maintenance.		✓	Need to Conducted more awareness programmes on environmental monitoring

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ENVIRONMENTAL AUDIT CHECK LIST

Eco Audit with respect to the Level of status				
S. No	Requirements	Level of Status		
		Good	Satisfactory	Need improvement
14	Conduction of outreach programmes for dissemination of natural resources and environmental pollution		✓	need improve outreach Programmes
15	Implementation of composting pits, recycling of kitchen wastes collected from Hostels and other places	—	—	Need to improved
16	Implementation of rain harvesting system, maintenance of natural resources in the campus		✓	need to improve
17	Waste disposal facility and functioning status in campus, hostels and other buildings	—	—	open burning
18	Role of Environment Monitoring System in ensuring green campus including social issues.	—	—	need to improved
19	Students projects offered towards environmental science and management.	—	—	need to improved
20	Overall rating for college campus with neatness upon Environmental impact analysis.		✓	satisfactory

12/10/21

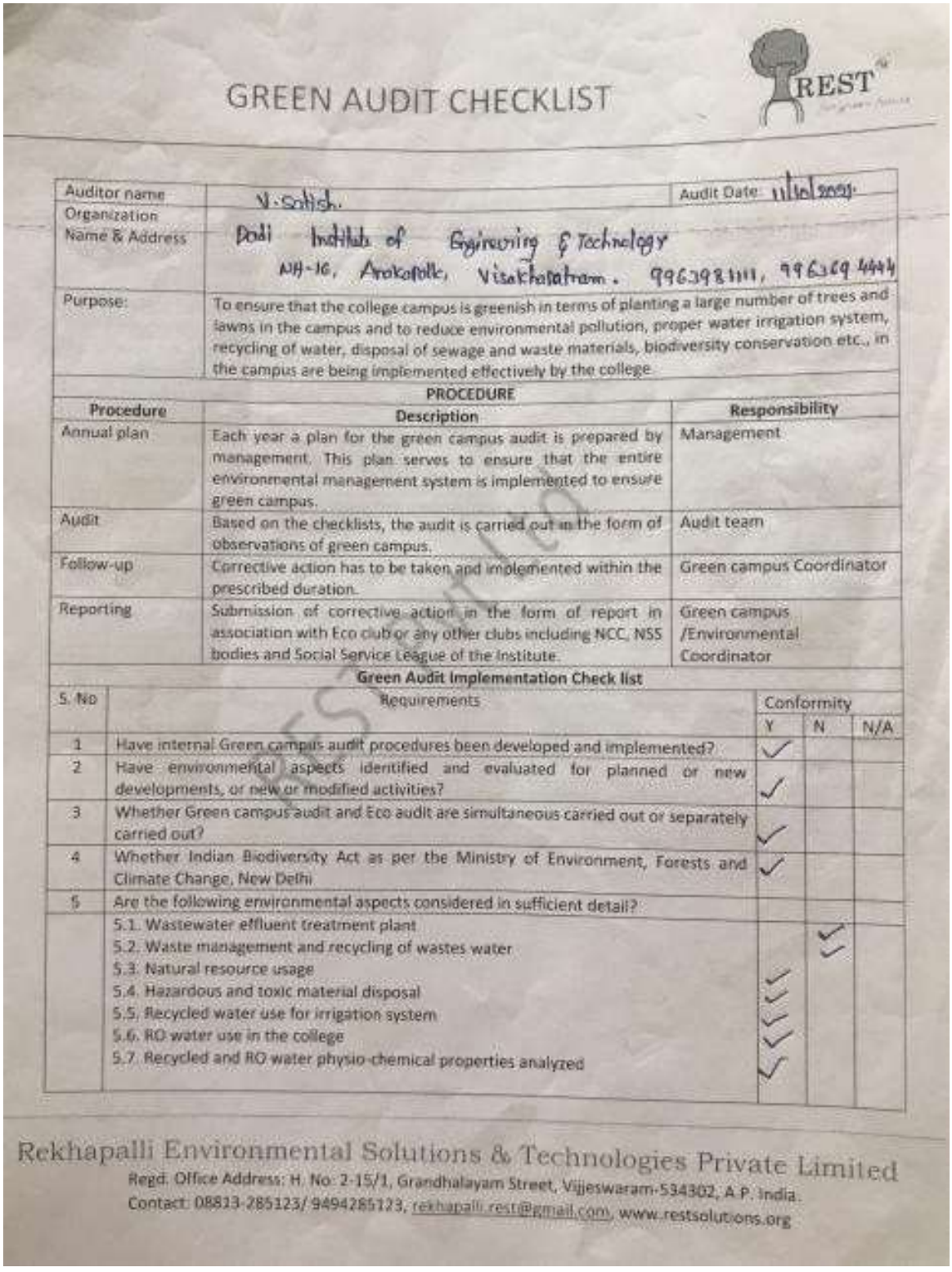
Signature of Eco Auditing Chairman

8/10/2021

Signature of Eco Auditing Auditor

REST Pvt Ltd

Green Audit Checklist



GREEN AUDIT CHECKLIST

Auditor name	V. Satish. Audit Date 11/10/2021
Organization Name & Address	Dadi Institute of Engineering & Technology NH-16, Anakapalle, Visakhapatnam. 9963983111, 9963694444
Purpose:	To ensure that the college campus is greenish in terms of planting a large number of trees and lawns in the campus and to reduce environmental pollution, proper water irrigation system, recycling of water, disposal of sewage and waste materials, biodiversity conservation etc., in the campus are being implemented effectively by the college

PROCEDURE

Procedure	Description	Responsibility
Annual plan	Each year a plan for the green campus audit is prepared by management. This plan serves to ensure that the entire environmental management system is implemented to ensure green campus.	Management
Audit	Based on the checklists, the audit is carried out in the form of observations of green campus.	Audit team
Follow-up	Corrective action has to be taken and implemented within the prescribed duration.	Green campus Coordinator
Reporting	Submission of corrective action in the form of report in association with Eco club or any other clubs including NCC, NSS bodies and Social Service League of the Institute.	Green campus /Environmental Coordinator

Green Audit Implementation Check list

S. No	Requirements	Conformity Y	N	N/A
1	Have internal Green campus audit procedures been developed and implemented?	✓		
2	Have environmental aspects identified and evaluated for planned or new developments, or new or modified activities?	✓		
3	Whether Green campus audit and Eco audit are simultaneous carried out or separately carried out?	✓		
