YENEPOYA
(Deemed to be University)

SUSTAINABILITY REPORT 2023

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SUSTAINABILITY REPORT 2023

YENEPOYA
(DEEMED TO BE UNIVERSITY)
University Road, Deralakatte, Mangalore – 575018, India
Ph: 0824 2204668 Fax: 0824 2204667
Email: registrar@yenepoya.edu.in Website: www.yenepoya.edu.in

Sustainability report committee

1) Dr. Bhagya B. Sharma
   Deputy Director, CES

2) Mr. Walter Castelino
   Manager, Maintenance Dept.

3) Mr. Vinayaka Bhatta
   Environmental Engineer, Maintenance Dept.

4) Mr. Sayyad M. I.
   Electrical Engineer, Maintenance Dept.

5) Mr. Zahir Peraje
   Electrical Engineer, Maintenance Dept.

6) Mr. Joy Nelson Monteiro
   Supervisor, Maintenance Dept.

SUSTAINABILITY REPORT

The Sustainability report of the Yenepoya (Deemed to be University) is an evaluation of the organization's operations, policies, and procedures, aimed at identifying areas for improvement to enhance overall sustainability. This process involves assessing the environmental consequences of the institution's activities, evaluating its commitment to social responsibility, and appraising its economic performance. The goal of this report is to uncover opportunities for the institution to reduce its environmental footprint, enhance its social responsibility practices, and strengthen its financial standing.

CONTENTS

List of Figures

List of Tables

Abbreviations

ARL	Above Roof Level
CETP	Common Effluent Treatment Plant
CFL	Compact Fluorescent Lamp
CSC	Campus Sustainability committee
DG	Diesel Generators
EAC	Environment Advisory Council
EC	Environmental Clearance
ETP	Treatment of Effluent
KL	Kilo Liters
KLD	Kilo Liter per Day
KSPCB	Karnataka State Pollution Control Board
KVA	Kilovolt Amperes
LBMW	Liquid Biomedical Waste Treatment
LED	Light Emitting Diode
LPG	Liquefied Petroleum Gas
LPH	Liters per hour
MESCOM	Mangalore Electricity Supply Company Limited
MOEF	Ministry of Environment, Forest and Climate Change
NABL	National Accreditation Board for Testing and Calibration Laboratories
RO	Reverse Osmosis
STP	Sewage Treatment Plants
TPH	Tones per hour
UPS	Uninterruptible Power Supply
YAMCH	Yenepoya Ayurveda Medical College & Hospital
YDC	Yenepoya Dental College
YDU	Yenepoya (Deemed to be University)
YFTI	Yenepoya Foundation for Technology Incubation
YHMCH	Yenepoya Homeopathic Medical College & Hospital
YIASCM	Yenepoya Institute of Arts Science Commerce & Management
YMC	Yenepoya Medical College
YMCH	Yenepoya Medical College Hospital
YNC	Yenepoya Nursing College
YNYSCH	Yenepoya Naturopathy & Yogic Science College & Hospital
YPC	Yenepoya Physiotherapy College
YPCRC	Yenepoya Pharmacy College & Research Centre
YRC	Yenepoya Research Center
YSAHS	Yenepoya School of Allied Health Sciences

EXECUTIVE SUMMARY

The Yenepoya (Deemed to be University) (YDU), established in 2008, has expanded rapidly offering a diverse range of courses to over 12,000 students. Notable achievements include accreditation with an impressive CGPA of 3.47 out of 4 and an A+ grade by the National Assessment and Accreditation Council (NAAC). The university ranks 85th among India's top 100 universities and excels in specialized areas such as dental education, securing the 28th rank nationally. Additionally, it has made significant strides in sustainability, earning recognition for its 'Green Campus' initiatives, including extensive green spaces, rainwater harvesting, solar power adoption, and promotion of e-vehicles. Emphasizing environmental responsibility, the university conducts comprehensive annual environmental audits and continually seeks to improve its sustainability practices.

Yenepoya (Deemed to be University) has implemented an Environmental Management System (EMS) to efficiently manage environmental responsibilities across all operations. The university's commitment to sustainability is reflected in its environmental policy, promoting eco-friendly practices and environmental consciousness among staff and students. Initiatives include creating a clean and green campus through no smoking and plastic-free policies, water conservation, alternative energy use, waste management, and sustainable architectural designs. To guide these efforts, the university has established various committees such as the Environment Advisory Council, Campus Sustainability Committee, Green Audit Committee, and Environmental Compliance Committee. These committees oversee environmental audits, sustainability action plans, and statutory compliance.

The University is spread over 93.74 acres, comprising ten constituent units and twenty specialized centres/units. This comprehensive sustainability report of YDU highlights various aspects of environmental management across its campuses. The report details the university's water management system, solid waste management practices, transportation initiatives, energy consumption patterns, and biodiversity conservation efforts.

Water management involves sourcing fresh water, treating both fresh and wastewater in compliance with regulatory standards. The university consumes 508,938 KL of water annually, with a per capita consumption of 1394.35 KLD. The drinking water meets the required quality standards, and wastewater treatment complies with KSPCB norms. Solid waste management follows the principles of Reduce, Reuse, and Recycle, with hazardous waste handled according to regulations. Biodegradable waste is recycled into compost, contributing to sustainable waste management practices. The university promotes sustainable transportation through electric vehicles and is developing strategies to reduce greenhouse gas emissions. Energy consumption, primarily from MESCOM, is substantial, with measures in place to harness solar energy and optimize usage. Biodiversity audits reveal the campus's rich ecological diversity, documented in publications on flora, fauna, and macro fungi. Environmental education is integrated into the curriculum, enhancing students' environmental literacy and promoting sustainable lifestyles. Initiatives such as tree planting, field visits, and environmental awareness activities through eco-clubs contribute to the university's commitment to environmental sustainability. Overall, Yenepoya (Deemed to be University) demonstrates a holistic approach to environmental stewardship and sets a benchmark for sustainable practices in higher education institutions.

ENVIRONMENTAL AUDIT 2023

The Environmental Audit report evaluates our adherence to environmental regulations and identifies areas for improvement in environmental performance. It assesses the impact of the organization's activities on the environment and helps ensure compliance with relevant laws and regulations.

1) Introduction

The Yenepoya (Deemed to be University) gained University status under section 3A of the UGC Act 1956 in 2008 from the Government of India's Ministry of Human Resource Development based on a recommendation made by the University Grants Commission. The institution traces its genesis to Islamic Academy of Education, a not-for-profit trust founded in 1991 for the upliftment of minorities in general and Muslims in particular, with entrepreneur Mr. Yenepoya Abdulla Kunhi as its Chairman.

Beginning with a Dental college in the same year, it launched the Yenepoya Medical College (1999), the Yenepoya Nursing College (2002) and the Yenepoya Physiotherapy College (2003) in rapid succession. With the opening up of the education sector, a new Trust was formed in the year 2007 with the sole purpose of gaining Deemed to be University status under the government regulations. Subsequently, The Yenepoya Institute of Arts, Science, Commerce and Management was added in 2017, The Yenepoya Ayurveda Medical College and Hospital in 2018, The Yenepoya Homeopathy Medical College and Hospital in 2018 and the Yenepoya School of Allied Health Sciences in 2020. Today the institution has ten constituent colleges catering to 9643 undergraduate students, 581 postgraduate students, 59 postgraduate diplomas and 205 PhD scholars. There are eleven academic faculties offering over 100 courses. 1042 faculty members and 3216 auxiliary staff make up the quorum of the institution.

The institution is spread over four campuses (Fig 1), situated in the periphery of the coastal city of Mangalore in Karnataka. The mother campus housing most of the constituent colleges and hostels is situated in 26.9 acres of natural terrain in Nithyananda Nagar, Deralakatte, while the second campus housing the Yenepoya Institute of Allied Health Sciences is situated in 1.3 acres at Mudipu, the third campus housing the Yenepoya Institute of Arts Science Commerce and Management is situated in 1.9 acres at Balmatta, Mangalore and The Yenepoya Ayurveda Medical College and Hospital, The Yenepoya Homeopathy Medical College and Hospital and the Yenepoya Naturopathy & Yogic Science College & Hospital is situated at Naringana, Kinya spread over 63.6 acres.

The Yenepoya (Deemed to be University) boasts of 15 specialized centres and 10 support centres. The institution has modern infrastructure and facilities such as well-furnished classrooms, full-fledged science laboratories, libraries, sports facilities, residential quarters for staff, hostels and transportation for boys and girls. It has adapted to all modern modes of learning including e-learning and distance education. Placement services and alumni network forms a part of the institution's organization profile.

The Yenepoya (Deemed to be University) has been accredited with a 3.47 CGPA out of 4 and awarded an A+ grade by the National Assessment and Accreditation Council. The University has been ranked 85 among the top 100 universities in the country as per the NIRF Rankings 2023 published by the Ministry of Human Resource Development, Government of India on 5th June 2023. Yenepoya Dental College has secured 28th rank among the top Dental Institutions in the country by NIRF. The University participated in UI Green Metric Ranking with 333 world ranking and 15th rank in India while in the Sustainable Institutions of India – Green University ranking achieved 16thrank in the country.

The Yenepoya (Deemed to be University) is proud of its commitment to the creation of 'Green Campus' exhibiting exemplary standards of environment friendly features like lush green garden, abundant rain water harvesting, adoption of solar power and e-vehicles. The institution is continuously growing in its scope and registering all round progress year after year with

addition of new courses and campus facilities, innovation and improvisation initiatives. The University is aware of its environmental commitments. It has a number of initiatives in place to foster positive environmental impact on the campus and the community. Comprehensive environmental audit is conducted annually, covering all units of the university. This report provides details of the environmental performance of the University, its best practices and targets for environmental improvement in its journey towards a sustainable university.

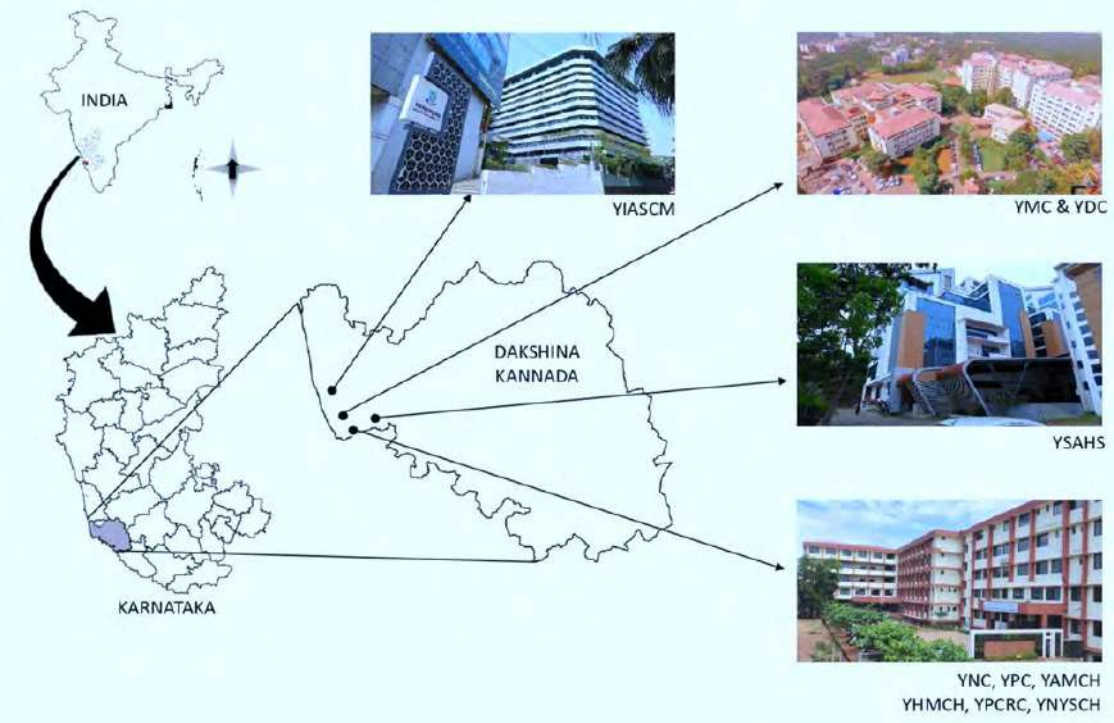

Fig 1: Yenepoya (Deemed to be University) campus layout

2) Scope

The University has several programmes within its fold, imparting education in the Medical and Allied fields. The following units have been covered in this audit report–

- Yenepoya Medical College
- Yenepoya Medical College Hospital
- Yenepoya Dental College
- Yenepoya Nursing College
- Yenepoya Physiotherapy College
- Yenepoya Ayurveda Medical College Hospital
- Yenepoya Homeopathic Medical College Hospital
- Yenepoya Pharmacy College and Research Centre
- Yenepoya Naturopathy and Yogic Science College and Hospital
- Yenepoya School of Allied Health Sciences
- Yenepoya Institute of Arts, Science, Commerce and Management
- University Centres/Units
- University Hostels
- Central Kitchen, Central Laundry, Canteen and Cafeteria

Audit date: 11.12.2023 to 15.12.2023
Time: 09.00 am to 04.00 pm

3) Objectives

- To assess the environmental performance of the University
- To ascertain whether all the institutions and units complies with the statutory requirements
- To assess whether the activities are economical, efficient and effective
- To enhance the institutional profile through demonstration of commitment towards environment
- To develop environmental ethics and value systems among stakeholders
- To strive towards environmentally sustainable institution of higher education
- To encourage Reduction, Recycling and Reuse practices
- To improve the environmental standards

4) Audit Plan

4.1 Audit methodology

- The various activities of the university campus that have a bearing on the environment are identified, and assessed for compliance with respect to applicable standards.
- Identification of activities that have an impact on the environment
- Identify sources of pollution and adequacy of the control systems in place
- Identification of resources and utilities required for the university
- Identify applicable environmental legislation
- Identify and suggest corrective and preventive actions for the short comings
- Review and recommend actions for continual improvement
- Conclusions from the audit

4.2 Audit criteria

Audit is carried out with respect to applicable environmental legislation which includes

- Water and waste water management
- Energy needs and utilization
- Air pollution and control method
- Waste management
- Conservation of biodiversity
- Education and awareness training
- Safety and Healthcare practices

4.3 Audit team

1) Dr. Bhagya B. Sharma - Deputy Director, Centre for Environmental Studies
2) Mr. Walter Castelino - Manager, Maintenance Department
3) Mr. Vinayaka Bhatta - Environmental Engineer
4) Mr. Sayyad M. I. - Electrical Engineer
5) Mr. Zahir Peraje - Electrical Engineer
6) Mr. Joy Nelson Monteiro - Supervisor

4.4 Applicable legislations

The University is governed by different laws with respect to the activities that have a bearing on the environment. The Ministry of Environment and Forest has enacted various Acts and issued various Rules under the acts to monitor such activities. As a responsible organization, the university believes in maintaining the activities within the guidelines of statutory agencies. The Environmental Policy emphasizes compliance as a key element of the Environmental Management System.

List of applicable Environmental Acts and rules for the University

- Water (Prevention and Control of Pollution) Act, 1974
- The Water (Prevention and Control of Pollution) Rules, 1976
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Water (Prevention and Control of Pollution) Cess Rules, 1978
- Air (Prevention and Control of Pollution) Act, 1981
- Air (Prevention and Control of Pollution) Rules, 1983
- Environment (Protection) Act, 1986
- Hazardous Waste (Management, Handling and Trans boundary Movement) Rules, 2008
- Environmental Impact Assessment Notification, 2006
- The Bio-Medical Waste (Management and Handling) Rules, 2016
- Municipal Solid Waste (Management and Handling) Rules, 2000
- The Noise Pollution (Regulation and control) Rules, 2000
- Batteries (Management and Handling) Rules, 2001
- Plastic Waste (Management and Handling) Rules, 2011
- E-Waste (Management and Handling) Rules, 2011

4.5 Environmental aspects and impacts

Various activities in the university campus and their associated environmental aspects and impacts are represented in Table 1, along with adopted remedy/ preventive measures.

Table 1: Environmental aspects and impacts of selected activities

Sl. No.	Activity	Environmental Aspects	Environmental Impact	Adopted remedy/ Preventive measures
1	Water consumption	Wastewater generation	Water and Land Pollution	Waste water treatment
		Resource consumption	Depletion of water resource	Rainwater harvesting, water conservation measures
2	Healthcare	Hazardous waste generation	Water and land pollution; Health hazard	Disposed to authorized recyclers
3	Consumption of food and beverages	Wastewater generation	Water and land pollution	Waste water treatment
		Solid waste generation	Water and land pollution	Scientific disposal
4	Operation of diesel generators	Flue gas emission	Air pollution	Chimney of standard specification
		Noise	Noise pollution	Acoustic enclosure
5	Use of batteries	Hazardous waste– Lead	Water and land pollution	Buy back arrangement With the suppliers
		Plastic waste	Water and land pollution	Waste minimization
6	Use of electronic items	E-waste generation	Water and land pollution	Disposed to authorized recyclers
7	Transportation	Greenhouse gas emission	Air pollution	Reducing vehicle trips
		Resource consumption	Depletion of Fossil fuel	Using alternate fuel
8	Energy consumption	Greenhouse gas emission	Air pollution	Using renewable energy

5) ENVIRONMENTAL MANAGEMENT SYSTEM

The university has established an Environmental Management System (EMS), to provide a framework for managing our environmental responsibilities efficiently in a way that is integrated into all our operations. The Environmental Management System is the process for quantitative and qualitative data capturing to track air, water and waste as well as to gain actionable insights to improve the operational performance. It is used to maintain the clean and green environment that leads to the stakeholders.

The Centre for Environmental Studies is committed for sustainable strategies for a sound and healthy environment. We practice self-sustaining eco-friendly activities and promote environmental consciousness among the younger generation.

Our environmental policy reflects the commitment of the University towards the environment. The University is committed on reducing the impact of healthcare activities on the environment through the staff who are trained on environmental policies and procedures. The eco- friendly stance is seen in the University commitment as a no smoking, plastic free, clean and green campus. Efforts are being made to develop the campus on green concepts particularly focus on water conservation, use of alternative sources of energy, solid waste management, vermicomposting, green belt development and sustainable architectural designs of buildings.

Yenepoya (Deemed to be University) has constituted an Environment Advisory Council, Campus Sustainability Committee, Green Audit committee, and Environmental Compliance Committee to guide the University on achieving the mission of an ecofriendly campus. The committees also monitor the environmental audit process, implementation of the sustainability action plan and ensure statutory environmental compliances

6) AUDIT PROCESS

6.1 Pre-Audit

An audit preparation meeting, led by the Lead Auditor and attended by all the Audit team members, was held on 09.12.2023. The purpose of the meeting was to align team roles and responsibilities. The preliminary interview schedule (who interviews whom and when) was also reviewed. The Lead Auditor then reviewed the documents and records with the Audit team to ensure each Auditor understands their role, conduct and responsibilities during the course of the Audit as well as what is expected in terms of their output. The team discussed the audit plan and the arrangements needed for the audit.

6.2 On-site Audit

Date: 11.12.2023 to 15.12.2023
Day: Monday to Friday
Venue: Deralakatte campus, Yenepoya (Deemed to be University), Mangalore – 575018
Audit team: Dr. Bhagya, Mr. Walter, Mr. Vinayaka, Mr. Sayyad, Mr. Zahir and Mr. Joy
Audit type: Performance audit
An orientation tour was conducted to observe general, physical and working conditions of the facility layout and key operations. The team had a walk-through of all buildings and operations for observation, review and documentation of the processes.

6.3 Post-Audit

The audit team met at the end of site-visit for exchanging information and gauge the Audit's progress. The Audit team discussed the findings, interviewed key persons, the management representative by reviewing the facts and supporting evidence. Major findings were communicated to the auditee and a draft report was prepared.

7) KEY FINDINGS AND OBSERVATIONS OF THE ENVIRONMENTAL AUDIT

The University is spread over an area of 93.74 acres with ten constituent units and twenty specialized Centres/Units (Fig 2). The green cover and built up area of the university is given in Table, 2, 3 and Fig 3.