4	Whether Indian Biodiversity Act as per the Ministry of Environment, Forests and Climate Change, New Delhi	✓		
5	Are the following environmental aspects considered in sufficient detail?			
	5.1. Wastewater effluent treatment plant		✓	
	5.2. Waste management and recycling of wastes water		✓	
	5.3. Natural resource usage	✓		
	5.4. Hazardous and toxic material disposal	✓		
	5.5. Recycled water use for irrigation system	✓		
	5.6. RO water use in the college	✓		
	5.7. Recycled and RO water physio-chemical properties analyzed	✓		

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GREEN AUDIT CHECKLIST

REST

Green Audit with respect to the Level of status				
S. No	Requirements	Level of Status		
		Good	Satisfactory	Need improvement
1	Waste water treatment facility to avoid waste water storage in the campus to minimize the disease spread to students			there is no STP plant
2	Solid waste management facility in the campus to reduce bad odor and smell and also to reduce disease incidence to students			open burning
3	Renewable energy utilization (Solar energy implementation schemes) for effective campus maintenance			only used in main gate
4	Sufficient number of trees, shrubs, herbs and lawns to ensure green campus facility to students and also to reduce environmental pollution			plantation is needed.
5	Maintenance of plantations in the campus and steps taken during summer season to maintain plants	✓		need improve sprinkler system
6	Water facility in the campus and steps taken for water scarcity during summer season	✓		mainly depend on bore well only
7	Implementation and practice of energy audit and hygiene audit in the campus		✓	need improve the hygiene audit
8	Number of trees, number animals including bird and establishment of any aquarium in the campus.		✓	Present only trees are there.
9	Whether plants are tagged properly with their common name and Botanical name for students	✓		need to improve the tagged to all the plants in the college.
10	Practice of water recycling process and Frequency of watering for plantations (Record maintenance	✓		required record maintenance
11	Functioning of Eco clubs and other clubs / Cells / Forums / Units to ensure green campus through students		✓	Required the formation of eco clubs & other clubs for students.
12	Implementation of Government schemes (Swatch Bharath) and conduction of awareness programmes for green campus		✓	need to improve awareness programme for green campus.
13	Conduction of outreach programmes for dissemination of green campus motto.		✓	need to improve the awareness of the Green campus motto.
14	Implementation of advanced methods for watering plantations (Trip and sprinkler irrigation methods)	—	—	there is no system
15	Implementation of rain harvesting system, use of biofertilizers, organic as well as green manures		✓	need to improve