7.1 Land usage pattern and green cover

Fig 2: Google Earth image of the Deralakatte campus

Table 2: Layout of green cover of university campuses

	Particulars	Area
Deralakatte campus (DC)	Campus area	26.92 acre
	Built up area	119835 m^2
	Greenbelt area	13 acre
	Green cover	48 %
Naringana campus (NC)	Campus area	63.6 acre
	Built up area	33980.7002 m^2
	Greenbelt area	45 acre
	Green cover	71 %
Mudipu campus (MC)	Campus area	1.314 acre
	Built up area	5318.20 m^2
	Greenbelt area	0.3 acre
	Green cover	23 %
Balmatta (BC) and Kulur campus (KC)	Campus area	1.91 acre
	Built up area	5520.1 m^2
	Greenbelt area	0.1 acre
	Green cover	5 %

Table 3: List of buildings and built up area

	Name of the building	Total area (m^2)
Deralakatte campus	Yenepoya Medical College	12659
	Yenepoya Medical College Hospital	30760
	Yenepoya Dental College	12473
	Yenepoya Centres	4767
	University Library	3859
	Gardyenia hostels	17257
	Staff quarters	15535
	Ladies hostel	8627
	Gents hostel	5127
	Administrative building	1163
	Sports complex	3455
	Central Kitchen & Central Laundry	2883
	Canteen, Central stores and Cafeteria	1270
	Total built-up area	1,19,835
Naringana campus	Yenepoya Nursing College	3625.790
	Yenepoya Pharmacy College	9064.4752
	Yenepoya Homeopathic College Hospital	5870.13
	Yenepoya Physiotherapy College Hospital	1812.8950
	Yenepoya Ayurvedic College Hospital	12423.75
	Yenepoya Naturopathy College Hospital	1183.66
	Total built-up area	33980.7002
Mudipu campus	Yenepoya School of Allied Health Sciences	5,318.20
	Total built-up area	5,318.20
Balmatta and Kulur campus	K R Hostel	2950.89
	Degree College Building	2569.21
	Total built-up area	5520.1

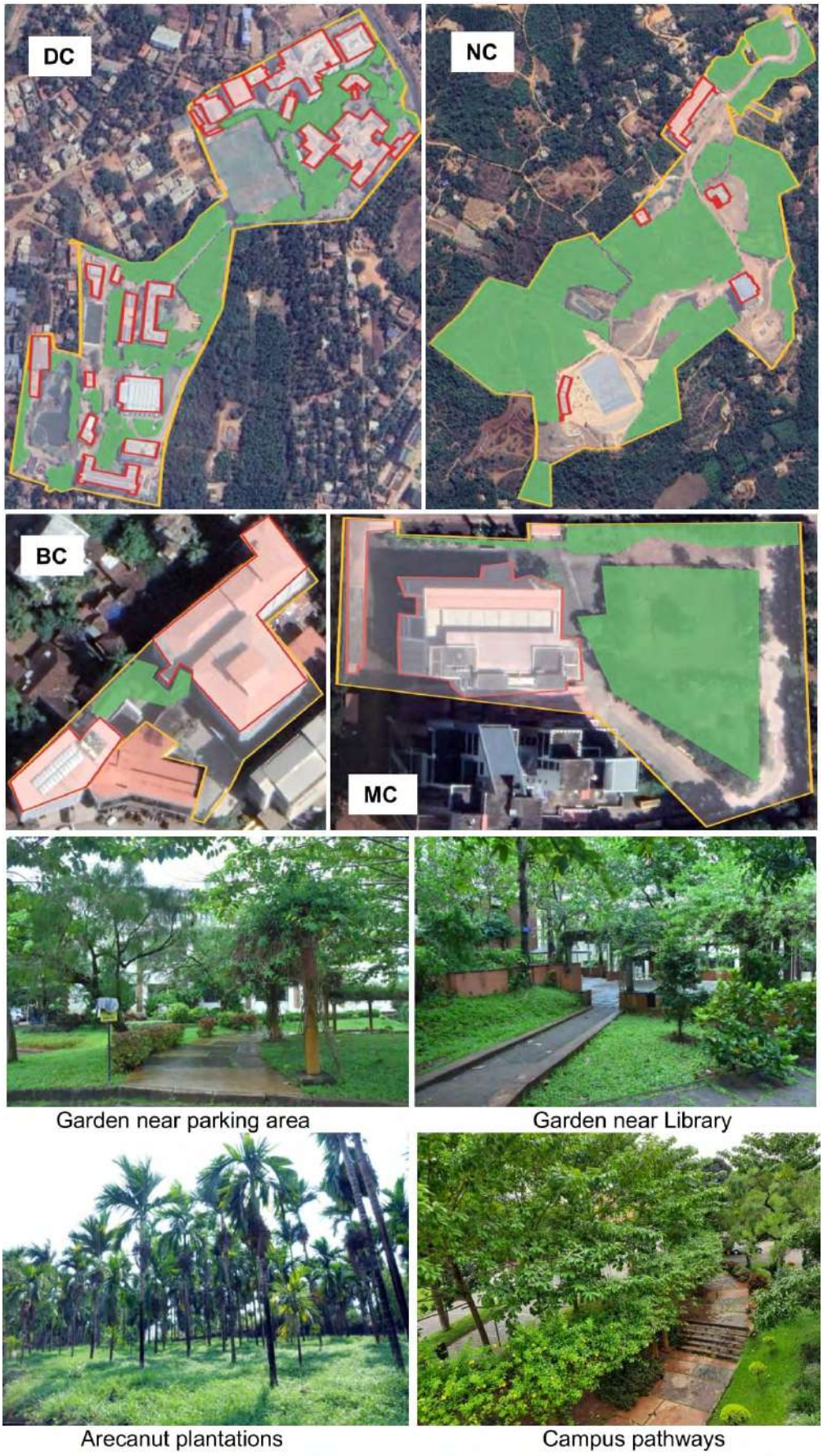

Fig 3: Green cover and built up area of the university campuses

7.2 Campus population:

The campus population includes students, staff, patients, their attendants and floating population among others. Average population on the campuses per day is approximately 23,186 and details are given in Table 4.

Table 4: Population on the campuses

	Building	Population
Deralakatte campus	Yenepoya Medical College	Students – 911 Teaching staff – 110 Non-teaching staff – 86
	Yenepoya Medical College Hospital	Teaching staff – 312 Non-teaching staff – 1470 Inpatients/day 900 Out patients/day 1180
	Yenepoya Dental College	Students – 746 Teaching staff – 125 Non-teaching staff – 134 Out patients/day 620
	Ladies hostels	Students – 1216
	Men's hostels	Students – 1071
	University Administration	Teaching staff – 56 Non-teaching staff – 770
	House-keeping staff	Staff – 261
	Central Kitchen & Central Laundry	Staff – 408
	Moving population	500
	Total population	~ **10876**
Naringana campus	Yenepoya Nursing College	Students 632 Teaching staff 32 Non-teaching staff 7
	Yenepoya Pharmacy College and Research Centre	Students 428 Teaching staff 30 Non-teaching staff 28
	Yenepoya Homeopathic Medical College Hospital	Students 352 Teaching staff 29 Non-teaching staff 32 Inpatients/day 10 Out patients/day 200
	Yenepoya Ayurveda Medical College Hospital	Students 498 Teaching staff 51 Non-teaching staff 151 Inpatients/day 10 Out patients/day 140
	Yenepoya Physiotherapy College	Students 561 Teaching staff 25 Non-teaching staff 12
	Yenepoya Naturopathy Yogic Science College and Hospital	Students 129 Teaching staff 10 Non-teaching staff 7 Inpatients/day 15 Out patients/day 40
	Total population	~ **3509**

Mudipu campus	Yenepoya School of Allied Health Sciences	Students 2930 Teaching staff 98 Non-teaching staff 22
	Total population	~ **3050**
Balmatta and Kulur campus	Yenepoya Institute of Arts Science Commerce & Management, Balmatta campus	Students 2466 Teaching staff 64 Non-teaching staff 47
	Yenepoya Institute of Arts Science Commerce & Management, Kulur Campus	Students 3009 Teaching staff 111 Non-teaching staff 54
	Total population	~ **5751**

7.3 Environmental Compliances

Yenepoya (Deemed to be University) is committed to upholding strict environmental compliance standards. An Environmental Compliance Cell is constituted with a Compliance Officer to monitor all operational processes and procedures using a compliance management platform to ensure that the university complies with all legal regulations and ethical standards. The Compliance Officer manages the flow of information by researching, recording and analyzing data and information. The university takes the required actions to obtain necessary compliances, such as Environmental Clearance (EC), Consent for Operation, Biomedical Waste Authorization, and Hazardous Waste Authorization. Regular monitoring and reporting of compliance activities, including the submission of documents and six-monthly reports, are diligently carried out to the corresponding agencies, such as the Ministry of Environment, Forest and Climate Change (MOEFCC), and Karnataka State Pollution Control Board (KSPCB). By adhering to these compliances the university ensures its dedication to environmental preservation and responsible operations. The list of university compliances is given in Table 25.

Table 5: List of university environmental compliances

Sl. No	Compliance	Agency	Obtained date	End date	Status
1	Environmental Compliance -Main campus	Ministry of Environment, Forest and Climate Change (MOEFCC)	15/10/2022	15/10/2032	EC is obtained for maximum limit
2	Environmental Compliance -Ayush campus		19/11/2019	19/11/2029	EC is obtained for maximum limit
3	Consent for operation for STP of Hospital	Karnataka State Pollution Control Board (KSPCB)	01/07/2021	30/06/2026	Renewal has been done
4	Consent for operation for STP of Hostel		01/07/2021	30/06/2026	Renewal has been done
5	Consent for operation for ETP of Central Kitchen		01/07/2021	30/06/2026	Renewal has been done
6	Consent for operation for Gardenia STP		10/05/2019	30/06/2020	Application has been applied
7	Consent for operation for Ayush Campus		-	-	CFO has been applied
8	Bio Medical waste Authorization	KSPCB	01/07/2021	30/06/2026	Renewal has been done
9	Hazardous Waste Authorization	KSPCB	29/12/2022	30/06/2026	Renewal has been done

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8) WATER MANAGEMENT SYSTEM

GOAL

Ensure access to water and sanitation for all

ONWARD ACTIONS

- Awareness programs are conducted on how to wash hands properly.
- Water purification systems are installed for drinking water
- Water sources such as tube wells, open wells, rainwater harvesting ponds are regularly cleaned and monitored.
- Posters are displayed to conserve water.
- Wastewater generated on the campus is recycled in Sewage Treatment Plants and reused for irrigation.

Water is used for drinking, sanitation, kitchen, laundry, housekeeping, gardening, and health care related activities. The university has a water collection, storage and distribution network for the supply of fresh water within the campus. An efficient water management system ensures all users receive water of desired quality with uninterrupted supply and no wastage in the transit.

8.1 Fresh water sources

The sources of fresh water are bore wells and open wells from the campus. There are 11 bore wells in the campus which are the main sources of water. Two open wells are used for pumping the water through shallow aquifers. Tankers collect water from outside sources during lean periods. The total quantity of water drawn from different sources is given in Table 6. The university is heavily dependent on the ground water for its water needs.

Table 6: Details of fresh water drawn from different sources

Sl. No.	Sources	Quantity of water drawn (KL)
1	Open wells	1,28,772 KL – 29.37%
2	Bore wells	2,67,854 KL – 61.11%
3	External source	41,696 KL – 9.57%

8.2 Fresh water storage and treatment

Water, drawn from various sources, is stored at different locations in the collection tanks of different capacities. There are eight collection tanks at different locations for storage and further treatment (Table 7).

Table 7: Details of storage tanks and their capacities

Water Storage			
Sl. No.	**User Locations**	**Number**	**Capacity in KL**
1	Zulekha & YMK Men's Hostel sump	2 x 100KL	200KL
2	YMCH sump	1 x 100KL	100KL
3	Central kitchen sump	1 x 150KL	150KL
4	YMCH filter sump	1 x 200KL	200KL
5	Gardyenia hostels	2 x 100KL	200KL
6	Naringana premises sump	1 x 100 KL	100 KL
7	Balmatta premises sump	1 x 100 KL	100 KL
8	Mudipu premises sump	1 x 150 KL	150 KL
TOTAL			**1200KL**

The water is treated to meet the acceptable quality standards and to remove unwanted matter like suspended solids present. There are four Water Treatment Plants (WTP), one each in the hospital, campus hostel, central kitchen and Gardyenia hostels and Naringana campus with a treatment capacity of 15m^3/hr each. The treated water is then collected in storage tanks and pumped to various user locations such as Hospital, Hostel, Laundry, Boiler, Central Kitchen and Colleges through a network of pipelines.

Water is supplied from water sumps designated to each user location as per the demand. For non-potable applications, water is filtered through sand filter and carbon filter to remove fine suspended solids. For critical applications in hospital and potable water requirements, water is purified through Reverse Osmosis (RO) plants. All the hostel blocks have RO plants to treat the water. There are two RO plants of 250 LPH capacity installed at boy's hostels, two in girl's hostels, three at Gardyenia hostels, one in Meridyen quarters, two in YMC, one in EMD building and one in the Incubation Technology building at the main campus, two RO at Naringana campus, two RO at Mudipu campus and one at Kulur campus. The university also provides drinking water facilities at designated locations in the hospital, administrative blocks, and college building with 70 water purifiers of different capacities.

8.3 Fresh water consumption

Water consumption for the year 2023 is given in Table 8. Comparison of water consumption is presented in Fig 4. Average water consumption of the university is 1394.35 KLD.

Table 8: Water consumption across different units and campuses

Month	Deralakatte Hostels	YMCH	Medical College and Admin	Dental College	Central kitchen	Gardyenia hostels	Meridiyen quarters	Naringana	Mudipu	Balmatta
	KL	KL	KL	KL	KL	KL	KL	KL	KL	KL
January	11769	11369	1306	781	6375	4737	1479	1611	2010	2900
February	10488	10196	1246	688	5447	4314	1319	1535	1874	2870
March	11752	11073	1801	1023	6015	4675	1578	1883	1950	2600
April	9666	10174	1403	864	5486	4042	1431	1488	1964	2640
May	11995	11114	1808	955	5535	4302	1596	1977	1973	2905
June	8564	10749	1242	982	5272	3234	1595	1319	2018	2920
July	11256	11037	1188	1080	5681	4170	1573	1517	1770	2950
August	11243	11225	1360	1217	5316	4002	1658	1636	1890	2870
September	10790	10636	1592	1206	3533	4120	1592	2432	1924	2844
October	12234	11199	1348	1335	5680	4547	1682	2648	1933	2903
November	11525	10735	1469	1533	5412	4391	1669	2610	1952	2910
December	10988	10691	1574	1696	5734	4282	1581	2666	1956	2870
Total	**132270**	**130198**	**17337**	**13360**	**65486**	**50816**	**18753**	**23322**	**23214**	**34182**
Total water consumption: 508938 KL Per capita water consumption: 1394.35 KLD										

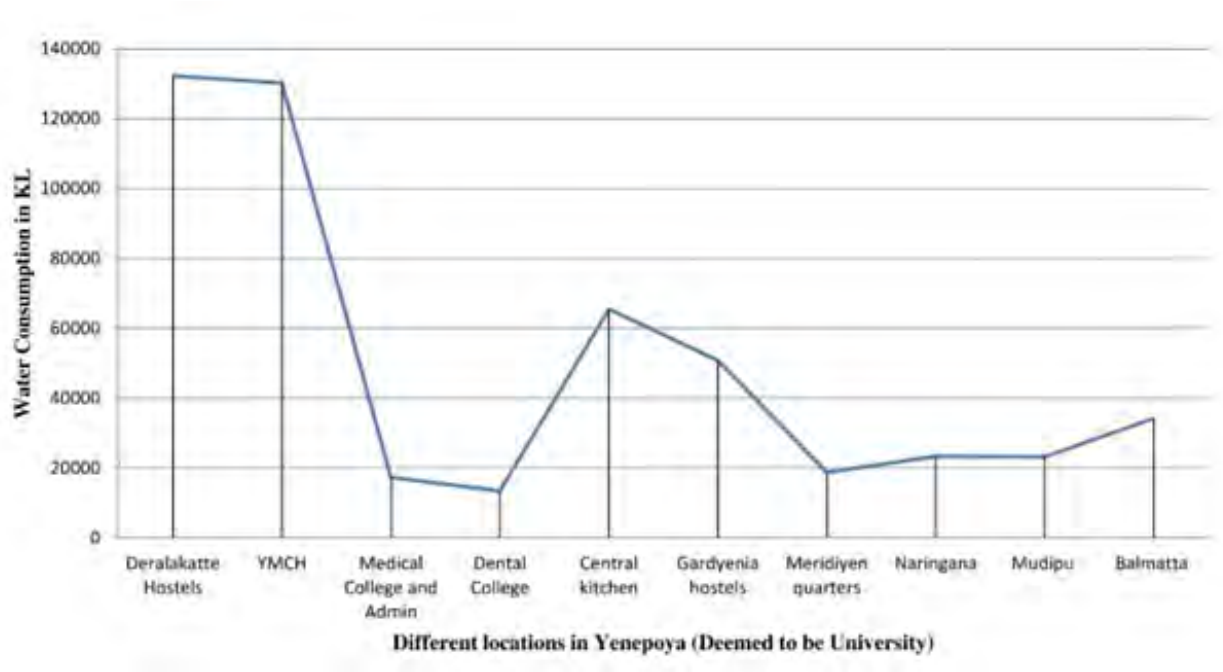


Fig 4: Water consumption chart

The water consumption pattern changes with each location, depending on the type of activities. The water usage on the campus is lower than the standards as per IS 1172 – 1993 (1394 KLD vs 2374 KLD) and details are provided in Table 9.

Table 9: Per capita water consumption

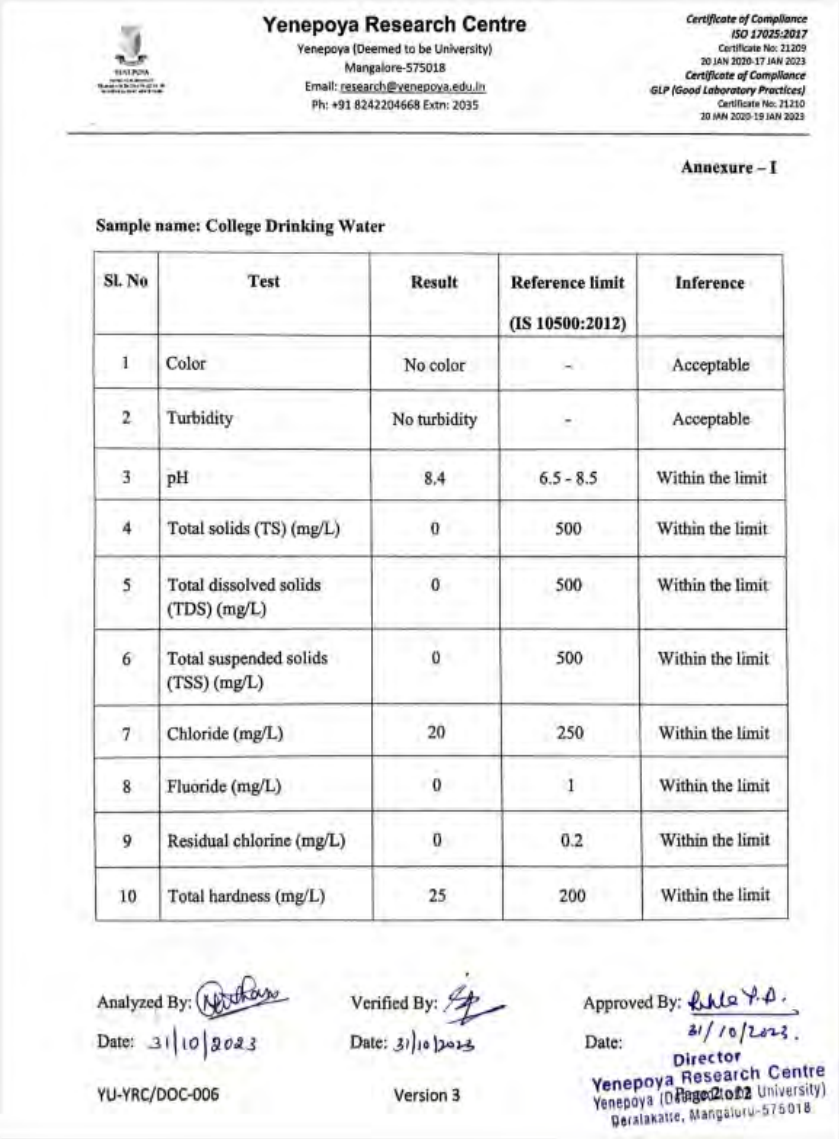
Category	Total Population	Per capita IS 1172-1993 (LD)	Total Water Consumed (KLD)
Inpatients	985	450	443
Students	11940	135	1612
Teaching Staff/ Non-teaching/ Outpatients/ Visitors/ Central Kitchen & Laundry	7087	45	319
Total	**20012**	**-**	**2374**

The raw water drawn from the bore wells after treatment is tested for potability and is found satisfactory (APHA, 2017) (Table 10) (Fig 5).

Table 10: Drinking water analysis report of various locations

Location		Parameters (IS 10500 2012)									
Site		Color	Turbidity	pH	Fluoride	R. Chlorine	Chloride	Total Hardness	TS	TDS	TSS
Gardenia	A block	No Color	No Turbidity	7.50	0	0	20	25	0	0	0
	B block			7.48	0	0	30	25	0	0	0
	C block			7.54	0	0	10	25	0	0	0
Hospital	Sump			7.28	0	0	20	150	440	240	200
Hostel	Hostel sump water			7.11	0	0	10	150	440	240	200
	Bru Hostel			7.08	0	0	20	0	0	0	0
	Aysha ladies hostel			6.84	0	0	20	0	0	0	0
	Hasan Enclave			7.53	0	0	10	0	40	40	0
	Hasan Chamber			6.97	0	0	40	0	120	120	0
	Meridian			7.44	0	0	10	50	80	0	80
	Fathima Hostel			7.70	0	0	20	0	40	40	0
	M.M. Residency			6.85	0	0	50	75	240	200	40
	New Boys Hostel			7.63	0	0	40	25	0	0	0
	Zulekha Ladies Hostel			7.49	0	0	20	50	0	0	0
	Old Boys Hostel			7.63	0	0	10	25	0	0	0

	Mphasis boys hostel			7.16	0	0	10	75	120	80	40
	Mphasis Ladies hostel			7.01	0	0	20	50	0	0	0
	Annex Ladies Hostel			7.44	0	0	30	25	0	0	0
	Baliyoor Hostel			7.10	0	0	25	10	0	0	0
	Incubator Dept.			7.35	0	0	30	75	360	200	160
	College			7.21	0	0	10	25	0	0	0
College	Pharmacy			8.29	0	0	10	0	0	0	0
	Mudipu			8.11	0	0	10	0	160	80	80
	Ayurvedic			7.90	0	0	10	0	0	0	0
	Kulur			8.13	0	0	20	0	0	0	0
	Balmatta			6.93	0	0	10	75	0	0	0



Yenepoya Research Centre
Yenepoya (Deemed to be University)
Mangalore-575018
Email: research@yenepoya.edu.in
Ph: +91 8242204668 Extn: 2035

Certificate of Compliance
ISO 17025:2017
Certificate No: 21209
20 JAN 2020-17 JAN 2023
Certificate of Compliance
GLP (Good Laboratory Practices)
Certificate No: 21210
20 JAN 2020-19 JAN 2023

Annexure – I

Sample name: College Drinking Water

Sl. No	Test	Result	Reference limit (IS 10500:2012)	Inference
1	Color	No color	-	Acceptable
2	Turbidity	No turbidity	-	Acceptable
3	pH	8.4	6.5 - 8.5	Within the limit
4	Total solids (TS) (mg/L)	0	500	Within the limit
5	Total dissolved solids (TDS) (mg/L)	0	500	Within the limit
6	Total suspended solids (TSS) (mg/L)	0	500	Within the limit
7	Chloride (mg/L)	20	250	Within the limit
8	Fluoride (mg/L)	0	1	Within the limit
9	Residual chlorine (mg/L)	0	0.2	Within the limit
10	Total hardness (mg/L)	25	200	Within the limit

Analyzed By: Date: 31/10/2023

Verified By: Date: 31/10/2023

Approved By: Date: 31/10/2023.

Director
Yenepoya Research Centre
Yenepoya (Deemed to be University)
Deralakatte, Mangaluru-575018

YU-YRC/DOC-006 Version 3 Page 2 of 2

Fig 5: Water analysis report

8.4 Wastewater management

Wastewater generated from all the user locations with varied degree of pollution is handled scientifically, as per the statutory requirements. Water consumption at various places may generate different quantum of wastewater. The hostels accommodate around high population of students which is one of the major contributors of wastewater generated in the campus.

8.5 Types of wastewater generated

Depending on the characteristics and source of wastewater generated in the campus, it is divided into following types as given in Table 11.

Table 11: Types of wastewater generated on the campus

Sl. No.	Types of wastewater	Sources of generation
1	Liquid Biomedical effluent	Hospitals & Colleges
2	Kitchen wastewater	Central kitchen
3	Laundry effluent	Central laundry
4	Sewage and sullage	Hospital, College, Administration block, Hostels, Staff quarters and central Kitchen
5	Black water	Hospital, College, Administration block, Hostels, Staff quarters and Central kitchen

8.6 Wastewater treatment facilities

The treatment and disposal of wastewater is carried out as per the applicable discharge norms. There are four Sewage Treatment Plants (STP) and two Effluent Treatment Plants (ETP) which are being operated. Details of treatment facilities provided for these wastewater streams are given in the Table 12.

Table 12: Treatment plants and disposal methods

Sl. No.	Types of waste water	Treatment plant	Disposal Method
1	Liquid biomedical effluent	ETP of 10KLD capacity	To hospital Common Effluent Treatment Plant
2	Kitchen effluent	ETP 300 KLD capacity	Toilet flushing, irrigation, etc
3	Laundry effluent		
4	Sewage and Sullage from YMCH	STP 500 KLD capacity	Toilet flushing, irrigation, etc
5	Sewage and Sullage from Deralakatte campus hostels	STP of 200 KLD capacity	Toilet flushing, irrigation, etc
6	Sewage and Sullage from Gardyenia hostels	STP of 300 KLD capacity	Toilet flushing, irrigation, etc
7	Sewage and Sullage from Naringana campus	STP of 300 KLD capacity	Toilet flushing, irrigation, etc

8.7 Treatment of effluent in ETP

An ETP of 10 KLD for liquid biomedical waste treatment (LBMW) from YMCH is screened through a bar screen followed by disinfection using sodium hypochlorite and continuous monitoring of pH and only pH levels between 6.5 to 8.5 are allowed to pass through the equalization tank of the STP (Fig 6).

Fig 6: Effluent treatment plant

The wastewater from kitchen and laundry is treated in ETP of 300 KLD with primary and secondary treatment. The effluent and sewage from YMCH are channelized to separate collection tanks at the ETP and STP. The LBMW is treated in the ETP and discharged into STP for further treatment. The effluent is dosed with sodium hypochlorite with continuous mixing. Effluent with sodium hypochlorite disinfects the effluent by transfer of chlorine. Chlorinated effluent is then pumped to the reaction tank attain complete reaction over a preset retention time. The treated effluent is let into STP for further treatment with sewage. The STP works with activated sludge process with extended aeration method. The treated discharge is dosed with sodium hypochlorite for disinfection and used for flushing and irrigation.

8.8 Treatment of sewage and sullage in STP

All the four STPs are designed with sequential batch process (SBR) (Fig 7). Wastewater generated from all the user locations with varied degree of pollution is handled scientifically, as per the statutory requirements. Approximately 1503 KL of wastewater is treated daily (Table 13) of which about 334 KLD is used for flushing and about 1170 KLD for irrigation (Fig 8).

Fig 7: Sewage treatment plant

Table 13: Summary of treated wastewater

Month	YMCH CETP (500 KLD)	Deralakatte Hostel STP (200 KLD)	Gardyenia Hostel STP (300 KLD)	Central Kitchen ETP (300 KLD)	Naringana Campus STP (300 KLD)
January	17492	15299	6158	8287	1335
February	15769	13634	5608	7081	1248
March	18066	15277	6077	7819	1290
April	16173	12565	5254	7131	1215
May	18040	15593	5592	7195	1371
June	16866	11133	4204	6853	967
July	17296	14632	5421	7385	1493
August	17942	14615	5202	6910	1456
September	17464	14027	5356	4592	1523
October	18046	15904	5911	7384	1638
November	17858	14982	5708	7035	1570
December	18149	14284	7454	5665	1346
Total	**209161**	**171945**	**67945**	**83238**	**16452**
Total water recycled: 548741 KL Total water recycled per day: 1503.4 KLD					

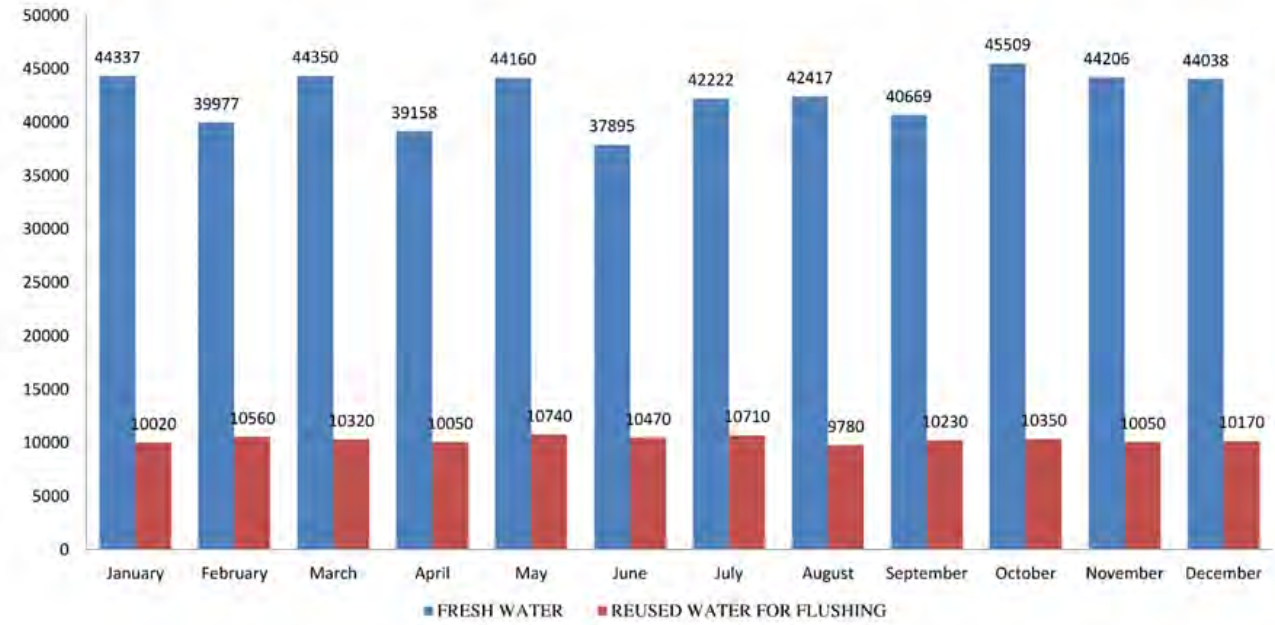


Fig 8: Water consumption and reused water quantity

The treated wastewater samples are collected by MoEF-NABL accredited laboratory for analysis with reference to the prescribed standards on monthly basis. The treated effluent confirms to the standards prescribed (Table 14) (Fig 9)

Table 14: Recycled water analysis reports of all STP's

Sl. No.	Parameter	KSPCB limits	YMCH CETP	Deralakatte Hostel STP	Gardyenia STP	Central Kitchen ETP	Naringana STP
1	pH	6.5-8.5	6.84	6.96	6.56	7.11	8.16
2	BOD	<10 mg/l	16	4	5	16	4.0
3	COD	<50 mg/l	55.56	15.87	32.51	55.56	16.25
4	Suspended Solids	<10 mg/l	16	4	5.2	8	BDL
5	Ammoniacal Nitrogen	<5 mg/l	18.93	BDL	0.37	-	1.8
6	Total Nitrogen	<10 mg/l	23.88	9.43	1.5	-	3.5
7	Faecal Coliform	<100 MPN/100 ml	-	>1600	63	-	63

Hubert Enviro Care Systems (P) Ltd.
7/C-45, Industrial Estate, Baikampady, Mangalore, Karnataka - 575011.
Ph: 0824 - 2408111, Email: kro@hecs.in, Website: www.hecs.in
H.O.: # 18, 92nd Street, Ashok Nagar, Chennai - 600 083.
Ph: 42985555 Fax : 42985500 E-mail : labsales@hecs.in

Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Page No. 1 of 1

Customer Name	M/s. YENEPOYA (DEEMED TO BE UNIVERSITY)
Project Site/ Address	University Road, Deralakatte, Mangalore - 575018, Karnataka, India
Sample Description	Waste Water
Sample Mark	Gardenia Hostel STP Outlet
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	26.08.2023
Qty. of sample received	2 L in HDPE Can + 150 mL in Sterile Container
Received Date	26.08.2023
Analysis Commenced On	26.08.2023
Completion On	02.09.2023
Report Date	04.09.2023
Report No.	HECS/WW/003/260823

RESULTS

S.No.	Parameters	Units	Results	KSPCB Standard	Test Method
1.	pH at 25°C	-	6.56	5.5 - 9.0	IS 3025 (Pt 11): 1983 (RA 2017)
2.	Total Suspended Solids	mg/L	5.2	≤ 100	2540 D APHA 23rd Edn., 2017
3.	BOD, 3 days at 27°C	mg/L	5.0	≤ 30	IS 3025 (Pt 44): 1993 (RA 2014)
4.	COD as O_2	mg/L	32.51	≤ 250	IS 3025 (Pt 58): 2006 (RA 2017)
5.	Ammonical Nitrogen	mg/L	0.37	≤ 5	IS 3025: (Part 34): 1988
6.	Total Nitrogen	mg/L	1.5	≤ 10	IS 3025: (Part 34): 1988
7.	Faecal Coliforms	MPN/100 mL	63	≤ 100	IS 1622: 1981 (RA 2009)

Note: mg/L - milligram per litre; MPN – Most Probable Number

INFERENCE	AS PER KSPCB STANDARD, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMIT

******End of Report******

HUBERT ENVIRO CARE SYSTEMS (P) LTD

Authorized Signatory
(Dr K GANESAN)
Laboratory Head & Quality Manager

Fig 9: Recycled water analysis report

As can be seen from the water balance chart (Fig 10) a total of 1394 KL of water is consumed and a total of 1503 KL of wastewater is recycled daily.

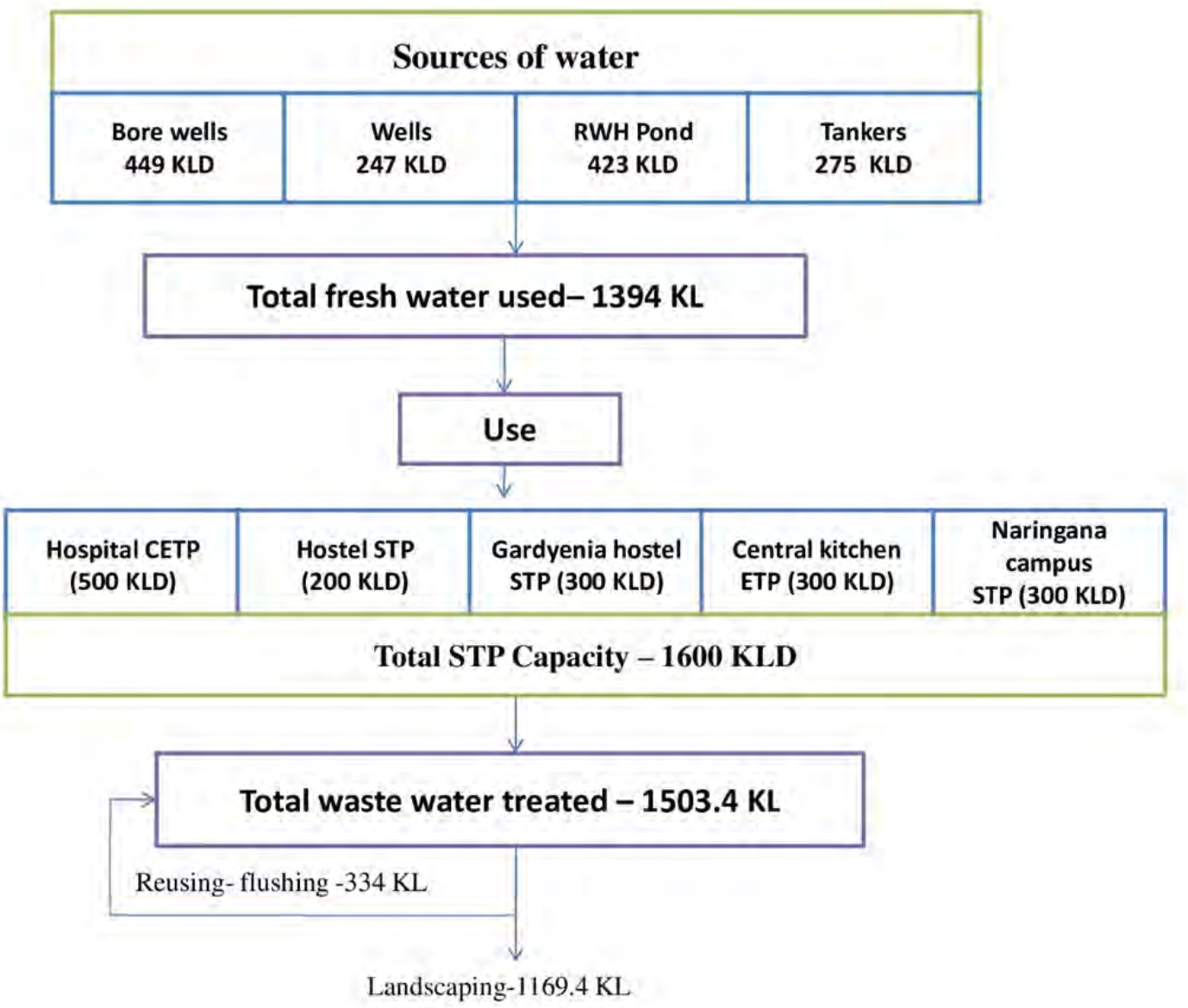


Fig 10: Water balance chart

9) SOLID WASTE MANAGEMENT

Solid waste is generated from various activities and broadly classified into hazardous and non-hazardous waste (Table 15). Management of waste essentially includes the 3R concepts of Reduce, Reuse and Recycle. The domestic waste is segregated as biodegradable and non-biodegradable waste.

Table 15: Solid waste categories

Sl. No.	Type of Waste	Activity	Description	Disposal Method
1	Domestic Waste	Consumer products – Biodegradable waste generation	Garden/Kitchen waste Vegetable waste and Food waste	Composting/Vermicomposting Sent to piggery/Composting
		Consumer products –Non-biodegradable waste generation	Waste that ends up in landfill–like plastic, Office waste etc	Saleable waste sold to recyclers (Scrap metal, paper etc) Non salable waste disposed municipal solid waste agency
		Gardening & Horti culture waste	Waste generated due to pruning, dry leaves etc	Composting/Vermicomposting
2	Biomedical Waste	Hospital activities and Medical college activities	Biomedical waste of different categories like use dPPE's, Contaminated cotton, expired medicines etc	Disposed through authorized biomedical wastehandling agency
3	E-waste	Discarded electronic items and instruments	IT, Diagnosis related electronic equipment	Sold to authorized e-waste recycler
4	Hazardous waste	DG Operations & Transformer	Used Lube Oil Battery	Sold to authorized oil Recyclers

9.1 Domestic waste segregation and disposal

Segregation of waste is an essential component of waste management. It is the process by which waste is separated as per the common characteristics, reuse potential and disposal method. Separate bins are kept to collect biodegradable and non-biodegradable waste items at different locations in solid PVC bins with labeling (Fig 11).

Fig 11: Bins to collect domestic waste in the campus

The total number of bins placed in different locations is shown in Table 16, based on the generation and frequency of clearing. Waste from the dustbins is collected on daily basis in respective buildings to a common collection point in the ground floor. From these areas, the collected domestic waste is packed in black bags and taken to a common storage area for disposal. The waste is collected by authorized vendors from the Municipal Corporation.

Table 16: Number of waste collection bins

Deralakatte premises	Naringana Premises	Mudipu premises	Balmatta premises
2775	376	112	73

The biodegradable waste such as garden waste and some quantity of kitchen waste is used in vermicomposting. An average of 1000 kg of garden waste is used in the vermicompost unit which is converted by earthworms into about 310 kg of vermicompost. Approximately 800 kg of food waste daily is composted separately using microorganisms.

Table 17: Scrap details/ General Waste

Sl. No.	Month	Iron Scrap (KG)	M.S Sheet (KG)	Steel Scrap (KG)	Copper (KG)	Carton Scrap (KG)	Waste Paper/ file/ Books (KG)	Plastic Scrap (KG)	Brass (KG)	Aluminium	Total (KG)
1	January	428.2	374.3	18.6	0	1343.1	1592.4	28.6	0	0	**3785.20**
2	February	1022.7	315.5	83.5	0	1289	780.3	207.8	0	0	**3698.80**
3	March	507.3	19.7	0	0	1935.6	848.7	241.8	0	0	**3553.10**
4	April	877.5	587.3	124.6	0	1961.6	556.6	172.6	0	0	**4280.20**
5	May	301.7	93.9	0	0	1166.8	396	256.3	0	0	**2214.70**
6	June	33.4	122.6	0	0	1467.8	1653.5	31.6	0	0	**3308.90**
7	July	210.4	570.1	59.4	0	1863.6	2494	477.2	0	0	**5674.70**
8	August	1307	176	0	12.1	2033.5	424.2	393.3	0	0	**4346.10**
9	September	269.6	302.1	0	131	2458	1222.9	173.9	39.2	0	**4596.70**
10	October	1072.1	670	46.7	43.9	1568.6	439.5	715.3	0	35.3	**4591.40**
11	November	0	0	0	0	1158.85	2758.42	0	0	0	**3917.27**
12	December	612.2	499.6	0	0	1862.148	4215.21	648.9	0	0	**7838.058**
Total		**6642.10**	**3731.10**	**332.80**	**187**	**20108.6**	**17381.73**	**3347.3**	**39.2**	**35.3**	**51805.13**

Approximately 142 kg/day scrap and dry waste is generated in the campus (Table 17), which is handed over to recyclers.

9.2 Hazardous waste segregation and disposal

The university generates Hazardous waste governed by various statutes. Hazardous waste is considered as hazard to the environment as well as health. Hazardous waste generation, handling, transport and disposal are governed by Hazardous and Other Wastes (Management and Tran's boundary Movement) Rules, 2016. The university has taken appropriate steps for scientific disposal of waste. These wastes are collected separately and stored in a designated location depending on the nature of the waste. Appropriate records are maintained for accounting the quantity of waste generated and disposed. The hazardous wastes cannot be mixed or disposed as one block, as the waste characteristics differ from one to another. The hazardous waste that is generated in the campus is:

9.2.1 Used/Waste oil:

Oil is used in generators and transformers. Oil is hydrocarbon in nature. Waste oil is generated during maintenance or replacement with fresh oil. The used and waste oil are collected in solid

containers and stored in a designated area with display boards. It is sold to authorized vendors. This year about 800 L of waste/spent oil was disposed to KarRecycle Centre LLP.

9.2.2 Electronic Waste:
The items like compact discs, desktops, printers, toner cartridges etc form the e-waste. Majority of the e-wastes are generated by the Department of Information and Technology. It is sold to the authorized vendors for safe disposal. This year about 1155.8 kg of e-waste is disposed of scientifically to PCB approved vendors, Moogambigai Metal Refineries.

9.2.3 Used Batteries:
The lead content in the used battery is hazardous. The buyback arrangement with the suppliers helps the university to dispose the used batteries. The suppliers who buy back the used batteries further send the used batteries to recyclers who are registered with Karnataka State Pollution Control Board. This year about 12 batteries were disposed to Bright Power Solutions.

9.3 Biomedical waste management: Any waste which is generated during the diagnosis, treatment of human beings or animals or in research activities are referred as biomedical waste. The hospital waste comprises both solid and liquid wastes. The liquid waste is treated in CETP and solid wastes are disposed through authorized vendor.

Biomedical waste generated from the hospital is infectious in nature. Therefore, the infectious waste is segregated and handled separately. The house keeping staff is well trained to work in the hospital to handle waste. The biomedical wastes are handled as per the guidelines of new Biomedical Waste (Management and Handling) Rules 2016. The rules layout the procedures and methodology for segregation, collection, treatment and disposal.

The display boards (Fig 12) are kept in the hospital to create awareness on the appropriate disposal of biomedical waste in the hospital.

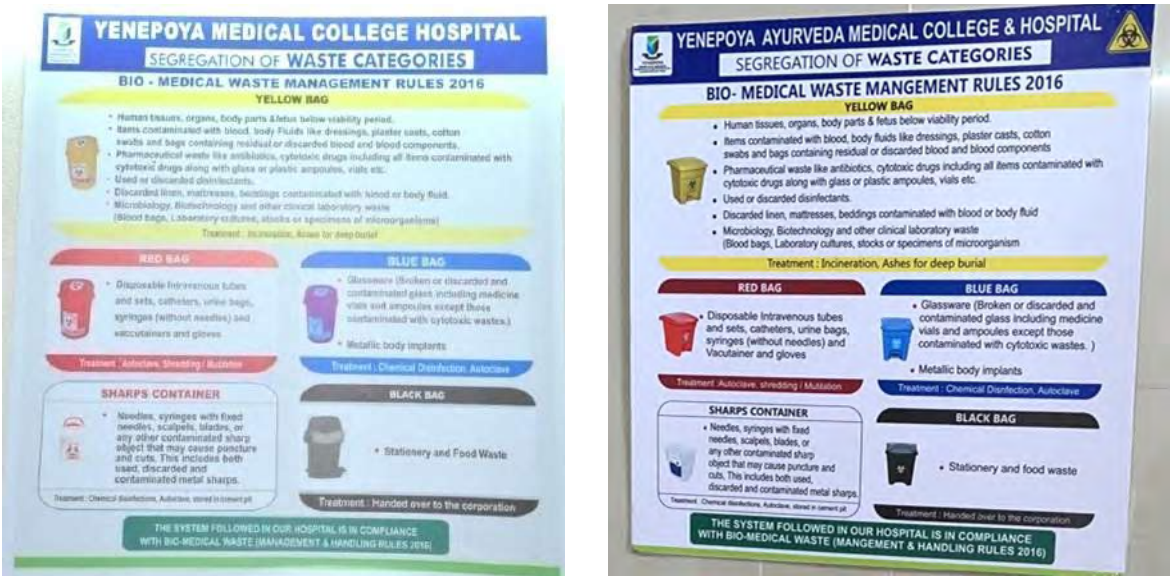


Fig 12: Display board on biomedical waste management

The waste generated from the hospital is segregated separately and collected in a color coded bins and sent for disposal. The waste is collected at different locations in colored PVC bins with non-chlorinated color bags provided for each type of waste (Fig 13). Each centre is given bins as per the generation and frequency of shifting.

Fig 13: Color coded bins to collect biomedical waste in hospital

The waste generated at source is segregated, filled in bags with the representative color bags, tied to avoid spillages and sent to final disposal site. At the site, waste in different bags is inspected for conformance to the norms by a competent person. Details are noted in the register. The details of biomedical waste generated during this year is given in table 18.

Table 18: Biomedical waste generated in the university

Sl. No.	Month	Yellow bags (kg)	Red bags (kg)	Bluebags (kg)	Sharps (kg)	Total (kg)
1	January	7558.57	6635.11	1412.21	213.57	**15819.46**
2	February	7133.34	5871	1585.74	216.5	**14806.58**
3	March	7931.17	7455.17	1484.61	276.54	**17147.49**
4	April	7043.9	6742.83	1282.3	217.68	**15286.71**
5	May	6464.42	6884.95	1481.7	265.75	**15096.82**
6	June	7447.99	7078.97	1383.72	288.34	**16199.02**
7	July	7662.4	7917.51	1735.84	281.72	**17597.47**
8	August	7514.18	8355.32	1565.27	266.12	**17700.89**
9	September	7071.52	7573.67	1766.11	244.64	**16655.94**
10	October	7451.97	8027	1754.22	275.69	**17508.88**
11	November	6846.21	7216.49	1573.56	235.74	**15872.00**
12	December	6699.64	7184.86	1573.49	319.62	**15777.61**
Total		**86825.31**	**86942.88**	**18598.77**	**3101.91**	**195468.87**

Yenepoya Medical College Hospital is a 985 bedded hospital and the hazardous biomedical wastes generated are handled as per the guidelines of the new Biomedical waste (Management & Handling) Rules 2016. The biomedical waste is stored in common collection site and disposed daily (540 kg/day) through the authorized vendor (Resustainability Healthcare Solutions Ltd.)