GREEN AUDIT CHECKLIST

S. No	Eco Audit with respect to the Level of status Requirements	Level of Status		
		Good	Satisfactory	Need improvement
16	Signing of MoU with Government and Non-Governmental Organizations to ensure green campus		✓	Not maintained
17	Presence of (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystem in college		✓	need improve the forest ecosystem
18	Role of College management in Natural resources maintenance and wildlife protection act implementation		✓	Not Applicable
19	Role of Environment Monitoring System in ensuring green campus including social issues.		✓	need to improve the policy.
20	Overall rating for Green campus		✓	Satisfactory

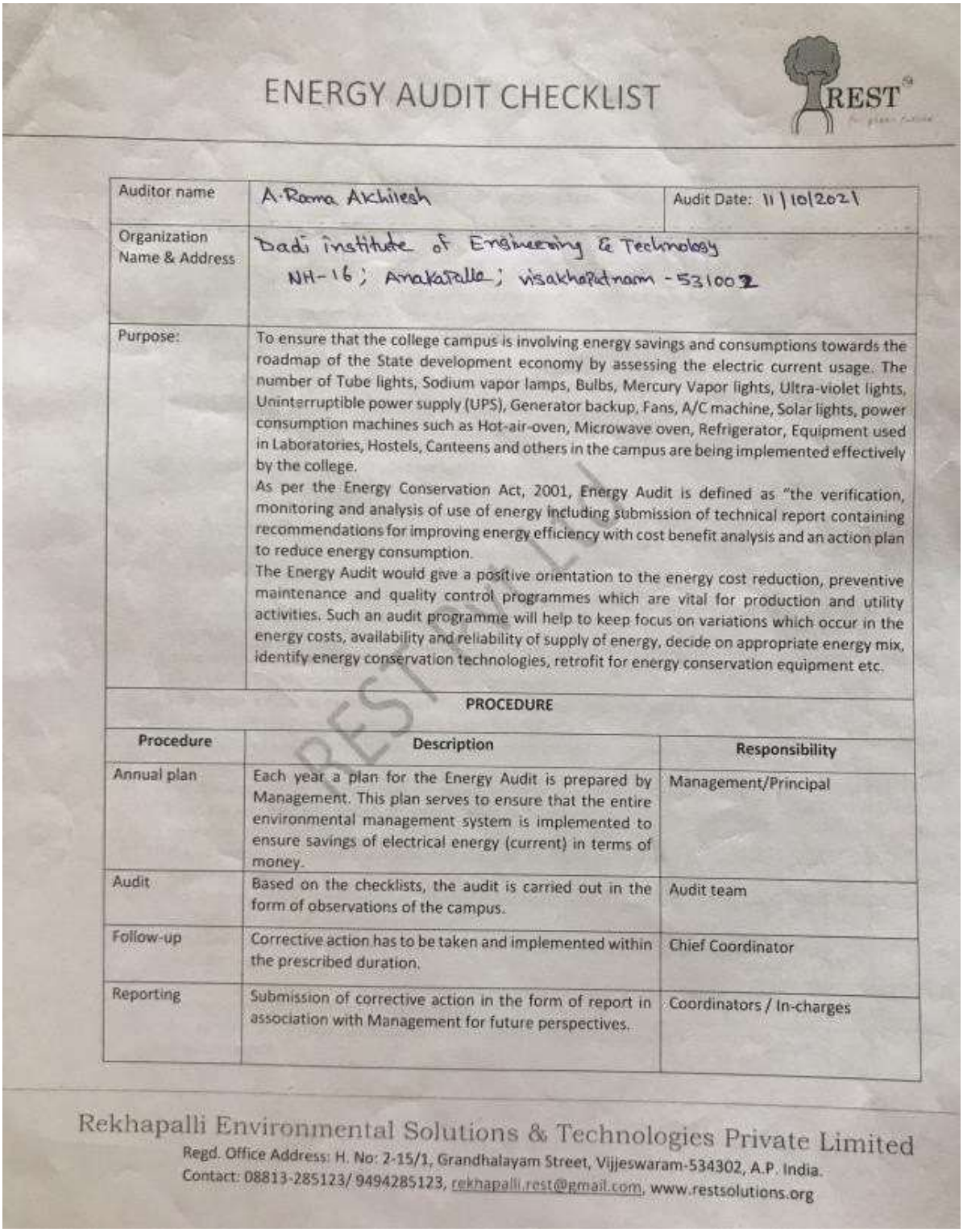
12/10/21
Signature of Green Auditing Chairman