10. NOISE POLLUTION AND CONTROL

Noise generated from machines and equipment's should be within the Karnataka State Pollution Control Board specified limits. Diesel Generators are potential source of noise in the campus. The DG Sets are provided with acoustic enclosures to control the noise within the stipulated norms under The Noise Pollution (Regulation and control) Rules, 2000. Noise levels recorded in the campus is presented in Table 19.

Table 19: Noise levels recorded

Noise level limit as per rules	Noise levels measured
<75 dbA	<35 dbA during day
	<30 dbA during night

11. AIR EMISSION SOURCES AND CONTROL

The sources which emit flue gas are Boilers in the Central Kitchen and Diesel Generators. Air emission sources are monitored periodically and records maintained with details of fuel consumptions and power generated. Both the boilers are connected to a common chimney of 30.5 meters' height above ground level as per the statutory requirement (Fig 14).

Fig 14: Chimney

11.1 Boiler Operation

Central Kitchen prepares meals in bulk and requires steam for cooking. Two Boilers (Fig 15) of 1TPH are installed with one working and one as standby. Boiler of capacity 1 ton/hour uses agro based fuel briquettes at a rate of 120 Kg/hr. In order to control air pollution, wet scrubber is provided to control emissions within the norms. The flue gas, before exiting the chimney, passes through the scrubber. Both the boilers are connected to a common chimney of 30.5 meters height above ground level as per the statutory requirement.

Fig 15: Boiler

12. TRANSPORT SERVICES

The transport department operates all transit services to and within the university campus. The university provides transportation facility for the campus community through a network of routes to reach the university. The university owns 31 small vehicles, 54 buses, 6 tankers and 10 ambulances which provide service for travel within the campus, field visits, patient care and other services (Fig 16). The transport department is utilizing approximately 3956 liters/month of petrol and 19,241 liters of diesel/month. The University has introduced a fleet of electric vehicles (25 bicycles, 10 bikes, 2 cars and 2 buggies) for meeting its in-house transportation requirements. The department is developing sustainable strategy to reduce greenhouse gas emissions and strive towards sustainable transport.

Fig 16: Campus vehicles

13. FIRE SAFETY

Employees are provided with adequate fire safety training. To comply with this statutory requirement, Heads of Management Units shall ensure that all employees within their management control receive regular fire safety training and all new employees undertake the training as soon as it is practicable after commencement of employment. All new employees are informed of the fire safety provisions that are relevant to the work place. The department HOD is responsible for ensuring that arrangements are made to ensure new employees is advised of the following; action arrangements, including the Fire Safety Policy of escape within the premise of fire exits, location of firefighting equipment's.

The Quality office in collaboration with Fire safety department organized mock drills as a part of awareness activity. The details of the activities held are presented in table 20.

Table 20: Code Red Mock Drill Report

Sl. No.	Date	Location	No. of Participants	Participants
1	24.02.2023	6th Floor F wing, New building	25	HIC Staff, Nursing Staff, HR Staff, Housekeeping Supervisor & Staff, FNO, AHOO
2	11.05.2023	1st Floor, C wing, Old Building	35	Nursing Staff, Security Staff, Housekeeping Supervisor & Staff , Nursing Supervisor, HIC Staff, FNO, AHOO
3	19.07.2023	5th Floor B wing	30	Housekeeping Staff, Security Staff, ANS, Nursing Officers & Supervisors, AHOO
4	29.08.2023	5th Floor, D wing, Old Building	27	Nursing Supervisor, Hospital Staff, Security & Maintenance Staff
5	31.10.2023	ENT OPD	25	Nursing Supervisors, ANS, Security Officers & Staff, DHOO, AHOO

Fig 17: Mock drill exercise

ENERGY AUDIT 2023

The energy audit focuses on assessing energy consumption and efficiency within a facility or organization. It aims to identify opportunities for energy savings, reduce energy costs, and improve overall energy performance.

GOAL

Ensure access to affordable, reliable, sustainable and modern energy for all

ONWARD ACTIONS

- Energy efficient LED bulbs and appliances are used
- Alternative sources of energy such as solar power are used
- Posters are displayed to save energy by switching off lights and fans when not in use
- Awareness programs on energy competitions, guest lectures, quiz and others organized

14. EXECUTIVE SUMMARY

The audit team conducted an Energy Efficiency Assessment of Yenepoya (Deemed to be University) campus on 15th December, 2023. The university administrative campus is located at 12.8117°N, 74.8811°E. The University is spread over an area of 93.74 acres with ten constituent units and twenty specialized Centres/Units. It was established in the year 2008 and this year the campuses population is around 23,186 staff, students and patients. The university consumed 1,39,64,828 kWh of electricity from MESCOM costing Rs. 13,26,67,041 during the calendar year 2023.

The purpose of the assessment was to evaluate existing energy-consuming systems and help identify opportunities for the university to become more energy efficient. The assessment includes an analysis of the following: utility rates, energy intensity benchmarking, retro- commissioning opportunities, operations and maintenance (O&M), heating, ventilation and air conditioning (HVAC) system and controls, lighting, plug load, computer power management, water heating and water consumption. The aim of the survey was to identify and suggest areas for future management in order to accelerate energy efficiency in the university.

15. INTRODUCTION

Comprehensive energy audit is conducted annually to review and identify the scope of reducing energy consumption as a part of the ongoing objective of minimizing the university emissions in all its units. The audit work was undertaken in December 2023 and the report was verified by SANS Associates, consulting agency for energy audit is gratefully acknowledged. The Energy Audit includes TPM, Power Quality measurements as may be applicable for this project and their effects on sensitive electronics & other plan equipment. All readings are therefore scaled to the conditions existed during the site study, which included taking various electrical/ mechanical/ thermal related measurements, as applicable, using most advanced recorders/loggers as per the requirements of relevant national & international standards namely IEEE.

16. ENERGY MANAGEMENT SYSTEM

The goal with energy conservation techniques is to reduce demand, protect and replenish supplies, develop and use alternative energy sources and energy efficient appliances. The energy demand comes from the operations of colleges, hospital, hostel, canteen, laundry, street lightings, energy storage (UPS), internet usage, security systems etc.

16.1 Sources of energy

There are two main sources of energy used on site:

- The university is connected to a power grid from Mangalore Electricity Supply Company Limited (MESCOM) (Fig 18 and 19).
- Diesel generators are installed as alternate or standby power source (Fig 23).

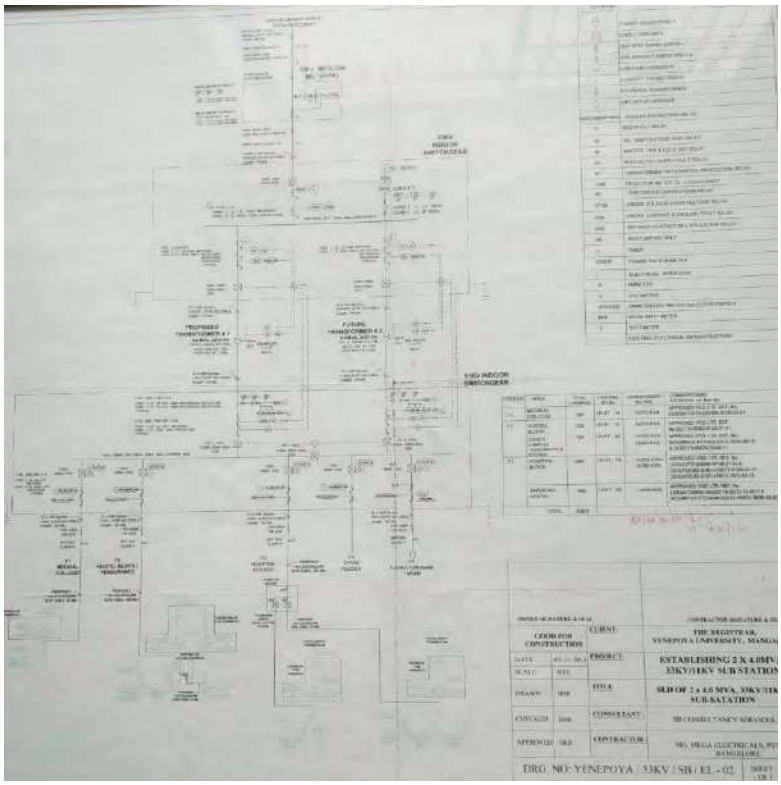


Fig 18: SLD of 33/11 KV Sub-Station

Fig 19: 33/11 KV Sub-Station

16.2 Major power consumption areas

The major areas of power consumption are the lifts, Air Conditioners and Uninterruptible Power Supply (Table 21, 22 and 23).

Table 21: Lift details

Sl. No.	Lift Make	Location	Floor	Passenger capacity	Qty
1	Scala	College	4	8	1
2	Dan-A to Z	Dental	8	16	1
3	Johnson		8	16	1
4	ThyssenKrupp	Teaching Hospital	11	8	1
5	ThyssenKrupp		11	20	1
6	OTC		11	20	1
7	Johnson		11	6	2
8	Johnson		11	8	1
9	Johnson	EMD	8	20	2
10	Johnson	Gardyenia A –Block	8	8	2
11	Johnson	Gardyenia B –Block	10	8	2
12	Johnson	Gardyenia D- Block	9	8	2
13	Johnson	Meridyen	9	10	2
14	Johnson	Central Kitchen	4	Goods	2
15	Toshiba Johnson	Oncology Building	5	20	2
				Total	**23**

Table 22: Air conditioning

Sl. No.	Location	Qty
1	Academic & Library Block	183
2	Administration Block	26
3	Dental block	64
4	Hospital Block	301
5	E. M.D Block	108
6	Nursing Block	44
7	Yendurance Block	30
8	Campus Boys Hostel	109
9	Campus Ladies Hostel	39
10	Gardyenia-A Block	130
11	Gardyenia-B Block	142
12	Gardyenia-C Block	109
13	Meridyen Block	194
14	Central kitchen	08
Total		**1487**

Table 23: Uninterruptible Power Supply (UPS)

Sl. No.	Rating	Make	Serial number	Quantity
Yenepoya Medical College Hospital				
1	90 KVA	EMERSON	201709AP0838	1
2	30 KVA	TECHSER	2012.07MY27	1
3	120 KVA	EATON	DK426LXX01	1
4	160 KVA	EATON	DL054LXX01	1
5	10 KVA	EATON	914510KINXL31	1
6	30 KVA	EMERSON	2015057M1852	1
7	20kKVA	EATON	DX 20000HXL31	1
Emergency Medicine building (EMD)				
1	90 KVA	EMERSON	201505AP0399	1
2	20 KVA	EMERSON	210120078221510/20011	1
Zulekha Yenepoya Institute of Oncology				
1	10 KVA	SOCOMAC	AI20450030	1
2	6 KVA	SOCOMAC	4120400016	1
3	20 KVA	SOCOMAC	Q210217815	1
Yenepoya Dental College				
1	20 KVA	TECHSER	1305MY011	1
2	15 KVA	TECHSER	MY1501007	1
3	10 KVA	SBS	280818154	1
4	5 KVA	TECHSER	MY2005053	1
Yenepoya Medical College				
1	30 KVA	TECHSER	2012.10.MY54	1
2	10 KVA	TECHSER	2010.04.27	1
3	10 KVA	TECHSER	MY1401089	1
5	3 KVA	TECHSER	2011.06.2P029	1
6	3 KVA	POWERLINK	308607	1
7	2 KVA	TECHSER	2003.12.47	1
8	20 KVA	EATON	4J023LXX14	1
9	20 KVA	EATON	4J045LXX14	1
10	20 KVA	EATON	4K023LXX37	1
11	20 KVA	EATON	4K021LXX17	1
12	30kKVA	TECHSER	20.10.05.15	1
Administrative Building				
1	20 KVA	TECHSER	2006.10.022	1
Yendurance Zone				
1	3 KVA	TECHSER	2004.02.55	1
Central Kitchen				
1	5 KVA	TECHSER	2003.02.56	1
Incubation Technology Building				
1	20 KVA	UNILINE	UL-K-15-523	1
2	20 KVA	TECHSER	MY2009123	1
3	20 KVA	TECHSER	MY2009135	1
Total				**33**

16.3 Energy Consumption and Cost Analysis- MESCOM

The average price of electricity over the above period was Rs. 9.5/kWh

Power Sources: MESCOM 33kV Feeder- RR- ULEHT-14 (Fig 20)

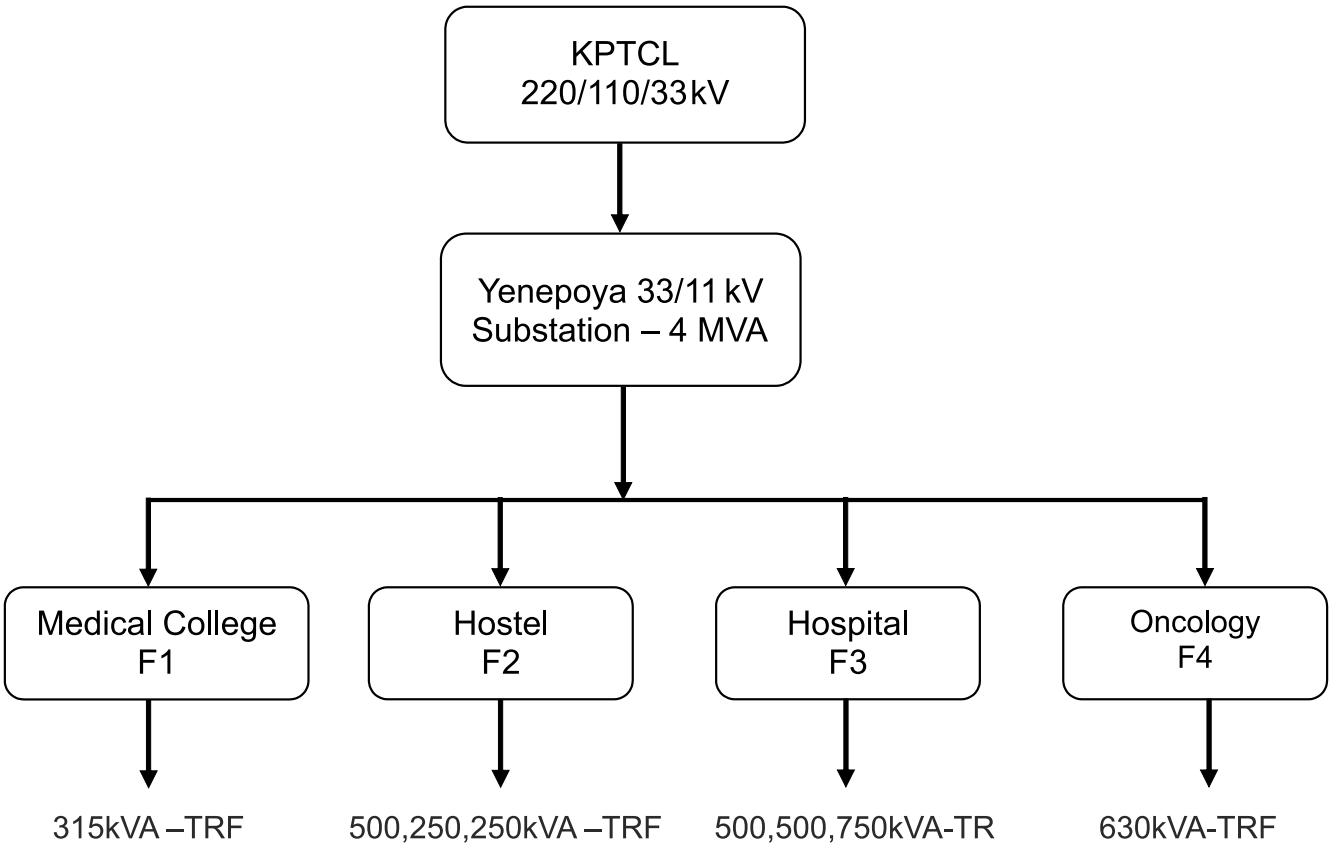


Fig 20: Flow chart of power distribution

EHT Panel: -Schneider Switchgear;

1. I/C -1, from MESCOM, 33kV
2. 800A Schneider-VCB
3. 800A TRF- 4.0 MVA, Prolec (GE) make, ONAN, 33kV/11kV -17Step OLTC.
4. 800A I/c # 2 – spare
5. 800A Bus PT

Power Distributions – 33/11Kv

Power Distributions – 33/11Kv

HT Panel: Schneider Switchgear – I/c from 4.0MVA TRF CD – 1900 kVA

1. 1250A –VCB-Megawin-I/c from 4.0MVA-TRF
2. 800A – I/c Feeder for Medical College
3. 800A- I/c Feeder for Hostel Block
4. 800A- I/c Feeder for Hospital Block
5. 1250A- Bus Coupler
6. Trunking Panel – Spare
7. 800A- Spare Feeder
8. 800A- I/c Feeder for Capacitor Panel
9. 1250A – I/c Feeder # 2

Medical College Feeder:

- Transformer – 315 kVA
- D.G set: 625 kVA

Yendurance and Hostel Power House Feeder:

Yendurance:

- Transformer – 250 KVA
- D.G set: 160 KVA

Hostel Blocks:

- Transformer – 250 KVA and 750 KVA
- D.G set: 250 KVA

Central Kitchen:

- Transformer – 500 KVA
- D.G set: 250 KVA and 125 KVA

Gardyenia blocks:

- Transformer – 500 KVA
- D.G set: 380 KVA

Hospital Power House Feeder:

HT Panel: -Bus – I/c from Hospital Block

1. 1250A- Mega win VCB from HT Bus
2. 800A – VCB I/c for 500kVA-TRF- Dental & Nursing Block
3. 800A – VCB I/c for 500kVA-TRF-Teaching Hospital Block
4. 800A – VCB I/c for 750kVA-TRF-EMD Block
5. DG Sets: 750KVA, 1250kVA – DG Sets for Hospital Block –PCC

Oncology Hospital block

- DG set: 625KVA
- 800A – VCB I/c for 6300kVA

The consumption of the power across various campuses is summarized in Table 24.

Table 24: Power consumption from MESCOM in different premises

	Deralakatte		Naringana		Mudipu		Balmatta	
Month	Total Units	Total Amount 33/11 KV	Total Units	Total Amount 11 KV	Total Units	Total Amount 11 KV	Total Units	Total Amount 11 KV
January	961485	8817189	31300	280316	15266	273841	36720	429030
February	960960	8512657	32663	292403	10528	227103	23720	293677
March	1084965	9823247	39163	332859	12529	246842	36705	456073
April	1126545	11000564	35775	306141	16167	282729	38500	504790
May	1254120	12486421	39813	347459	16897	289930	46225	644855
June	1045170	9482379	35775	310050	13276	333039	33370	456762
July	1004430	9084320	30738	284711	9541	255572	24730	347960
August	1086855	9890195	39875	340673	12840	288834	39675	562360
September	1046010	9335968	39113	331489	13620	296699	33940	486434
October	1121400	10149170	43800	369122	17224	333036	38405	541724
November	1107435	10404528	48075	550196	14312	303676	37080	493020
December	1113105	10339361	52950	577768	13673	297233	28365	372636
Total	**12912480**	**119325999**	**469040**	**4323187**	**165873**	**3428534**	**417435**	**5589321**

16.4 Electrical Rooftop Solar Panels

Solar PV Panels: Connected to Respective Block – (Total: 454.675 kWp Panels) (Table 25) (Fig 21). The electricity generated from the solar panels is given in table 25.

Table 25: Area and capacity of solar panels

Sl. No	Location	Area	Capacity in kWp	Qty
1	Medical College	772 sq mts	125.45	1
2	Dental College	412 sq mts	66.95	1
3	Teaching Hospital	702 sq mts	114.075	1
4	Boys Hostel	564 sq mts	91.65	1
5	Ladies Hostel	380 sq mts	56.55	1
		Total	**454.675**	**5**

Fig 21: Roof top solar panels on different buildings

Table 26: Units of electricity generated in Rooftop Solar panels

Months	Hospital	College	Dental	Boys Hostel	Ladies Hostel	Total Units
January	11940	14160	6820	11430	6520	**50870**
February	12420	14120	6620	11190	6480	**50830**
March	13080	16760	14439	13440	8020	**65739**
April	14280	16680	7040	13080	8060	**59140**
May	13650	16360	9100	12210	7920	**59240**
June	10110	11960	6780	9120	5740	**43710**
July	7230	9040	5140	6510	4200	**32120**
August	13560	15920	9040	10740	7760	**57020**
September	10020	11200	6680	8550	5560	**42010**
October	11550	13760	7640	10800	6480	**50230**
November	10050	11880	6540	9480	5520	**43470**
December	11130	12480	7160	10620	5980	**47370**
Total	**139020**	**164320**	**98999**	**127170**	**78240**	**601749**

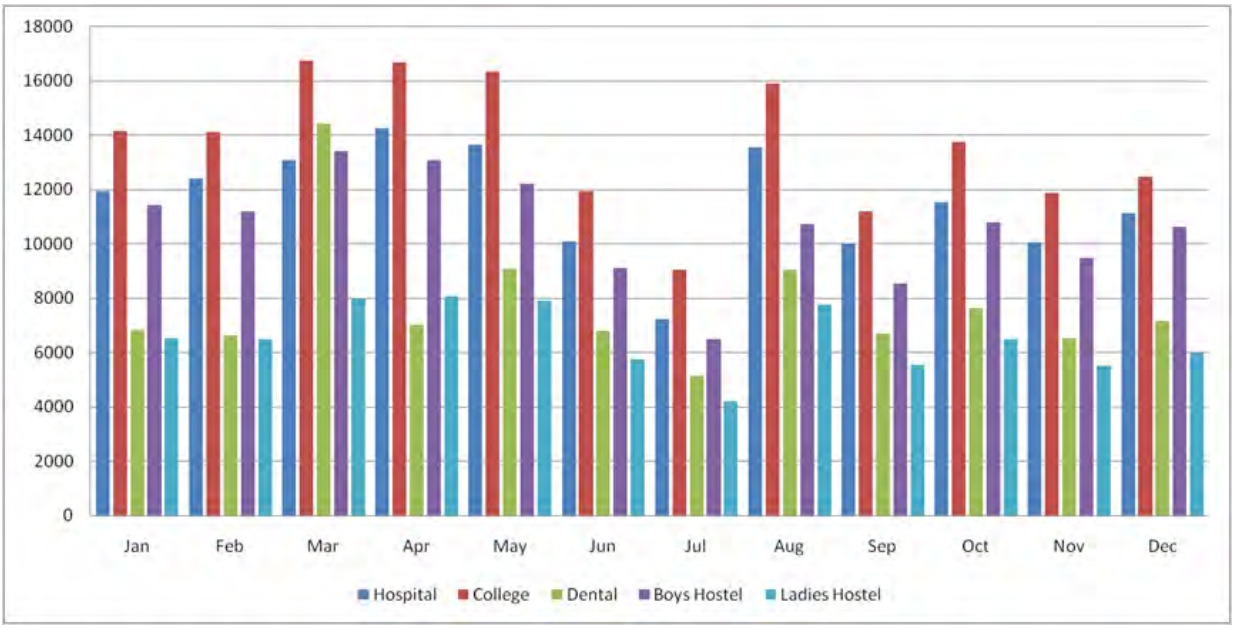


Fig 22: Rooftop electrical solar units - 2023

16.5 Diesel Generators

Diesel generators are operated when the MESCOM power supply fails and is essential to maintain continuous power supply for the hospital and other critical facilities, including research laboratories. The diesel generators (Fig 23, Table 26) are an essential alternate power source for the hospital. Chimneys with adequate height are provided for the generators as per the statutory requirements as shown in Table 27. Power generated from DG is shown in Table 27.

Fig 23: Diesel Generator

Table 27: Details of diesel generators installed

Sl. No	DG capacity	Location	Standard fuel consumption (Liters/Hour)	Recommended chimney height Above Roof Level (ARL)
1	DG 1 1250 kVA	Hospital	145	10 m ARL
2	DG 2 750 kVA	Hospital	110	10 m ARL
3	DG 3 625 kVA	Oncology	44	10 m ARL
4	DG 4 625 kVA	College	45	10 m ARL
5	DG 5 380 kVA	Mobile DG	48	10 m ARL
6	DG 6 250 kVA	Campus Hostel	52	3.5 m ARL
7	DG 7 380 kVA	Hostel	53	4.0 m ARL
8	DG 8 250 kVA	Central Kitchen	39	3.5 m ARL
9	DG 9 125 kVA	Central Kitchen	24	2.5 m ARL
10	DG 10 380 kVA	Gardyenia Hostel	46	4.0 m ARL
11	DG 11 160 kVA	Yendurance zone	13	3.0 m ARL
12	DG 12 320 kVA	Naringana Campus	49	4.0 m ARL
13	DG 13 380 kVA	Mudipu Campus	46	4.0 m ARL
14	DG 14 160 kVA	Balmatta Campus	12	4.0 m ARL
15	DG 15 65 kVA	Balmatta Campus	8	4.0 m ARL

The diesel generators are housed in separate sheds away from the buildings. Exhaust chimneys are installed with respect to location and exposure. The generators are provided with acoustic control units for control of noise.

Table 28: Total units generated by various diesel generators

DG	Premise	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DG 1	Deralakatte	5600	750	5500	4500	8000	3700	7800	5000	6500	7500	8000	7500
DG 2		5040	720	4800	5040	4560	2880	4560	4080	4320	5280	6000	1280
DG 3		2400	320	2240	1760	2720	800	2400	1920	2560	2720	3520	3360
DG 4		1200	200	1000	800	2200	600	1600	1200	2600	1600	3400	1600
DG 5		0	0	0	0	0	200	0	0	0	0	0	0
DG 6		1760	240	0	0	1040	0	1680	1520	1760	1840	0	320
DG 7		0	0	0	0	0	0	0	0	0	0	0	18240
DG 8		1080	120	960	360	960	360	1080	600	600	720	840	840
DG 9		440	40	280	480	720	360	1200	960	1200	960	960	960

DG 10		1680	240	1440	1200	3120	960	3120	1440	2520	2040	2400	2040
DG11		150	200	200	240	1200	1440	720	600	360	5160	3120	480
DG12	Naringana	1870	2180	1370	3080	3270	2630	5060	2610	2990	5420	4570	3200
DG 13	Mudipu	570	883	1331	2124	2623	1808	1716	784	1356	1449	1497	2413
DG 14& 15	Balmatta	420	410	270	490	420	370	1100	910	1100	910	900	420
Total units generated		**21640**	**5420**	**18060**	**17950**	**28210**	**14300**	**30320**	**20840**	**26510**	**34150**	**33710**	**40240**

The total units of energy consumed in a month is 12, 38,161 Kwh. The total units used from MESCOM is 11,63,736/month and from Diesel generators is 24,279 units per month (Table 28). Approximately 5% of energy is generated from solar panels i.e., 50146 units per month.
The university is replacing old incandescent bulbs with LED bulbs.

16.6 Fuel Consumption - DG

Bharat stage III (BSIII) compliant high speed diesel is used as fuel for the generators. The diesels blended with 5% ethanol. Chimneys with suitable heights are provided as per the statutory requirements. Fuel consumption by DG is given in Table 29.

Table 29: Consumption of diesel (Litres) by Diesel Generators

Month	Deralakatte							Naringana	Balmatta		Total (L)
	DG 1, 2, 4	DG 3	DG 5	DG 6, 7	DG 8, 9	DG 10	DG 11	DG 12	DG 14	DG 15	
January	3960	820	0	1285	950	580	180	850	20	20	**8665**
February	630	140	0	735	50	110	100	1030	20	150	**2965**
March	3240	780	730	735	715	490	145	705	20	160	**7720**
April	2920	580	440	735	830	415	60	1285	-	220	**7485**
May	4400	940	640	1335	830	990	185	1485	-	80	**10885**
June	2140	340	375	1335	290	1560	250	4215	-	100	**10605**
July	4170	900	-	670	725	1000	275	2295	-	200	**10235**
August	3380	715	-	600	685	500	125	1095	-	200	**7300**
September	4280	865	-	600	590	800	110	1200	-	200	**8645**
October	4250	980	-	1400	595	715	605	2035	-	200	**10780**
November	5090	1020	-	1050	970	795	470	1660	-	150	**11205**
December	4450	1190	-	820	555	660	135	1180	-	100	**9090**
										Total	**105580**

16.7 Energy statement

The energy consumption of the university is summarized and presented in Table 30.

Table 30: Energy Statement

MESCOM		DG			Rooftop Solar Generations			Grand Total of electricity consumption and cost	
Total units (kWh)	Total amount (Rs.)	Total units (kWh)	Total amount (Rs.)	Electricity Tax Rs.0.10/ 0.20 (Rs.)	Total units (kWh)	Total amount (Rs.)	Electricity Tax Rs.0.20 (Rs.)	Total units (kWh)	Total amount (Rs.)
13964828	132667041	291350	4661600	29135	601749	2707871	120350	14857927	140185997

16.8 Fuel consumption for boiler

Agro fuel in the form of briquettes is used in the boilers. The pollutants load is lesser in the flue gas with agro fuel. About 1, 23,184 kg of briquettes is used per month (Table 31).

Table 31: Summary of agro-fuel used

Month	Weight of the fuel	Cost of the fuel (Rs.)
January	134898	944286
February	116352	814464
March	123214	862498
April	125424	877968
May	126837	887859
June	125846	880922
July	117169	820183
August	128596	900172
September	119501	836507
October	121828	852796
November	114504	801528
December	124038	868266
Total	**1478207**	**10347449**

17. LIQUEFIED PETROLEUM GAS (LPG)

Commercial LPG cylinders are utilized for cooking purpose in the central kitchen. Approximately 30,000 meals per day are cooked at the central kitchen. About 530 LPG cylinders of 19.5kg and 47kg capacity are used per month.

18. CONCLUSION

Energy audit is an effective tool in identifying and perusing a comprehensive energy management program. The audit identified that the university's electricity cost from MESCOM is more than 13 lakhs, which incurs significant expenses for the university. The lifts, air conditioners and UPS are the highest electricity using devices. University is using all the opportunities for upgrading lighting systems and managing plug loads. Transitioning from conventional lighting to LED bulbs and implementing sensor systems to prevent unnecessary energy consumption has been done. Improvements in water heating systems and overall water consumption were taken care for a comprehensive approach to resource management. University has been explored alternative energy source like solar panels for electricity generation and water heating to reduce dependency on conventional power.

To enhance cost-effectiveness, exploring opportunities for renegotiating utility rates or adopting energy-intensive benchmarking strategies could be beneficial. Institute has to look upon potential retro-commissioning opportunities, emphasizing the need to optimize existing systems for better performance and efficiency. This could involve fine-tuning HVAC systems, lighting controls, and other energy-consuming systems. The operation and maintenance practices need to be evaluated, and recommendations for improving maintenance efficiency have to be provided. Regular upkeep of equipment, especially critical facilities like research laboratories, is crucial for sustained energy performance. The assessment needs to focus on HVAC systems, suggesting enhancements for better energy efficiency. Implementing energy-efficient HVAC technologies and controls could significantly reduce energy consumption.

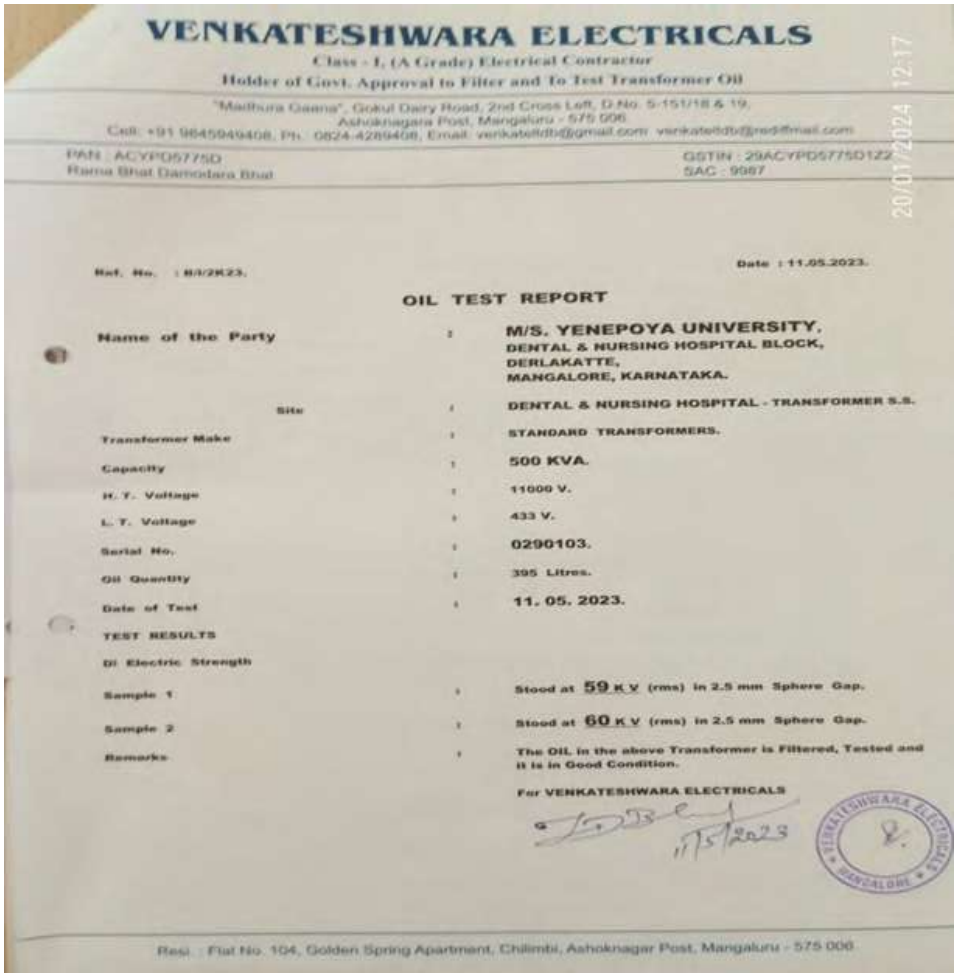
The recent energy audit has identified areas where the university can enhance energy efficiency. Specifically, it recommends the replacement of transformers with preferably 5-star rating transformers to increase power efficiency. Moreover, upgrading other equipment, particularly air conditioners, to higher-rated models is advised. In addition to these measures, it's suggested to expand solar panel installations in new buildings to augment alternative energy resources. Furthermore, the initiatives like organizing workshops on energy-efficient practices, hosting community events centered around sustainable living, and utilizing social media platforms to disseminate tips, facts, and info-graphics related to energy conservations can be done. Additionally, innovative ideas like celebrating an 'AC-free day' could play a pivotal role in promoting sustainable practices.

The implementation of recommended measures is estimated to result in a significant reduction in energy consumption, translating into substantial cost savings. Apart from economic advantages, the suggested measures contribute to environmental sustainability. Reduction in carbon footprint, enhanced reliability of equipment, and overall operational efficiency are essential outcomes.

This energy audit provides a roadmap for Yenepoya (Deemed to be University) to achieve substantial improvements in energy efficiency. The potential benefits extend beyond cost savings to environmental and operational enhancements. The commitment to celebrating energy-related awareness days and embracing sustainable technologies showcases the institution's dedication to a greener and more efficient future. The audit's positive findings install confidence in the university's ability to lead the way in energy conservation and environmental stewardship.

19. ANNEXURES

TRANSFORMER OIL TEST REPORT



VENKATESHWARA ELECTRICALS

Class - I, (A Grade) Electrical Contractor
Holder of Govt. Approval to Filter and To Test Transformer Oil

"Madhura Gaana", Gokul Dairy Road, 2nd Cross Left, D.No. 5-151/18 & 19,
Ashoknagara Post, Mangaluru - 575 006
Cell: +91 9845949408, Ph: 0824-4289408, Email: venkateldb@gmail.com venkateldb@rediffmail.com

PAN : ACYPD5775D
Rama Bhat Damolara Bhat

GSTIN : 29ACYPD5775D1ZZ
SAC : 9987

Ref. No. : 8/3/2K23.

Date : 11.05.2023.

OIL TEST REPORT

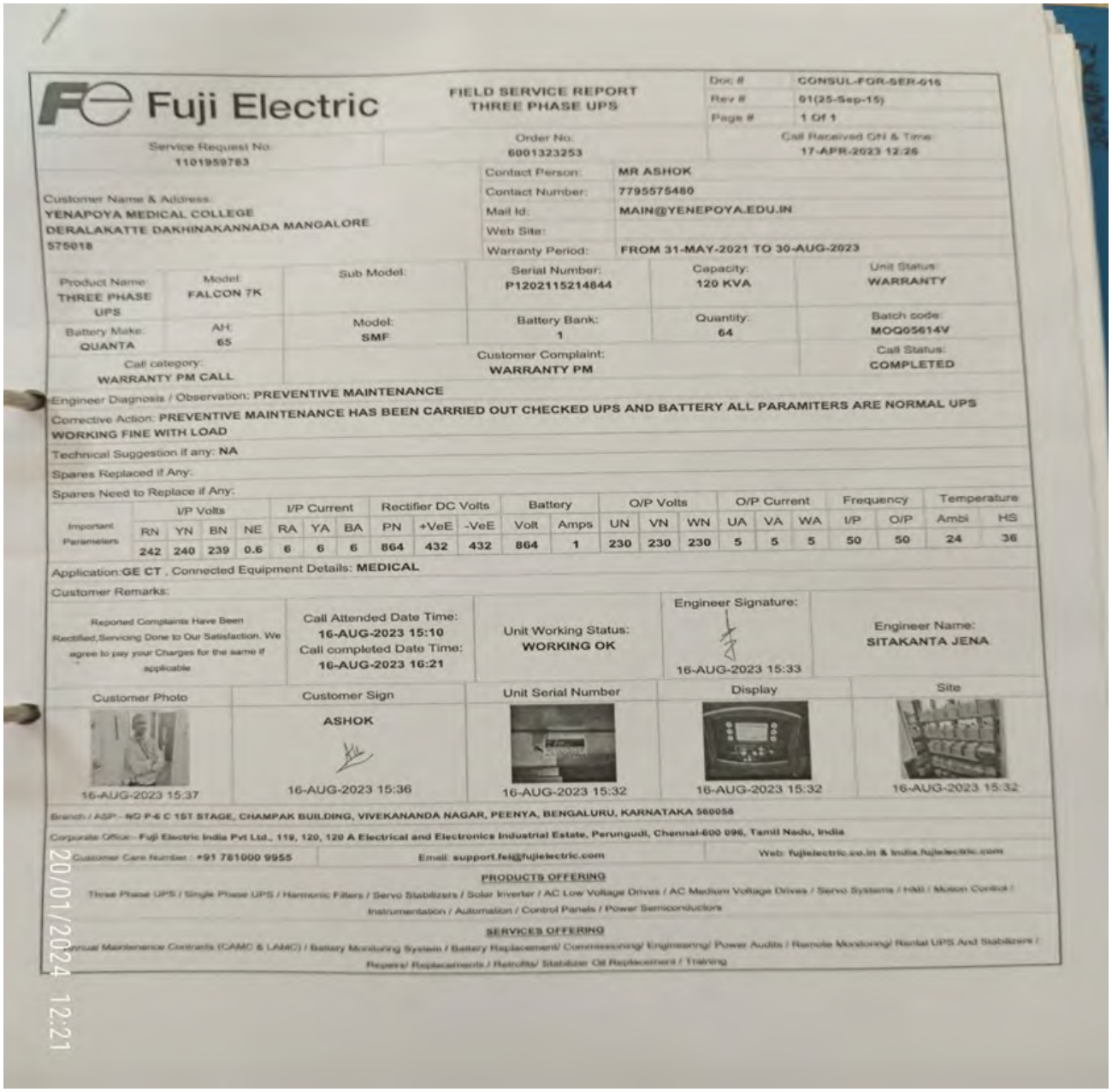
Name of the Party	:	M/S. YENEPOYA UNIVERSITY, DENTAL & NURSING HOSPITAL BLOCK, DERLAKATTE, MANGALORE, KARNATAKA.
Site	:	DENTAL & NURSING HOSPITAL - TRANSFORMER S.S.
Transformer Make	:	STANDARD TRANSFORMERS.
Capacity	:	500 KVA.
H. T. Voltage	:	11000 V.
L. T. Voltage	:	433 V.
Serial No.	:	0290103.
Oil Quantity	:	395 Litres.
Date of Test	:	11. 05. 2023.
TEST RESULTS		
Dl Electric Strength		
Sample 1	:	Stood at 59 K V (rms) in 2.5 mm Sphere Gap.
Sample 2	:	Stood at 60 K V (rms) in 2.5 mm Sphere Gap.
Remarks	:	The OIL in the above Transformer is Filtered, Tested and it is in Good Condition.

For VENKATESHWARA ELECTRICALS

11/5/2023

Resi. : Flat No. 104, Golden Spring Apartment, Chilimbi, Ashoknagar Post, Mangaluru - 575 006

UPS SERVICE REPORT



Fuji Electric

FIELD SERVICE REPORT
THREE PHASE UPS

Doc #	CONSUL-FOR-SER-016
Rev #	01(25-Sep-15)
Page #	1 Of 1

Service Request No: 1101959783
Order No: 6001323253
Call Received DN & Time: 17-APR-2023 12:26

Customer Name & Address:
YENAPOYA MEDICAL COLLEGE
DERALAKATTE DAKHINAKANNADA MANGALORE
575018

Contact Person:	MR ASHOK
Contact Number:	7795575480
Mail Id:	MAIN@YENEPOYA.EDU.IN
Web Site:	
Warranty Period:	FROM 31-MAY-2021 TO 30-AUG-2023

Product Name	Model	Sub Model	Serial Number	Capacity	Unit Status
THREE PHASE UPS	FALCON 7K		P1202115214844	120 KVA	WARRANTY

Battery Make	AH	Model	Battery Bank	Quantity	Batch code
QUANTA	65	SMF	1	64	MOQ05614V

Call category	Customer Complaint	Call Status
WARRANTY PM CALL	WARRANTY PM	COMPLETED

Engineer Diagnosis / Observation: PREVENTIVE MAINTENANCE

Corrective Action: PREVENTIVE MAINTENANCE HAS BEEN CARRIED OUT CHECKED UPS AND BATTERY ALL PARAMITERS ARE NORMAL UPS WORKING FINE WITH LOAD

Technical Suggestion if any: NA

Spares Replaced if Any:

Spares Need to Replace if Any:

Important Parameters	I/P Volts				I/P Current			Rectifier DC Volts			Battery		O/P Volts			O/P Current			Frequency		Temperature	
	RN	YN	BN	NE	RA	YA	BA	PN	+VeE	-VeE	Volt	Amps	UN	VN	WN	UA	VA	WA	I/P	O/P	Ambi	HS
	242	240	239	0.6	6	6	6	864	432	432	864	1	230	230	230	5	5	5	50	50	24	36

Application:GE CT , Connected Equipment Details: MEDICAL

Customer Remarks:

Reported Complaints Have Been Rectified,Servicing Done to Our Satisfaction. We agree to pay your Charges for the same if applicable

Call Attended Date Time: 16-AUG-2023 15:10
Call completed Date Time: 16-AUG-2023 16:21

Unit Working Status: WORKING OK

Engineer Signature: 16-AUG-2023 15:33

Engineer Name: SITAKANTA JENA

Customer Photo	Customer Sign	Unit Serial Number	Display	Site
16-AUG-2023 15:37	ASHOK 16-AUG-2023 15:36	16-AUG-2023 15:32	16-AUG-2023 15:32	16-AUG-2023 15:32

Branch / ASP:- NO P-4 C 1ST STAGE, CHAMPAK BUILDING, VIVEKANANDA NAGAR, PEENYA, BENGALURU, KARNATAKA 560058

Corporate Office:- Fuji Electric India Pvt Ltd., 119, 120, 120 A Electrical and Electronics Industrial Estate, Perungudi, Chennai-600 096, Tamil Nadu, India

Customer Care Number : +91 781000 9955 | Email: support.fei@fujielectric.com | Web: fujielectric.co.in & India.fujielectric.com