11/10/21
Signature of Green Auditing Auditor

REST Pvt Ltd

Rekhapalli Environmental Solutions & Technologies Private Limited
Regd. Office Address: H. No: 2-15/1, Grandhalayam Street, Vijjeswaram-534302, A.P. India.
Contact: 08813 285123/ 9494285123, rekhapalli.rest@gmail.com, www.restsolutions.org

Energy Audit checklist



ENERGY AUDIT CHECKLIST

Auditor name	A. Rama Akhilesh	Audit Date: 11/10/2021
Organization Name & Address	Dadi Institute of Engineering & Technology NH-16; Anakapalle; Visakhapatnam - 531002	
Purpose:	To ensure that the college campus is involving energy savings and consumptions towards the roadmap of the State development economy by assessing the electric current usage. The number of Tube lights, Sodium vapor lamps, Bulbs, Mercury Vapor lights, Ultra-violet lights, Uninterruptible power supply (UPS), Generator backup, Fans, A/C machine, Solar lights, power consumption machines such as Hot-air-oven, Microwave oven, Refrigerator, Equipment used in Laboratories, Hostels, Canteens and others in the campus are being implemented effectively by the college. As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption. The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in the energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc.	

PROCEDURE

Procedure	Description	Responsibility
Annual plan	Each year a plan for the Energy Audit is prepared by Management. This plan serves to ensure that the entire environmental management system is implemented to ensure savings of electrical energy (current) in terms of money.	Management/Principal
Audit	Based on the checklists, the audit is carried out in the form of observations of the campus.	Audit team
Follow-up	Corrective action has to be taken and implemented within the prescribed duration.	Chief Coordinator
Reporting	Submission of corrective action in the form of report in association with Management for future perspectives.	Coordinators / In-charges

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ENERGY AUDIT CHECKLIST

Energy Audit Implementation Check list				
S. No.	Requirements	Conformity		
		Y	N	N/A
1	Have internal Electrical Energy Audit procedures been developed and implemented?	✓		
2	Have any steps taken for savings of energy by means of controlling number of lights and fans ON/OFF mechanisms by the Management?	✓		
3	Whether ordinary tube lights, sodium vapor lights and sodium vapor lights are replaced with LED bulbs in all the places in the campus?	✓		
4	Whether power consumption is being controlled by means of creating awareness among the stakeholders such as students, teachers, and etc.	✓		
5	Are the following energy conservation aspects considered in sufficient detail?			
	5.1. Number of Uninterruptible power supply (UPS) used : 19 ; Batteries: 296	✓		
	5.2. Number of Solar systems used for lighting : 06	✓		
	5.3. Usage Solar systems used in boiling water in hostels	–	–	N/A
	5.4. Number of Power generators installed : 01			
	5.5. Automatic sprinkler system used for irrigation purpose		✓	
	5.6. RO water use in the college and its current supply	✓		
	5.7. Ultra-violet lights and any other harmful lights used		✓	
	5.8. Attempt in reducing the energy expense and carbon footprint	✓		
6	Have responsibilities been assigned for maintenance of Electrical items and gadgets for long run?	✓		
7	Have programmes for the achievement of prescribed financial outlay for current bill for each building in the campus towards power consumptions?	✓		
8	Any display is made to switch ON / switch OFF in the college to create awareness among students and teachers towards power consumptions?	✓		
9	Are objectives and targets specific, measurable, concrete and understandable in power consumptions?		✓	
10	Has the organization ensured that personnel performing environmental specific tasks have the required knowledge on energy audit (e.g., education, training experience, workshop, camp and etc.)?	✓		
11	Are objectives and targets documented towards energy audit periodically and any Register is made?	✓		
12	Has a Management Representative, Electrical Engineer, Staff in charge been assigned for energy savings on power consumptions?	✓		
13	Have the roles, responsibilities, and authorities for the Management Representative been defined?		✓	
14	Are the required resources (e.g. personnel, technology, finance) for implementation of energy savings provided by Management?	✓		
15	Are all electrical equipment towards power consumptions appropriately maintained and calibrated?	✓		

ENERGY AUDIT CHECKLIST

Energy Audit Implementation Check list				
S. No	Requirements	Conformity		
		Y	N	N/A
16	Any energy conservation technologies and retrofit for energy conservation equipment are being implemented?	✓		
17	Any analysis of energy flows for energy conservation in terms of the amount of energy input into the system without negatively affecting the output in Buildings in the College	✓		
18	Implications of alternative energy efficiency measures sufficient to satisfy the financial criteria of sophisticated investors	✓		
19	Identification of the most efficient and cost-effective Energy Conservation Opportunities (ECOs) or Measures (ECMs) taken by the management	✓		