PRODUCTS OFFERING

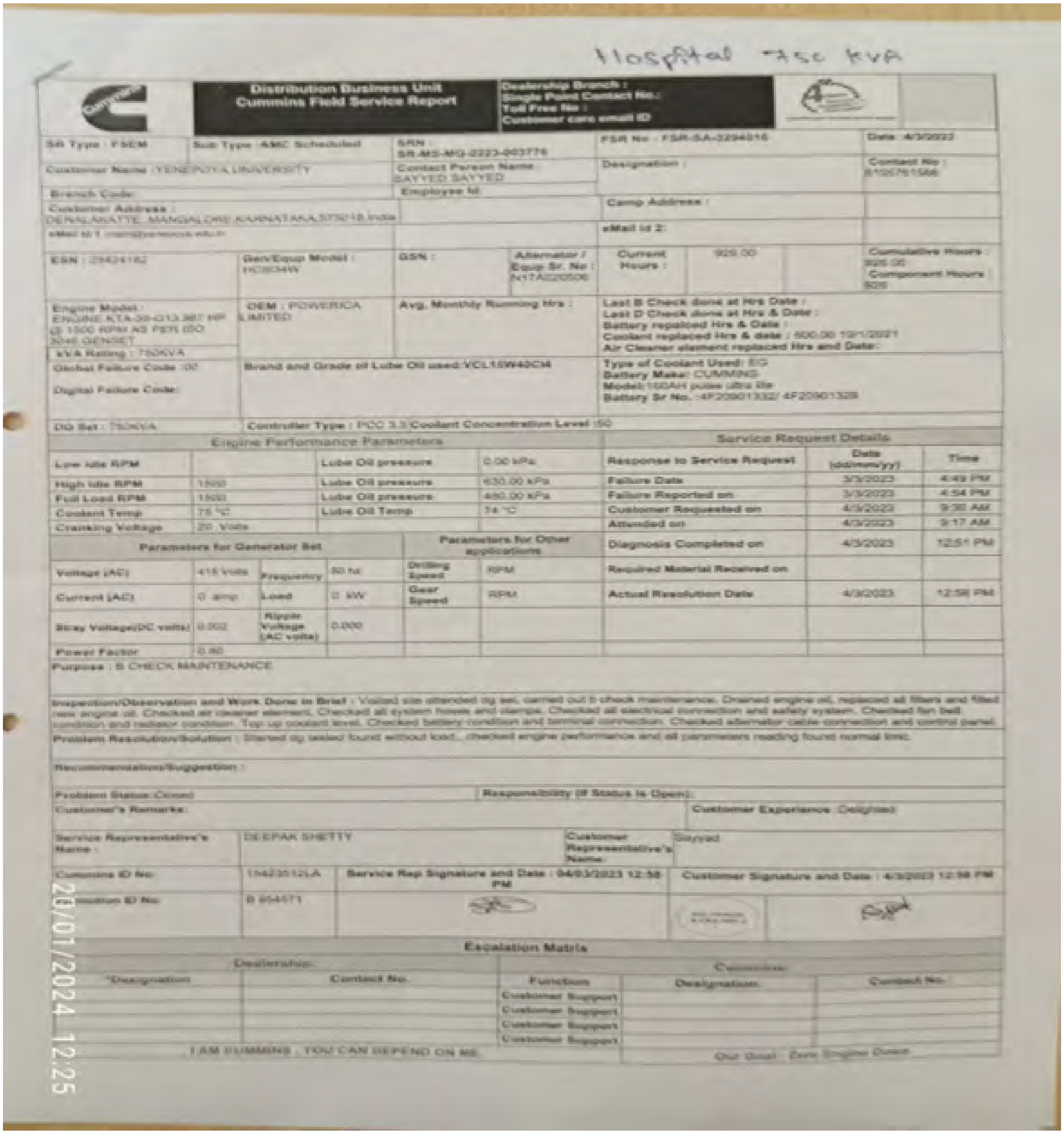
Three Phase UPS / Single Phase UPS / Harmonic Filters / Servo Stabilizers / Solar Inverter / AC Low Voltage Drives / AC Medium Voltage Drives / Servo Systems / HMI / Motion Control / Instrumentation / Automation / Control Panels / Power Semiconductors

SERVICES OFFERING

Annual Maintenance Contracts (CAMC & LAMC) / Battery Monitoring System / Battery Replacement/ Commissioning/ Engineering/ Power Audits / Remote Monitoring/ Rental UPS And Stabilizers / Repairs/ Replacements / Retrofits/ Stabilizer Oil Replacement / Training

20/01/2024 12:21

D.G. SERVICE REPORT



Hospital 750 KVA

Distribution Business Unit
Cummins Field Service Report

Dealership Branch :
Single Point Contact No.:
Toll Free No :
Customer care email ID

SR Type : FSEM	Sub Type : AMC Scheduled	SRN : SR-MS-MG-2223-003776	FSR No : FSR-SA-3294016	Date : 4/3/2023
Customer Name : YENEPOYA UNIVERSITY		Contact Person Name : SAYYED SAYYED	Designation :	Contact No : [illegible]
Branch Code:		Employee Id:		
Customer Address : DERALAKATTE, MANGALORE KARNATAKA,575018,India			Camp Address :	
eMail id 1 : [illegible]			eMail id 2:	
ESN : [illegible]	Gen/Equip Model : [illegible]	GSN :	Alternator / Equip Sr. No : [illegible]	Current Hours : 926.00	Cumulative Hours : 926.00 Component Hours : 926
Engine Model : ENGINE KTA-38-G13 987 HP @ 1500 RPM AS PER ISO 3046 GENSET	OEM : POWERICA LIMITED	Avg. Monthly Running Hrs :	Last B Check done at Hrs Date : Last D Check done at Hrs & Date : Battery replaced Hrs & Date : Coolant replaced Hrs & date : 600.00 19/1/2021 Air Cleaner element replaced Hrs and Date:
kVA Rating : 750KVA			
Global Failure Code : 00 Digital Failure Code:	Brand and Grade of Lube Oil used:VCL15W40CI4		Type of Coolant Used: EG Battery Make: CUMMINS Model:100AH pulse ultra lite Battery Sr No. :4F20901332/ 4F20901329
DG Set : 750KVA	Controller Type : PCC 3.3	Coolant Concentration Level :50	

Engine Performance Parameters				Service Request Details	Date (dd/mm/yy)	Time
Low Idle RPM		Lube Oil pressure	0.00 kPa	Response to Service Request		
High Idle RPM	1500	Lube Oil pressure	630.00 kPa	Failure Date	3/3/2023	4:49 PM
Full Load RPM	1500	Lube Oil pressure	460.00 kPa	Failure Reported on	3/3/2023	4:54 PM
Coolant Temp	75 °C	Lube Oil Temp	74 °C	Customer Requested on	4/3/2023	9:30 AM
Cranking Voltage	20 Volts			Attended on	4/3/2023	9:17 AM

Parameters for Generator Set				Parameters for Other applications				
						Diagnosis Completed on	4/3/2023	12:51 PM
Voltage (AC)	415 Volts	Frequency	50 hz	Drilling Speed	RPM	Required Material Received on		
Current (AC)	0 amp	Load	0 kW	Gear Speed	RPM	Actual Resolution Date	4/3/2023	12:58 PM
Stray Voltage(DC volts)	0.002	Ripple Voltage (AC volts)	0.000					
Power Factor	0.80							

Purpose : B CHECK MAINTENANCE

Inspection/Observation and Work Done in Brief : Visited site attended dg set, carried out b check maintenance. Drained engine oil, replaced all filters and filled new engine oil. Checked air cleaner element. Checked all system hoses and clamps. Checked all electrical connection and safety system. Checked fan belt condition and radiator condition. Top up coolant level. Checked battery condition and terminal connection. Checked alternator cable connection and control panel.

Problem Resolution/Solution : Started dg tested found without load.. checked engine performance and all parameters reading found normal limit.

Recommendation/Suggestion :

Problem Status:Closed		Responsibility (If Status is Open):	
Customer's Remarks:		Customer Experience :Delighted	
Service Representative's Name :	DEEPAK SHETTY	Customer Representative's Name:	Sayyed
Cummins ID No:	[illegible]	Service Rep Signature and Date : 04/03/2023 12:58 PM	Customer Signature and Date : 4/3/2023 12:58 PM
[illegible] ID No:	B [illegible]		

Escalation Matrix

Dealership		Cummins		
Designation	Contact No.	Function	Designation	Contact No.
		Customer Support		
		Customer Support		
		Customer Support		
		Customer Support		

I AM CUMMINS , YOU CAN DEPEND ON ME

Our Goal : Zero Engine Down

20/01/2024 12:25

Distribution Business Unit Cummins Field Service Report Manipanjan Diesel Sales and Service Private Ltd.	Dealership Branch : Maniranjan - Mangalore Single Point Contact No.: 0824-2405005/2407442/ Mob : 8095213309 Toll Free No :080021 02525 Customer care email ID mpcmangalore@maniranjan.com	

SR Type : FSEM	Sub Type :AMC Scheduled	SRN : SR-MS-MG-2324-001394	FSR No : FSR-SA-3691325	Date :2/8/2023
Customer Name :YENEPOYA UNIVERSITY		Contact Person Name : SAYYED SAYYED	Designation :	Contact No : 8105761568
Branch Code:		Employee Id:	Camp Address :Yenepoya hospital	
Customer Address : DERALAKATTE, MANGALORE,KARNATAKA,575018,India			eMail id 2:	
eMail id 1: [illegible]				
ESN : [illegible]	Gen/Equip Model : HC6D4W	GSN :	Alternator / Equip Sr. No : 25424182	Current Hours : 981.00	Cumulative Hours : 981.00 Component Hours : 981
Engine Model : ENGINE KTA-38-G[illegible]	OEM : POWERICA LIMITED	Avg. Monthly Running Hrs :	Last B Check done at Hrs Date : Last D Check done at Hrs & Date : Battery repalced Hrs & Date : Coolant replaced Hrs & date : 600.00 10/1/2021 Air Cleaner element replaced Hrs and Date:
kVA Rating : 750KVA Global Failure Code :00 Digital Failure Code:	Brand and Grade of Lube Oil used:VCL15W40CM		Type of Coolant Used: EG Battery Make: CUMMINS Model:180AH Battery Sr No. :
DG Set : 750KVA	Controller Type : PCC3.3	Coolant Concentration Level :50	

Engine Performance Parameters

Low idle RPM		Lube Oil pressure	0.00 kPa
High idle RPM	1500	Lube Oil pressure	540.00 kPa
Full Load RPM	1500	Lube Oil pressure	480.00 kPa
Coolant Temp	75 °C	Lube Oil Temp	75 °C
Cranking Voltage	19 Volts		

Parameters for Generator Set

Voltage (AC)	[illegible] Volts	Frequency	50 Hz
Current (AC)	0 amp	Load	0 kW
Stray Voltage(DC volts)	0.000	Ripple Voltage (AC volts)	0.000
Power Factor	0.80		

Parameters for Other applications

Drilling Speed	RPM
Gear Speed	RPM

Service Request Details

Response to Service Request	Date (dd/mm/yy)	Time
Failure Date	2/8/2023	9:04 AM
Failure Reported on	2/8/2023	9:07 AM
Customer Requested on	2/8/2023	10:00 AM
Attended on	2/8/2023	9:46 AM
Diagnosis Completed on	2/8/2023	12:30 PM
Required Material Received on		
Actual Resolution Date	2/8/2023	12:43 PM

Purpose : GENERAL CHECK UP

Inspection/Observation and Work Done in Brief : Visited site attended dg set, checked engine oil and coolant level. Checked all system hoses and clamps. Checked air cleaner element. Checked all electrical connection and safety system. Checked alternator cable connection and control panel. Checked fan belt condition and radiator condition. Checked battery condition and terminal connection.

Problem Resolution/Solution : Started dg tested found without load, checked engine performance and all parameters reading found normal limit.

Recommendation/Suggestion :

Problem Status:Closed | Responsibility (If Status is Open):

Customer's Remarks: | Customer Experience :Delighted

Service Representative's Name :	DEEPAK SHETTY	Customer Representative's Name:	Joy Nelson
Cummins ID No:	154235T2LA	Service Rep Signature and Date : 02/08/2023 01:49 PM	Customer Signature and Date : 2/8/2023 12:43 PM
Promotion ID No:	B 954571		

Escalation Matrix

Dealership:		Cummins:		
*Designation	Contact No.	Function	Designation:	Contact No.
BRANCH HEAD	9448395096	Customer Support	Channel Service Manager	9480811681
SERVICE HEAD	9513011161	Customer Support	Area Service Manager	9891799316
CEO	6360450190	Customer Support	Zonal Service Head	9971002393
DIRECTOR	9008296910	Customer Support		

I AM CUMMINS , YOU CAN DEPEND ON ME | Our Goal : Zero Engine Down

LIFT SERVICE REPORT

Swift Space Elevators

SSE

Registered Office : Shop #10, D.No. 20-3-251/62, 1st Floor, Regal Park, Mission Street, Mangalore-575001

No: 7511

Maintenance Log Book

Contact No: 0824-2441550

Building Name: Yenepoya — City/ Town

Product Type : ☑ Elevator ☐ Escalator ☐ Passenger Conveyor

Type of Visit : ☑ Preventive Maintenance ☐ Call Out ☐ Repair ☐ Audit

Date/ Time of call out: 7-12-2023 — Job Status: ☐ Closed ☐ Not Closed

Technician Name:	Arrival Date	Arrival Time	Restored Date	Restored Time

Status on arrival:

- ☑ Running Correctly
- ☐ Not Running -on level
- ☐ Not Running -Escalator/ passenger Conveyor
- ☐ Running with problem
- ☐ Not-Running-out of level
- ☐ Entrapment

Maintenance Module	Completed
Basic Inspection	☑
Cleaning & Lubricating the Guides	
Examining the ropes and their attachments	
Examining the safety Devices	
Examining and lubricating the door locks	
Lubricating all moving parts	
Control panel module	
Machine module	
Signalization module	
Drive module (Escalator/passenger conveyor)	
Brake module (Escalator/passenger conveyor)	
handrail module (Escalator/passenger conveyor)	
Comb plate module (Escalator/passenger conveyor)	
Guid Module (Escalator/passenger conveyor)	
Step Module (Escalator/passenger conveyor)	

Rectification Result:

- ☐ Equipment running
- ☐ Equipment running, not yet fixed
- ☐ Equipment not running, not yet fixed
- ☐ Others; (specify)

Rectification Area		Completed
Elevator	Escalator (Passenger conveyor)	
Guide Rails	Drive station	
Doors & Entrances	Track system	
Machine room equipments	Truss	
Shaft equipments	Safety signs/ cladding	
Car	Skirting	
Car sling	Handrail system	
Counter weight	Step band	
Rope Assemblies	Floor plate	
Control system	Comb carrier	
Drive system	Electrical system	
Signalization	Deckings	
Peripheral Devices	Balustrades	
Power supply	Power supply	
Others	Others	

Techeical Remarks

Additional Works/ parts replaced

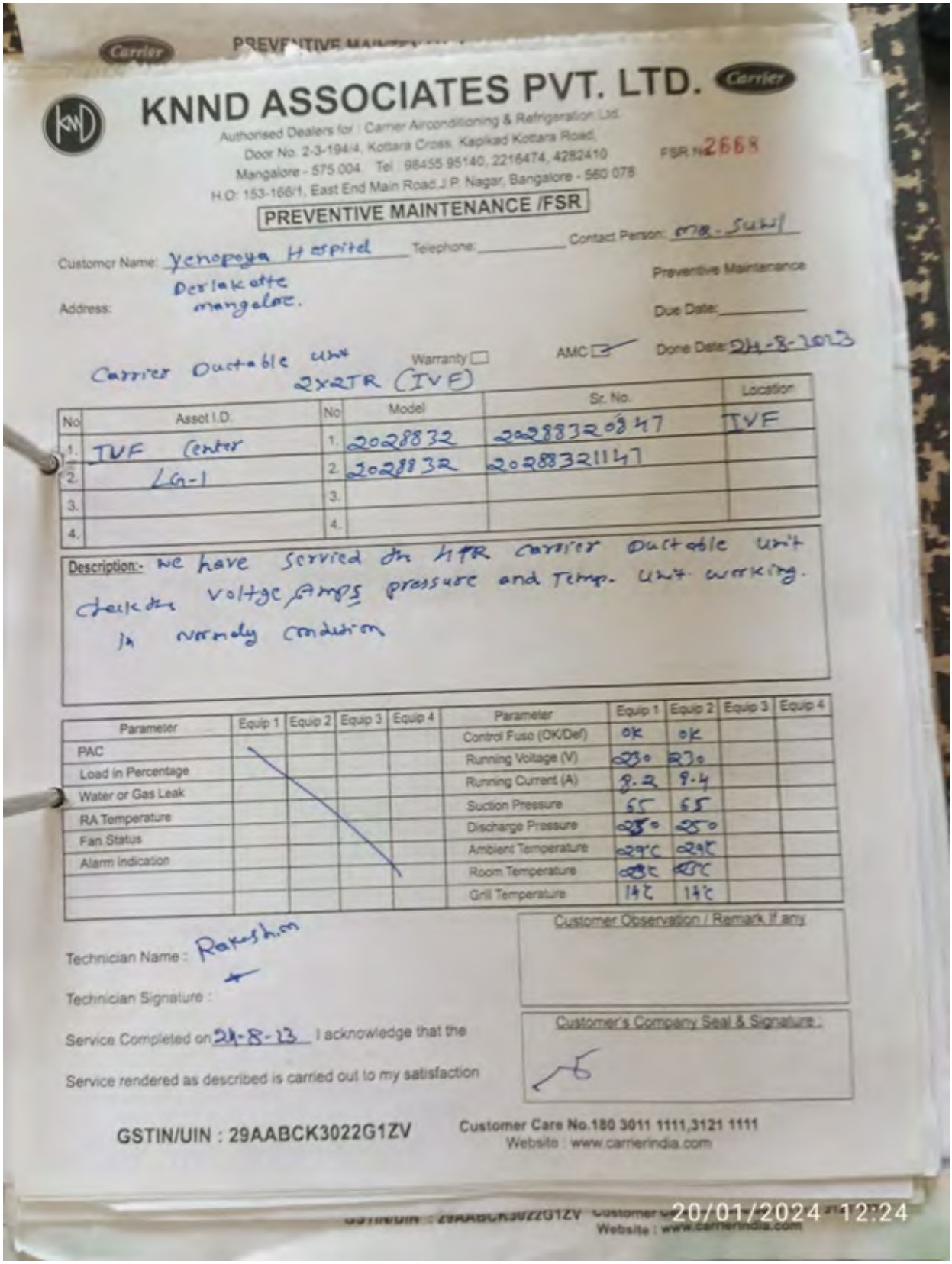
1. Elevator 2nd floor landing door coupler bush 2Nos replaced.
2. Elevator Car door shoe 8 NO replaced

Customer comments

Technical name/ Employee No: Kamalakara — Technician Signature

Customer Name — Date — Customer Signature — Date

AIR CONDITIONING SERVICE REPORT



Carrier

PREVENTIVE MAINTENANCE

KNND ASSOCIATES PVT. LTD.

Carrier

Authorised Dealers for : Carrier Airconditioning & Refrigeration Ltd.
Door No. 2-3-194/4, Kottara Cross, Kapikad Kottara Road,
Mangalore - 575 004 Tel : 98455 95140, 2216474, 4282410
H.O: 153-166/1, East End Main Road,J P. Nagar, Bangalore - 560 078

FSR No 2668

PREVENTIVE MAINTENANCE /FSR

Customer Name: Yenepoya Hospital Telephone: _____ Contact Person: MR. SUNIL

Address: Derlakatte Mangalore.

Preventive Maintenance

Due Date: _____

Done Date: 24-8-2023

Carrier Ductable unit 2x2TR (IVF) Warranty ☐ AMC ☑

No	Asset I.D.	No	Model	Sr. No.	Location
1.	IVF Center	1.	2028832	202883203 47	IVF
2.	LG-1	2.	2028832	20288321147	
3.		3.			
4.		4.			

Description:- We have servied the 4TR carrier Ductable unit checked the voltge, Amps pressure and Temp. Unit working in normaly condition

Parameter	Equip 1	Equip 2	Equip 3	Equip 4
PAC				
Load in Percentage				
Water or Gas Leak				
RA Temperature				
Fan Status				
Alarm indication				

Parameter	Equip 1	Equip 2	Equip 3	Equip 4
Control Fuse (OK/Def)	ok	ok		
Running Voltage (V)	230	230		
Running Current (A)	8.2	9.4		
Suction Pressure	65	65		
Discharge Pressure	250	250		
Ambient Temperature	29°C	29°C		
Room Temperature	23°C	23°C		
Grill Temperature	14°C	14°C		

Customer Observation / Remark if any

Technician Name : Rakesh.m

Technician Signature :

Service Completed on 24-8-23 I acknowledge that the Service rendered as described is carried out to my satisfaction

Customer's Company Seal & Signature :

GSTIN/UIN : 29AABCK3022G1ZV

Customer Care No.180 3011 1111,3121 1111
Website : www.carrierindia.com

20/01/2024 12:24

GREEN AUDIT 2023

The Green Audit report documents systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. It also reports the best practices of the institution for promoting biodiversity and environmental awareness and education for the students.

20. BIODIVERSITY AUDIT

The biodiversity audit conducted by the expert team involving students of the university identified about 350 species of flora, 178 species of fauna and about 40 species of mushrooms on the campus. The audit was conducted to analyse the present biodiversity status of the university and to propose plans to enhance the existing biodiversity. The findings have been published in three books (Fig 24):

- A book on 'Medicinal plants of the university campus' documents about 50 medicinal plants with its photographs, chemical constituents and medicinal uses. All plants are maintained in the campus with name boards and their uses. First Edition 2013; Second Edition 2017 (ISBN:9788193485705)

- A book on 'Macrofungal resources of Yenepoya University' with a description of 40 macrofungi, their substrates associated with plants and their detritus was published in 2018. (ISBN: 978-81-934857-2-9)

- A comprehensive report on the species diversity found on the campus was published as a book titled 'Flora & Fauna of the Yenepoya (Deemed to be University) campus' in 2022. The book has photo and description of 131 plants and 173 animals of the campus. (ISBN: 978-81-957069-4-5)

Fig 24: Books published

The list of plants, animals and mushrooms of the Deralakatte campus is given tin Annexure (24). (Fig 28 to 32). The details of tree audit is also provided.

21. PLANT – A – TREE PROGRAM

About 60 saplings were planted during this year including a fruit garden (Fig 25, 26) (Table 33).

Fig 25: Fruit garden

Fig 26: *Bunchosia argentea* (Peanut butter furit)

Table 32: Details of saplings planted

Date	Name of the plant	No. of saplings planted
20-04-2023	*Mangifera indica*	2
	Bunchosia argentea	4
	Citrus limon	2
	Averrhoa carambola	2
	Manilkara zapota	2
	Nephelium lappaceum	4
	Synsepalum dulcificum	2
	Punica granatum	2
	Persea americana	2
	Garcinia mangostana	2
	Malpighia emarginata	1
	Psidium gujava	1
	Cassia fistula	3
05.06.2023	*Mangifera indica*	1
	Artocarpus heterophyllus	1
	Annona muricata	1
26.06.2023	*Artocarpus heterophyllus*	5
	Syzygium cumini	2
	Mangifera indica	5
	Crotons	15
14.07.2023	*Mimusops elengi*	1
Total		**60**

22. TREE AUDIT

The Centre conducted an audit of Trees in the campus during November to December 2023 to create a data bank of greeneries inside the sprawling campus spread over 27 acres.

Fig 27: Tree assessment Audit

A total of 1676 trees have been documented of which about 650 bamboo plants, about 450 arecanut trees and 576 trees of other species were documented with their scientific name, coordinates (Latitude and Longitude), girth, height and approximate age of the tree. The carbon sequestration capacity of the trees was calculated and approximately 6503 Kg of CO_2 may be sequestered by the trees on the Deralakatte campus. The type of tree with their total number, age, girth, height and carbon sequestration potential is given in Table 34.

Table 33: Details of trees of the Deralakatte campus

Sl. No.	Scientific name	Number of trees	Mean Age	Mean Girth	Mean Height	Carbon sequestration potential (Kg)
1	*Bambusa vulgaris*	650	20	0.7	50	504.957
2	*Areca catechu*	450	20	0.8	35	310.681
3	*Swietenia macrophylla*	116	15	3.5	28.06	1271.709
4	*Terminalia catappa*	57	15	2.7	25.8	415.348
5	*Caryota urens*	35	15	3.75	29.4	451.829
6	*Neolamarckia cadamba*	28	15	3.5	26	374.007
7	*Lagerstroemia speciosa*	23	15	2.96	25.6	225.948
8	*Mangifera indica*	22	15	3.14	21.045	159.836
9	*Artocarpus heterophyllus*	20	15	3.1	23	160.019
10	*Wodyetia bifurcata*	18	12	2.4	17	60.406
11	*Acacia auriculiformis*	17	12	17.73	13	99.841
12	*Saraca asoca*	16	12	2.1	17.7	49.56
13	*Cocos nucifera*	15	12	2.66	24.8	76.121
14	*Garcinia indica*	14	10	1.89	18.92	58.528
15	*Magnolia alba*	14	15	3.25	23.28	139.022
16	*Roystonea regia*	11	15	3.2	24.1	116.477
17	*Tabebuia rosea*	11	10	2.6	34.5	152.133
18	*Callistemon citrinus*	10	15	3.95	24	126.706
19	*Cyrtostachys renda*	10	25	2	35	43.15
20	*Wrightia tinctoria*	10	10	1.9	17.9	23.605
21	*Syzygium cumini*	9	15	4.7	24.3	215.709
22	*Cassia fistula*	8	10	2.58	19.2	53.166
23	*Artocarpus hirsutus*	7	10	2.6	23	37.076
24	*Muntingia calabura*	7	12	3.2	16	174.158
25	*Dalbergia latifolia*	6	12	1.65	12.67	8.236
26	*Mimosops elengi*	6	12	1.2	17	8.841
27	*Peltophorum pterocarpum*	5	20	4.3	27.2	98.946
28	*Macaranga peltata*	4	12	2.3	15	12.8
29	*Persea macrantha*	4	15	3.7	35.7	73.36
30	*Plumeria acutifolia*	4	15	1.8	10	3.994

31	*Spathodea campanulata*	4	10	4.3	22	43.216
32	*Syzygium samarangense*	4	15	2.6	22	14.416
33	*Tectona grandis*	4	5	1.3	13	3.657
34	*Aphanamixis polystachya*	3	9	2.8	40	29.239
35	*Cassia roxburghii*	3	12	3.36	28.3	31.237
36	*Drypetes roxburghii*	3	10	4	30	57.329
37	*Ficus benjamina*	3	15	3.3	8.3	17.341
38	*Phyllanthus emblica*	3	20	2.4	14.3	7.202
39	*Psidium gujava*	3	10	2.5	9	5.24
40	*Alstonia scholaris*	2	30	5.7	51	122.97
41	*Delonix regia*	2	17	6.9	23.5	92.785
42	*Ficus religiosa*	2	20	6.75	30.5	129.266
43	*Flacourita montana*	2	15	2.35	32.5	11.258
44	*Magnolia champaca*	2	15	5.5	30.5	90.498
45	*Morinda citrifolia*	2	15	1.8	12.5	4.039
46	*Moringa oleifera*	2	20	2	11	2.712
47	*Myristica malabarica*	2	10	2	18	4.438
48	*Polyalthia longifolia*	2	10	2.1	35	8.739
49	*Pterocarpus marsupium*	2	20	5.6	34.5	71.102
50	*Terminalia arjuna*	2	25	7.5	36.5	153.934
51	*Anacardium occidentale*	1	30	4.3	22	12.538
52	*Annona reticulata*	1	5	2.4	40	7.101
53	*Borassus flabellifer*	1	40	3	30	8.322
54	*Butea monosperma*	1	25	5.3	25	17.316
55	*Cananga odorata*	1	2	1	12	0.179
56	*Careya arborea*	1	20	3.1	18	5.332
57	*Elaeocarpus ganitrus*	1	10	2.8	20	4.833
58	*Ficus racemosa*	1	10	3.2	24	7.575
59	*Madhuca longifolia*	1	5	1	10	0.38
60	*Nephelium lappaceum*	1	15	1	10	0.308
61	*Plumeria obtusa*	1	15	2	12	1.479
62	*Plumeria rubra*	1	15	2	12	1.479
63	*Pongamia pinnata*	1	5	2	22	2.712
64	*Scleropyrum pentandrum*	1	20	2.5	13	2.504
65	*Simarouba amara*	1	10	1	8	0.247
66	*Spondias dulcis*	1	10	4.9	31	22.941
67	*Tecoma castanifolia*	1	15	1.7	10	0.891
	Total	**576**	**-**	**-**	**-**	**6502.924**

23. ANNEXURE

List of Plants
FLORA

HERBS

1. *Achetaria azurea* (Linden) V.C. Souza [*Otacanthus caeruleus* Lindl.] –Plantaginaceae
2. *Achyranthes aspera* L.- Amaranthaceae
3. *Acorus calamus* L. – Acoraceae
4. *Aervalanata* (L.) Juss. ex Schult – Amaranthaceae
5. *Agave amica* (Medik.) Thiede & Govaerts
6. *Aglaomorpha quercifolia* (L.) Hovenkamp & S.Linds. – Polypodiaceae
7. *Aloe vera* (L.) Burm. f. - Xanthorrhoeaceae
8. *Alpinia calcarata*(Haw.) Roscoe - Zingiberaceae
9. *Alpinia purpurata* (Vieill.) K. Schum. – Zingiberaceae
10. *Alternanthera bettzickiana* (Regel) G. Nicholson
11. *Andrographis paniculata* (Burm. f.) Wall. ex Nees – Acanthaceae
12. *Bacopa monnieri* (L.) Pennell – Plantaginaceae
13. *Boerhavia diffusa* L. – Nyctaginaceae
14. *Caladium bicolor* (Aiton) Vent. – Araceae
15. *Calathea zebrine* (Sims) Lindl. – Marantaceae
16. *Canna x generalis* L.H.Bailey. – Cannaceae
17. *Catharanthus roseus* (L.) G. Don. – Apocynaceae
18. *Centella asiatica* (L.) Urban – Apiaceae
19. *Chrysothemis pulchella* (Donn ex Sims) Decne. – Gesneriaceae
20. *Clinacanthus nutans* (Burm.f.) Lindau – Acanthaceae
21. *Coleus amboinicus* Lour. – Lamiaceae
22. *Colocasia esculenta* (L.) Schott. – Araceae
23. *Costus pictus* D. Don – Costaceae
24. *Curcuma longa* L. – Zingiberaceae
25. *Dieffenbachia amoena* Bull. – Araceae
26. *Eclipta prostrata* (L.) L. – Asteraceae
27. *Etlingera elatior* (Jack) R.M. Sm. [*Phaeomeria magnifica* (Roscoe) K. Schum] –Zingiberaceae
28. *Gerbera* sp. – Asteraceae
29. *Heliconia psittacorum* L.f. – Heliconiaceae
30. *Heliconia rostrata* Ruiz & Pav. – Heliconiaceae
31. *Hemigraphis alternata* (Burm.f.) T.Anderson. – Acanthaceae
32. *Hemigraphis colorata* W. Bull. – Acanthaceae
33. *Hymenocallis littoralis* (Jacq.) Salisb. – Amaryllidaceae
34. *Impatiens balsamina* L. - Balsaminaceae
35. *Ipomoea batatas* (L.) Poir. – Convolvulaceae
36. *Leucas lavandulifolia* Sm. – Lamiaceae
37. *Maranta arundinacea* L. – Marantaceae
38. *Musa x paradisiaca* L. – Musaceae
39. *Nephrolepis exaltata* (L.) Schott – Lomariopsidaceae [Fern]
40. *Ocimum tenuiflorum* L. – Lamiaceae
41. *Ophiopogon japonicus* (Thunb.) Ker Gawl. – Asparagaceae
42. *Philodendron* 'Green emerald' - Araceae
43. *Phyllanthus amarus* Schum & Thonn. – Phyllanthaceae
44. *Plumbago zeylanica* L.- Plumbaginaceae
45. *Portulaca grandiflora* Hook. – Portulacaceae
46. *Ruellia simplex* C. Wright – Acanthaceae
47. *Ruellia tuberosa* L. – Acanthaceae
48. *Spathiphyllum* sp. – Araceae
49. *Spathoglottis plicata* Blume – Orchidaceae

50. *Stachytarpheta urticaefolia* (Rattail). – Verbenaceae
51. *Syngonium podophyllum* Schott – Araceae
52. *Tagetes erecta* L. – Asteraceae
53. *Tradescantia spathacea* Sw. [*Rhoeo discolor* (L'Her.) Hance] – Commelinaceae
54. *Tradescantia zebrina* (Schinz) D.R. Hunt – Commelinaceae
55. *Vernonia cinerea* (L.) Less. – Asteraceae
56. *Vetiveria zizanoides*(L.) Nash – Poaceae
57. *Wedelia trilobata* (L.) Hitchc. – Asteraceae
58. *Xanthosoma sagittifolium* (L.) Schott - Araceae
59. *Zephyranthes candida* (Lindl.) Herb. – Amaryllidaceae
60. *Zephyranthes carinata* Herb. – Amaryllidaceae

SHRUBS

1. *Acalypha hispida* Burm.f. – Euphorbiaceae
2. *Acalypha wilkesiana* Muell. - Arg. – Euphorbiaceae
3. *Adhatoda zeylanica* Medikus– Acanthaceae
4. *Ardisia elliptica* Thunb.
5. *Asparagus densiflorus* (Kunth) Jessop - Asparagaceae
6. *Bambusa heterostachya* (Munro) Holttum –Poaceae
7. *Barleria cristata* L. – Acanthaceae
8. *Bauhinia acuminata* L. – Fabaceae
9. *Bauhinia tomentosa* L. – Fabaceae
10. *Bixa orellana* L. – Bixaceae
11. *Breynia vitis-idaea* (Burm.f.) C.E.C.Fisch.
12. *Caesalpinia pulcherima (L.) Sw. – Fabaceae*
13. *Calotropis gigantea* (L.) R. Br.- Apocynaceae
14. *Calotropis procera* (Aiton) W.T.Aiton
15. *Carissa spinarum* L. - Apocynaceae
16. *Clerodendrum inerme* (L.) Gaertn. – Lamiaceae
17. *Codiaeum variegatum* (L.) Rumph. ex A. Juss. – Euphorbiaceae
18. *Cordyline fruticosa* (L.) A. Chev. [*C. terminalis* Kunth] – Asparagaceae
19. *Cuphea hyssopifolia* Kunth - Lythraceae
20. *Dracaena braunii* Engl. [*D. sanderiana* Sander] – Asparagaceae
21. *Dracaena godseffiana* Mast. – Asparagaceae
22. *Dracaena marginata* Lam. – Dracaenaceae
23. *Dracaena reflexa* Lam. – Asparagaceae
24. *Duranta erecta* L. [*D. plumieri* Jacq.] – Verbenaceae
25. *Euodia ridleyi* Hochr. – Rutaceae
26. *Euphorbia milii* Des Moul. – Euporbiaceae
27. *Euphorbia trigona* Mill. - Euphorbiaceae
28. *Excoecaria cochinchinensis* Lour. – Euphorbiaceae
29. *Gardenia jasminoides* Ellis – Rubiaceae
30. *Graptophyllum pictum* (L.) Griff. – Acanthaceae
31. *Hamelia patens* Jacq. – Rubiaceae
32. *Hibiscus rosa-sinensis* L. - Malvaceae
33. *Hibiscus schizopetalus* (Dyer) Hook.f. – Malvaceae
34. *Hydrangea macrophylla* (Thunb.) Ser. – Hydrangeaceae
35. *Ixora casei* Hance – Rubiaceae
36. *Ixora chinensis* Lam. – Rubiaceae
37. *Ixora finlaysoniana* Wall. ex G. Don – Rubiaceae
38. *Ixora* sp. – Rubiaceae
39. *Jatropa curcas*L. – Euporbiaceae
40. *Jatropa gossipifolia* L. – Euporbiaceae
41. *Jatropa integerrima* Jacq. – Euphorbiaceae

42. *Jatropha pandurifolia* Andr. - Euphorbiaceae
43. *Justicia gendarussa* Burm.f. – Acanthaceae
44. *Lantana camara* L. – Verbenaceae
45. *Lantana montevidensis* (Spreng.) Briq. - Verbenaceae
46. *Lawsonia inermis* L. – Lythraceae
47. *Leea indica* (Burm.f.) Merr. - Vitaceae
48. *Malvaviscus penduliflorus* DC. – Malvaceae
49. *Melicope denhamii* (Seem.) T.G. Hartley – Rutaceae
50. *Morinda citrifolia*L. – Rubiaceae
51. *Mussaenda philippica* A. Rich. – Rubiaceae
52. *Nerium oleander* L. – Apocynaceae
53. *Nymphaea nouchali* Burm. F. – Nymphaeaceae
54. *Osmoxylon lineare* (Merr.) Philipson – Araliaceae
55. *Pandanus tectorius* Sol. ex Balf.f. – Pandanaceae
56. *Phyllanthus myrtifolius* (Wight) Muell. - Arg. – Phyllanthaceae
57. *Pisonia umbellifera* (J.R. Forst. & G. Forst.) Seem – Nyctaginaceae
58. *Polyscias filicifolia* (C. Moore ex E. Fourn.) L.H. Bailey – Araliaceae
59. *Polyscias guilfoylei* (W. Bull) L.H. Bailey – Araliaceae
60. *Polyscias paniculata* (DC.) Baker – Araliaceae
61. *Polyscias scutellaria* (Burm.f.) Fosberg – Araliaceae
62. *Premna serratifolia* L. [*Premna obtusifolia* R. Br.] – Lamiaceae
63. *Pseuderanthemum carruthersii* (Seem.) Guillaumin – Acanthaceae
64. *Punica granatum* L. – Lythraceae
65. *Rauvolfia serpentina* (L.) Benth.ex Kurz – Apocynaceae
66. *Rhapis excels* (Thunb.) A. Henry ex Rehder – Arecaceae
67. *Ricinis communis* L. – Euporbiaceae
68. *Rosa* sp. – Rosaceae
69. *Rotheca serrata* (L.) Steane & Mabb. – Lamiaceae
70. *Russelia equisetiformis* Schltdl. – Plantaginaceae
71. *Sanchezia nobilis* Hook.f. – Acanthaceae
72. *Sansevieria trifasciata* hort. ex Prain – Dracaenaceae
73. *Schefflera arboricola* (Hayata) Kanehira - Aralliaceae
74. *Senna occidentalis* (L.) Link – Caesalpiniaceae
75. *Solanum torvum* Sw. – Solanaceae
76. *Syzygium australe* (J.C.Wendl. ex Link) B.Hyland – Myrtaceae
77. *Tabernaemontana divaricata* (L.) R.Br. ex Roem. &Schult. –Apocynaceae
78. *Tecoma castanifolia* (D.Don) Melch. – Bignoniaceae
79. *Tecoma fulva* (Cav.) G.Don – Bignoniaceae
80. *Tephrosia purpurea* (L.) Pers. – Fabaceae
81. *Tibouchina urvilleana* Cogn. – Melastomataceae
82. *Turnera subulata* Sm. – Passifloraceae
83. *Turnera ulmifolia* L. - Passifloraceae
84. *Vitex negundo* L. – Lamiaceae
85. *Woodfordia fruticosa* (L.) Kurz – Lythraceae
86. *Wrightia antidysenterica* (L.) R. Br. – Apocynaceae

CLIMBERS

1. *Acacia caesia* (L.) Willd. – Fabaceae
2. *Allamanda blanchetii* A. DC. [*A. violacea* Gardner] – Apocynaceae
3. Allamanda cathartica L. – Apocynaceae
4. *Antigonon leptopus* Hook. & Arn. – Polygonaceae
5. *Asparagus racemosus* Willd. - Asparagaceae
6. *Bougainvillea buttiana* Holttum & Standey – Nyctaginaceae
7. *Cissus repanda* Vahl – Vitaceae

8. *Clematis gouriana* Roxb. ex DC. –Ranunculaceae
9. *Clerodendrum splendens* G. Don – Lamiaceae
10. *Clitoria ternatea* L. – Fabaceae
11. *Coscinium fenestratum* (Gartn.) Colebr. – Menispermaceae
12. *Epipremnum pinnatum* (L.) Engl. Cv. 'Aureum' - Araceae
13. *Hemidesmus indicus* (L.) R. Br. – Apocynaceae
14. *Lonicera japonica* Thunb. – Caprifoliaceae
15. *Mussaenda laxa* (Hook.f.) Hutch. ex Gamble – Rubiaceae
16. *Piper longum* L.- Piperaceae
17. *Quisqualis indica* L. – Combretaceae
18. *Thunbergia fragrans* Roxb. – Acanthaceae
19. Thunbergia grandiflora (Roxb. ex Rottl.) Roxb. – Acanthaceae
20. *Tinospora cordifolia* (Willd.) Miers – Menispermaceae
21. *Marsdenia sylvestris* (Retz.) P.I.Forst. – Asclepiadaceae
22. *Passiflora foetida* L. – Passifloraceae
23. *Philodendron cordatum* Kunth ex Schott. – Araceae
24. *Syngonium podophyllum* Schott. – Araceae

TREES

1. *Acacia auriculiformis* Benth. – Fabaceae
2. *Acacia mangium* Willd. – Fabaceae
3. *Aegle marmelos* (L.) Correa – Rutaceae
4. *Ailanthus triphysa* (Dennst.) Alston – Simaroubaceae
5. *Albizia saman (Jacq.) Merr. [Samanea saman (Jacq.) Merr.] – Fabaceae*
6. *Alstonia scholaris* (L.) R. Br. – Apocynaceae
7. *Annona muricata* L. – Annonaceae
8. *Aphanamixis polystachya* (Wall.) R. N. Parker – Meliaceae
9. *Areca catechu* L. – Arecaceae
10. *Artocarpus heterophyllus* Lam. – Moraceae
11. *Artocarpus hirstus* Lam. – Moraceae
12. *Averrhoa bilimbi* L. – Oxalidaceae
13. *Azadirachta indica* A. Juss. -Meliaceae
14. *Bambusa vulgaris* Schrad. – Poaceae
15. *Brownia coccinea* Jacq. – Fabaceae
16. *Butea monosperma* (Lam.) Taub. – Fabaceae
17. *Callistemon citrinus* (Curtis) Skeels [C. lanceolatus (Sm.) DC.] - Myrtaceae
18. *Careya arborea* Roxb. – Lecythidaceae
19. *Carica papaya* L. – Caricaceae
20. *Caryota urens* L. – Arecaceae
21. *Cascabela thevetia* (L.) Lippold – Apocynaceae
22. *Cassia fistula* L. – Fabaceae
23. *Cassia roxburghii* DC. [C. marginata Roxb.] – Fabaceae
24. *Citrus aurantifolia* (Christm. &Panz.) Swingle – Rutaceae
25. *Cochlospermum religiosum* (L.) Alston - Bixaceae
26. *Cocos nucifera* L. – Arecaceae
27. *Cyrtostachys renda* Blume – Arecaceae [Red palm]
28. *Dalbergia latifolia* Roxb. – Fabaceae
29. *Delonix regia (Hook.) Raf. – Fabaceae*
30. *Drypetes roxburghii* (Wall.) Hurusawa – Putranjivaceae
31. *Dypsis lutescens* (H. Wendl.) Beentije& J. Dransf. – Arecaceae
32. *Elaeocarpus ganitrus* Roxb. Ex G. Don – Elaeocarpaceae
33. *Erythrina variegata* L. [E. indica Lam.] – Fabaceae
34. *Ficus benjamina* L. – Moraceae
35. *Ficus exasperata* Vahl. – Moraceae

36. *Ficus hispida* Roxb. ex Wall. – Moraceae
37. *Ficus racemosa* L. – Moraceae
38. *Ficus religiosa* L. – Moraceae
39. *Flacourtia montana* J. Graham – Salicaceae
40. *Garcinia indica* (Thouars) Choisy – Clusiaceae
41. *Gmelina arborea* L. – Lamiaceae
42. *Grevillea robusta* Cunn. ex R. Br. – Proteaceae
43. *Hopea ponga* (Dennst.) Mabb. - Dipterocarpaceae
44. *Lagerstroemia speciosa (L.) Pers. – Lythraceae*
45. *Leucaena leucocephala* (Lam.) de Wit. – Mimosaceae
46. *Livistona rotundifolia* (Lam.) Mart. – Arecaceae
47. *Macaranga peltata* (Roxb.) Muell. -Arg. – Euphorbiaceae
48. *Magnolia champaca* (L.) Baill. ex Pierre [Micheliachampaka L.] – Magnoliaceae
49. *Mangifera indica L. – Anacardiaceae*
50. *Melaleuca leucadendron* L. – Myrtaceae
51. *Mesua ferrea* L. – Calophyllaceae
52. *Mimusops elengi* L. – Sapotaceae
53. *Morinda citrifolia* L. – Rubiaceae
54. *Moringa oleifera* Lam. – Moringaceae
55. *Muntingia calabura* L. – Muntingiaceae
56. *Myristica malabarica* Lam. – Myristicaceae
57. *Neolamarckia cadamba* (Roxb.) Bosser – Rubiaceae
58. *Nephelium lappaceum* L. – Sapindaceae
59. *Persea macrantha* (Nees) Kosterm. – Lauraceae
60. *Phyllanthus acidus* (L.) Skeels – Phyllanthaceae
61. *Phyllanthus emblica* L. – Phyllanthaceae
62. *Pimenta dioica* (L.) Merr. – Myrtaceae
63. *Plumeria obtusa* L. – Apocynaceae
64. *Plumeria rubra* L. – Apocynaceae
65. *Polyalthia longifolia* (Sonn.) Thwaites – Annonaceae
66. *Premna serratifolia* Blanco. – Lamiaceae
67. *Prosopis cineraria* (L.) Druce - Fabaceae
68. *Pterocarpus marsupium* Roxb. – Fabaceae
69. *Ptychosper mamacarthurii* (H. Wendl. ex H.J. Veitch) H. Wendl. & Hook.f. - Arecaceae
70. *Roystonea regia (Kunth) O.F. Cook – Arecaceae*
71. *Santalum album* L. – Santalaceae
72. *Saracaasoca* (Roxb.) Willd. – Fabaceae
73. *Schefflera actinophylla* (Endl.) Harms - Araliaceae
74. *Senna siamea* (Lam.) H.S. Irwin & Barneby [*Cassia siamea* Lam.] – Fabaceae
75. *Spathodea campanulata* P. Beauv. – Bignoniaceae
76. *Swietenia macrophylla* King – Meliaceae
77. *Syzygium cumini* (L.) Skeels – Myrtaceae
78. *Syzygium jambos* (L.) Alston – Myrtaceae
79. *Syzygium samarangense* (Blume) Merr. & L.M. Perry – Myrtaceae
80. *Tabebuia aurea* (Silva Manso) Benth. &Hook.f. ex S. Moore [*T. argentea* (Bureau & K. Schum.) Britton – Bignoniaceae
81. *Terminalia arjuna* (Roxb.) Wight &Arn. – Combretaceae
82. *Terminalia catappa* L. – Combretaceae
83. *Terminalia chebula* Retz. - Combretaceae
84. *Thevetia peruviana* (Pers.) K. Schum. – Apocynaceae
85. *Wrightia tinctoria* (Roxb.) R. Br. – Apocynaceae