Energy Audit with respect to the Level of status				
S. No	Requirements	Level of Status		
		Good	Satisfactory	Need improvement
1	Number of UPS, Solar system and Generator for power back up to alternative current supply facility in each building		✓	Need to improve the inspection of UPS, solar systems Generator
2	Implementation and practice of energy audit, eco audit and hygiene audit in the campus		✓	Hygiene audit is not conducting, so required for implementation
3	Functioning of Clubs / Cells / Forums / Units to ensure the safety precautions on current scared to students and teachers	—	—	required formation of clubs / cells to ensure the safety precautions
4	Implementation of advanced methods for watering plantations (Trip and sprinkler irrigation methods) and boiling water system on energy savings mode	—	—	required installation of the sprinkler irrigation methods.
5	Roles, responsibilities, and authorities for the Management Representative for energy savings and amount of money savings		✓	Draft the MR Roles & Responsibilities for energy savings & money saving
6	Use of Ultra-violet and Harmful lights without creating any awareness and safety precautions.	—	—	Not using any UV - Harmful light at college
7	Servicing and calibration of Electrical equipment items and gadgets for energy savings and power consumptions		✓	Required calibration of the equipments.
8	Signing of MoU with Government and Non-Governmental Organizations to ensure energy audit		✓	NO, any MOU with Government
9	Cost-effective energy conservation measures is well taken.	—	—	Using only solar system UP to 2 KWP only.
10	Overall rating for Energy Audit		✓	Need to improve

ENERGY AUDIT CHECKLIST

Assessment of Energy Audit:

Common types of Energy audits are distinguished below, although the actual tasks performed and level of effort may vary with the consultant providing services under these broad headings. The only way to ensure that a proposed audit will meet your specific needs is to spell out those requirements in a detailed scope of work. Generally, four levels of analysis can be outlined here:

- **Level 0** – Benchmarking: This first analysis consists in a preliminary Whole Building Energy Use (WBEU) analysis based on the analysis of the historic utility use and costs and the comparison of the performances of the buildings to those of similar buildings. This benchmarking of the studied installation allows determining if further analysis is required;

- **Level I** – Walk-through audit: Preliminary analysis made to assess building energy efficiency to identify not only simple and low-cost improvements but also a list of energy conservation measures (ECMs, or energy conservation opportunities, ECOs) to orient the future detailed audit. This inspection is based on visual verifications, study of installed equipment and operating data and detailed analysis of recorded energy consumption collected during the benchmarking phase;

- **Level II** – Detailed/General energy audit: Based on the results of the pre-audit, this type of energy audit consists in energy use survey in order to provide a comprehensive analysis of the studied installation, a more detailed analysis of the facility, a breakdown of the energy use and a first quantitative evaluation of the ECOs/ECMs selected to correct the defects or improve the existing installation. This level of analysis can involve advanced on site measurements and sophisticated computer-based simulation tools to evaluate precisely the selected energy retrofits;

- **Level III** – Investment-Grade audit: Detailed Analysis of Capital-Intensive Modifications focusing on potential costly ECOs requiring rigorous engineering study

12/10/21

Signature of Energy Auditing Chairman

11/10/2021

Signature of Energy Auditing Auditor

8. PHOTO GALLERY

Main Building Aerial View

Main Building

Amenities & Buildings

Audit session

Green Belt


SCIENTIFIC NAME : MANGIFERA INDICA
LOCAL NAME : MANGO
MEDICINAL USE : IMPROVES BLOOD IMMUNITY
DIGESTIVE HEALTH , EYE HEALTH
HAIR & SKIN HEALTH


SCIENTIFIC NAME : TECTONA GRANDIS
LOCAL NAME : TEAK TREE
MEDICINAL USE : RELIEVING SWELLING
PAIN RELIEF
PROMOTING A HEALTHY


SAY
NO

Students' awareness and interactive session by Dr Rekhapalli.

Students Participation

Our sincere thanks to the DIET Management, Principal, Vice Principal, Green Campus Coordinator, Staff and students for successful completion of “Green Campus Audit and assessment” to achieve towards “Green Campus Certification” award.

Report prepared

By

(Dr Srinivasa Rao Rekhapalli)

Managing Director

REST Pvt Ltd

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