WEEDS

1. *Adiantum lunulatum* Burm. - Pteridaceae
2. *Ageratum conyzoides* L. - Asteraceae
3. *Alternanthera ficoidea* (L.) Sm. - Amaranthaceae
4. *Alysicarpus bupleurifolius* (L.) DC. - Fabaceae
5. *Alysicarpus vaginalis* (L.) DC. - Fabaceae
6. *Amaranthus hybridus* L. - Amaranthaceae
7. *Asystasia variabilis* Trimen - Acanthaceae
8. *Axonopus compressus* (Sw.) P. Beauv. – Poaceae
9. *Blumea* sp. - Asteraceae
10. *Brachiaria subquadripara* (Trin.) Hitchc. – Poaceae
11. *Cheilanthes tenuifolia* (Burm.f.) Sw. – Pteridaceae
12. *Cheilocostus speciosus* (J. Koenig) C. Specht – Costaceae
13. *Chloris barbata* Sw. – Poaceae
14. *Christella dentata* (Forssk.) Brownsey & Jermy – Thelypteridaceae
15. *Cleome rutidosperma* DC. - Cleomaceae
16. *Colocasia esculenta* (L.) Schott - Araceae
17. *Commelina diffusa* Burm.f. – Commelinaceae
18. *Crotalaria pallida* Aiton – Fabaceae
19. *Cuscuta chinensis* Lam. - Convolvulaceae
20. *Cyanotis cristata* (L.) D. Don - Commelinaceae
21. *Cyanthillium cinereum* (L.) H. Rob. - Asteraceae
22. *Cynodon dactylon* (L.) Pers. - Poaceae
23. *Cyperus compressus* L. – Cyperaceae
24. *Cyperus distans*L.f. - Cyperaceae
25. *Cyperus iria* L. - Cyperaceae
26. *Cyperus javanicus* Houtt. – Cyperaceae
27. *Cyperus rotundus* L. - Cyperaceae
28. *Cyperus squarrosus* L. - Cyperaceae
29. *Dactyloctenium aegyptium* (L.) Willd. - Poaceae
30. *Desmodium scorpiurus* (Sw.) Desv. - Fabaceae
31. *Desmodium triflorum* (L.) DC. - Fabaceae
32. *Digitaria bicornis* (Lam.) Roem. &Schult. - Poaceae
33. *Digitaria longiflora* (Retz.) Pers. - Poaceae
34. *Digitaria setigera* Roth – Poaceae
35. *Diploclisia glaucescens* (Blume) Diels - Cucurbitaceae
36. *Drynaria quercifolia* (L.) J. Sm. - Polypodiaceae
37. *Echinochloa colona* (L.) Link - Poaceae
38. *Eclipta prostrata* (L.) L. - Asteraceae
39. *Elatostema cuneatum* Wight - Urticaceae
40. *Eleusine indica* (L.) Gaertn. -Poaceae
41. *Elytranthe parasitica* (L.) Danser - Loranthaceae
42. *Emilia sonchifolia* (L.) DC. - Asteraceae
43. *Eragrostis amabilis* (L.) Wight & Arn. – Poaceae
44. *Eragrostis nutans* (Retz.) Nees ex Steud. – Poaceae
45. *Eragrostis unioloides* (Retz.) Nees ex Steud. - Poaceae
46. *Euphorbia hirta* L. - Euphorbiaceae
47. *Evolvulus alsinoides* (L.) L. - Convolvulaceae
48. *Evolvulus nummularius* (L.) L. - Convolvulaceae
49. *Fimbristlis dichotoma* (L.) Vahl - Cyperaceae
50. *Hybanthus enneaspermus* (L.) F. Muell. – Violaceae
51. *Impatiens minor* (DC.) Bennet – Balsaminaceae
52. *Ipomoea triloba* L. - Convolvulaceae
53. *Kyllinga brevifolia* Rottb. - Cyperaceae

54. *Kyllinga nemoralis* (J.R. Forst. & G. Forst.) Dandy - Cyperaceae
55. *Laportea interrupta* (L.) Chew – Urticaceae
56. *Lindernia antipoda* (L.) Alston – Linderniaceae
57. *Lindernia ciliata* (Colsm.) Pennell – Linderniaceae
58. *Lindernia crustacea* (L.) F. Muell. – Linderniaceae
59. *Ludwigia hyssopifolia* (G. Don) Exell - Onagraceae
60. *Mecardonia procumbens* (Mill.) Small - Plantaginaceae
61. *Mimosa pudica* L. – Fabaceae
62. *Mitracarpus hirtus* (L.) DC. - Rubiaceae
63. *Mucuna pruriens* (L.) DC. - Fabaceae
64. *Murdannia nudiflora* (L.) Brenan - Commelinaceae
65. *Oldenlandia corymbosa* L. – Rubiaceae
66. *Osbeckia muralis* Naudin – Melastomataceae
67. *Oxalis corniculata* L. – Oxalidaceae
68. *Panicum repens* L. – Poaceae
69. *Pepromia pellucida* (L.) Kunth – Piperaceae
70. *Phyllanthus amarus* Schumach. & Thonn. – Phyllanthaceae
71. *Phyllanthus debilis* Klein ex Willd. – Phyllanthaceae
72. *Phyllanthus tenellus* Roxb. - Phyllanthaceae
73. *Phyllanthus urinaria* L. – Phyllanthaceae
74. *Phyllanthus virgatus* G. Forst. – Phyllanthaceae
75. *Physalis angulata* L. - Solanaceae
76. *Pilea microphylla* (L.) Liebm. – Urticaceae
77. *Pityrogramma calomelanos* (L.) Link – Pteridaceae
78. *Pogonatherum crinitum* (Thunb.) Kunth – Poaceae
79. *Pteris confusa* T.G. Walker – Pteridaceae
80. *Pteris vittata*L. - Pteridaceae
81. *Pycreus pumilus* (L.) Nees – Cyperaceae
82. *Rotala malampuzhensis* Nair ex C.D.K. Cook - Lythraceae
83. *Rungia pectinata* (L.) Nees - Acanthaceae
84. *Scoparia dulcis* L. – Plantaginaceae
85. *Selaginella ciliaris* (Retz.) Spring - Selaginellaceae
86. *Sidaalnifolia* L. - Malvaceae
87. *Spermacoce exilis* (L.O. Williams) C.D. Adams ex W.C. Burger & C.M. Taylor - Rubiaceae
88. *Sporobolus diandrus* (Retz.) P. Beauv. - Poaceae
89. *Sporobolus tenuissimus* (Schrank.) Kuntze - Poaceae
90. *Stemodia verticillata* (Mill.) Hassl. – Plantaginaceae
91. *Stylosanthes humilis* Kunth - Fabaceae
92. *Synedrella nodiflora* (L.) Gaertn. - Asteraceae
93. *Tridax procumbens* L. - Asteraceae
94. *Urena sinuata* L. - Malvaceae
95. *Zoysia matrella* (L.) Merr. – Poaceae

Fig 28: Arecanut arboretum

Fig 29: Flowering plants on the campus

Fig 30: Fruiting plants on the campus

List of Animals

ANNELIDA

1. *Eudrilus eugenia* (African night crawler)
2. *Pontoscolex corethrurus* (Earth worm)

ARTHROPODA

1. *Heterometrus bengalensis* (Scorpion)
2. *Nephila pilipes* (Gaint golden orb weaver)
3. *Argiope anasuja* (Signature spider)
4. *Bavia*sp. (Jumping spiders)
5. *Tetragnatha* sp. (Stretch spiders)
6. *Anepsion maritatum* (Spider)
7. *Menemerus bivittatus* (Gray wall jumper)
8. *Myrmarachne plataleoides* (Jumping spider)
9. *Phidippus* sp. (Spider)
10. *Aethriamanta brevipennis* (Scarlet marsh hawk)
11. *Neurothemis fulvia* (Fulvous Forest skimmer)
12. *Neurothemis tullia* (Pied paddy skimmer)
13. *Rhyothemis variegata* (Common picture wing)
14. *Trithemis pallidinervis* (Long-legged marsh glider)
15. *Ictinogomphus rapax* (Common clubtail)
16. *Copera marginipes* (Yellow Bush Dart)
17. *Diabolocatantops* sp. (Acridid grasshopper)
18. *Atractomorpha* sp. (Grashopper)
19. *Euconocephalus* sp. (Katydid)
20. *Velarifictorus micado* (Japanese burrowing cricket)
21. *Periplaneta americana* (Cockroach)
22. *Creobroter pictipennis* (Indian flower mantis)
23. *Purana tigrina* (Cicada)
24. *Oryctes rhinoceros* (Coconut rhinoceros beetle)
25. *Holotrichia* sp. (Chafer beetles)
26. *Copris* sp. (Dung beetle)
27. *Musca domestica* (Housefly)
28. *Aedes* sp. (Mosquito)
29. *Anopheles* sp. (Mosquito)
30. *Vespa* sp. (Wasp)
31. *Apis* sp. (Bee)
32. *Ocecophylla smaragdina* (Asian weaver ant)
33. *Camponotus* sp. (Carpenter ant)
34. *Odontomachus haematodus* (Trap-jaw ants)
35. *Telicota bambusa* (Dark Palm Dart)
36. *Suastusgremius* (Indian Palm Bob)
37. *Tagiades litigiosa* (Water Snow Flat)
38. *Tagiades gana* (Suffused Snow Flat)
39. *Borbo cinnara* (Rice Swift)
40. *Iambrix salsala* (Chestnut Bob)
41. *Aeromachus pygmaeus* (Pygmy Scrub Hopper)
42. *Psolos fuligo* (Dusky Partwing)
43. *Papilio polytes* (Common Mormon)
44. *Graphium agamemnon* (Tailed Jay)
45. *Graphium teredon* (Narrow-banded Bluebottle)
46. *Papilio demoleus* (Lime Butterfly)
47. *Papilio clytia* (Common Mime)
48. *Papilio polymnestor* (Blue Mormon)
49. *Pachliopta aristolochiae* (Common Rose)

50. *Troides minos* (Southern Birdwing)
51. *Catopsilia pomona* (Common Emigrant)
52. *Eurema hecabe* (Common Grass Yellow)
53. *Eurema blanda* (Three-spot Grass Yellow)
54. *Delias eucharis* (Common Jezebel)
55. *Pareronia hippia* (Common Wanderer)
56. *Arhopala centaurus* (Centaur Oakblue)
57. *Surendra quercetorum* (Common Acacia Blue)
58. *Jamides celeno* (Common Cerulean)
59. *Caleta decidia* (Angled Pierrot)
60. *Castalius rosimon* (Common Pierrot)
61. *Acytolepis puspa* (Common Hedge Blue)
62. *Neopithecops zalamora* (Quaker)
63. *Spindasis vulcanus* (Common Silverline)
64. *Bindahara moorei* (Blue-bordered Plane)
65. *Zizina otiss* (Lesser Grass Blue)
66. *Euploea core* (Common Crow)
67. *Tirumala septentrionis* (Dark Blue Tiger)
68. *Danaus chrysippus* (Plain Tiger)
69. *Danaus genutia* (Striped Tiger)
70. *Mycalesis perseus* (Common bushbrown)
71. *Ypthima huebneri* (Common Fourring)
72. *Orsotriaena medus* (Medus Brown)
73. *Melanitis leda* (Common Evening Brown)
74. *Cupha erymanthis* (Rustic)
75. *Elymnias caudata* (Tailed Palmfly)
76. *Cirrochora thais* (Tamil Yeoman)
77. *Acrea terpsicore* (Tawny Coster)
78. *Moduza procris* (Commander)
79. *Euthalia aconthea* (Common Baron)
80. *Parthenos sylvia* (Clipper)
81. *Junonia iphita* (Chocolate Pansy)
82. *Junonia atlites* (Grey Pansy)
83. *Junonia lemonias* (Lemon Pansy)
84. *Hypolimnas bolina* (Great Eggfly)
85. *Neptis hylas* (Common Sailer)
86. *Ariadne ariadne* (Angled Castor)
87. *Harpaphe haydeniana* (Yellow spotted millipede)
88. *Trigoniulus corallines* (Rusty millipede)

MOLLUSCA

1. *Mariaella dussumieri* (Slug)
2. *Macrochlamys indica* (Snail)

AMPHIBIA

1. *Duttaphrynus melanostictus* (Common Indian toad)
2. *Euphlyctis cyanophlyctis* (Skittering frog)
3. *Hoplobatrachu stigerinus* (Indian bull-frog)
4. *Pseudophilautus wynaadensis* (Wyanad bush-frog)

REPTILES

1. *Eutropis carinata* (Common skink)
2. *Calotes versicolor* (Oriental Garden lizard)
3. *Hemidactylus frenatus* (Common house gecko)
4. *Varanus bengalensis* (Common Indian monitor lizard)

5. *Ptyas mucosa* (Oriental rat-snake)
6. *Dendrelaphis tristis* (Bronze-back tree snake)
7. *Fowlea piscator* (Checkered keelback)
8. *Ahaetulla nasuta* (Green vine snake)
9. *Amphiesma stolatum* (Striped keelback)
10. *Coelognathus helena* (Common trinket snake)
11. *Naja naja* (Spectacled cobra)

AVES

1. *Pavo cristatus (Indian peafowl)*
2. *Gallus sonneratii (Grey jungle fowl)*
3. *Columba livia (Rock pigeon)*
4. *Streptopelia chinensis (Spotted dove)*
5. *Treron phoenicopterus (Yellow-footed green pigeon)*
6. *Hierococcyx varius (Common Hawk Cuckoo)*
7. *Edynamys scolopaceus (Asian koel)*
8. *Amaurornis phoenicurus (White breasted waterhen)*
9. *Ciconia episcopus (Wooly necked stork)*
10. *Nycticorax nycticorax (Black-crowned night-heron)*
11. *Ardeola grayii (Indian pond heron)*
12. *Bubulcus ibis (Cattle egret)*
13. *Ardea cinerea (Grey heron)*
14. *Threskiornis melanocephalus (Black headed ibis)*
15. *Phalacrocorax fuscicollis (Indian cormorant)*
16. *Anhinga melanogaster (Oriental darter)*
17. *Vanellus indicus (Red wattled lapwing)*
18. *Pernis ptilorhynchus (Oriental honey buzzard)*
19. *Spilornis cheela (Crested serpent eagle)*
20. *Haliastur indus (Brahminy kite)*
21. *Milvus migrans (Black kite)*
22. *Accipiter badius (Shikra)*
23. *Tyto alba (Barn owl)*
24. *Dinopium Benghalense (Black-rumpedflameback woodpecker)*
25. *Psilopogon viridis (White cheeked barbet)*
26. *Merops orientalis (Green bee-eater)*
27. *Coracias benghalensis (Indian roller)*
28. *Alcedo atthis (Common kingfisher)*
29. *Ceryle rudis (Pied kingfisher)*
30. *Halcyon smyrnensis (White throated kingfisher)*
31. *Loriculus vernalis (Vernal hanging parrot)*
32. *Psittacula cyanocephala (Plum headed parakeet)*
33. *Psittacula krameri (Rose ringed parakeet)*
34. *Pitta brachyura (Indian pitta)*
35. *Oriolus kundoo (Indian golden oriole)*
36. *Aegithina tiphia (Common iora)*
37. *Dicrurus macrocercus (Black drongo)*
38. *Lanius cristatus (Brown shrike)*
39. *Corvus splendens (House crow)*
40. *Corvus macrorhynchos (Jungle crow)*
41. *Dendrocitta vagabunda (Rufous Treepie)*
42. *Terpsiphone paradisi (Indian paradise flycatcher)*
43. *Leptocoma zeylonica (Purple rumped sunbird)*
44. *Cinnyrislotenius (Loten's sunbird)*
45. *Arachnothera longirostrata (Little spider hunter)*
46. *Lonchura striata (White breasted munia)*

47. *Lonchura punctulata (Scaly breasted munia)*
48. *Passer domesticus (House sparrow)*
49. *Anthus rufulus (Paddy field pipit)*
50. *Motacilla maderaspatensis (White browed wagtail)*
51. *Mirafra erythroptera (Indian bush lark)*
52. *Prinia hodgsonii (Grey breasted prinia)*
53. *Prinia socialis (Ashy prinia)*
54. *Orthotomus sutorius (Common tailorbird)*
55. *Hirundo smithii (Wire-tailed swallow)*
56. *Rubigula gularis (Flame throated bulbul)*
57. *Pycnonotus jocosus (Red whiskered bulbul)*
58. *Pycnonotus cafer (Red vented bulbul)*
59. *Pycnonotus sinensis (Greater coucal)*
60. *Argya caudata (Common babbler)*
61. *Acridothere stristis(Common myna)*
62. *Copsychus saularis(Oriental magpie robin)*
63. *Saxicola caprata (Pied bush chat)*
64. *Geokichla citrina (Orange headed thrush)*

MAMMALS

1. *Pteropus giganteus (Indian flying fox)*
2. *Paradoxurus hermaphrodites (Toddy palm civet)*
3. *Herpestes edwardsii (Indian grey mongoose)*
4. *Funambulus palmarum (Three striped palm squirrel)*
5. *Hystrix indica (Indian porcupine)*
6. *Canis lupus familiaris(Dog)*
7. *Felis catus (Cat)*

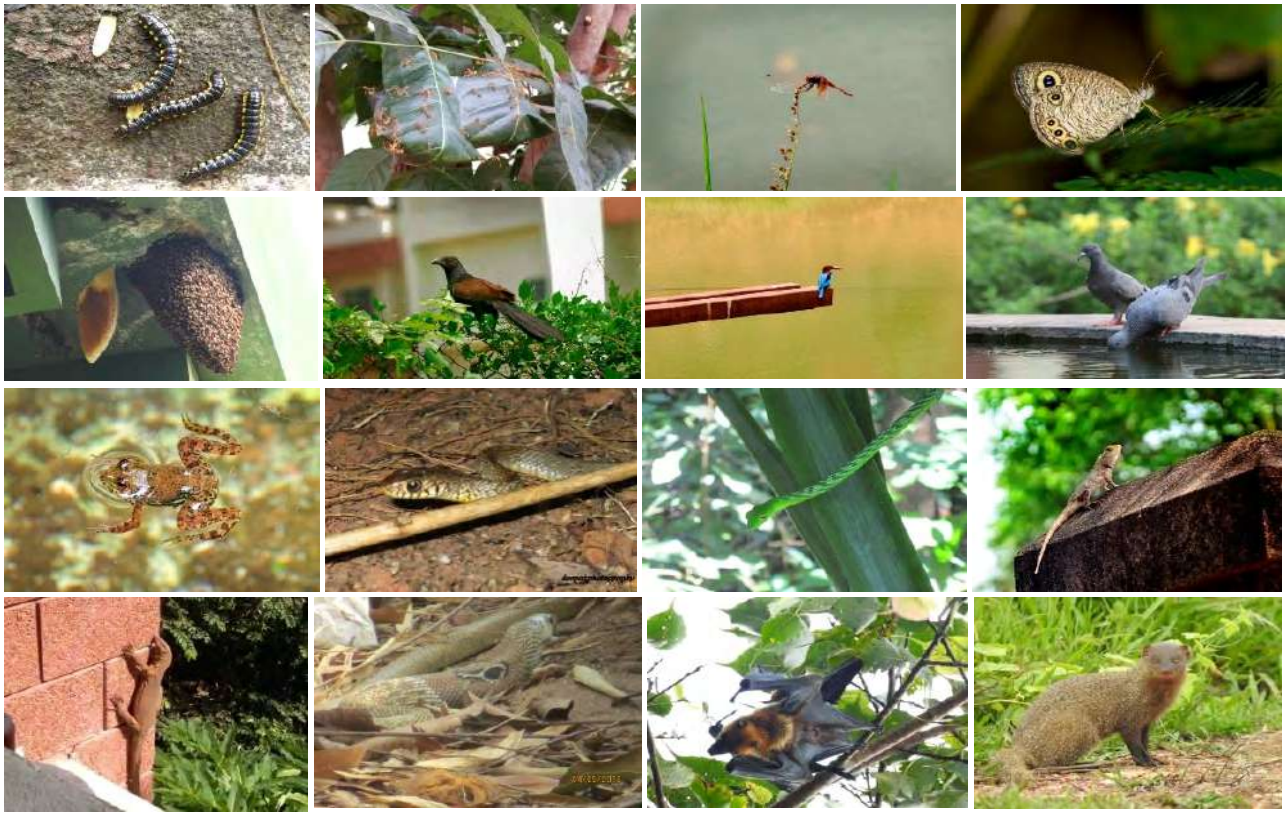


Fig 31: Fauna on the campus

List of Macrofungi

1. *Agaricus sp.*
2. *Amylocarpus campbellii*
3. *Auricularia auricula-judae*
4. *Chlorophyllum molybdites*
5. *Conocybe crispa*
6. *Coprinus disseminatus*
7. *Cystoagaricus trisulphuratus*
8. *Dacryopinax spathularia*
9. *Daldinia concentrica*
10. *Ganoderma applanatum*
11. *Ganoderma lucidum*
12. *Gymnopilus lateritius*
13. *Gymnopilus terricola*
14. *Hexagonia tenuis*
15. *Ileodictyon gracile*
16. *Lentinus dicholamellatus*
17. *Lentinus squarrosulus*
18. *Lenzites betulina*
19. *Lycoperdon mammiforme*
20. *Lycoperdon utriforme*
21. *Marasmiellus ignobilis*
22. *Marasmiellus stenophyllus*
23. *Marasmiellus subaurantiacus*
24. *Marasmius androsaceus*
25. *Marasmius haematocephalus*
26. *Marsmius sp.*
27. *Microporus vernicipes*
28. *Mycena rosea*
29. *Omphalotus olearius*
30. *Phallus atrovolvatus*
31. *Phallus duplicatus*
32. *Phlebopus marginatus*
33. *Polyporus sp.*
34. *Pycnoporus cinnabarinus*
35. *Schizophyllum commune*
36. *Scutellinia setosa*
37. *Termitomyces fuliginosus*
38. *Tetrapyrgos nigripes*
39. *Volvariella bombycina*
40. *Xylaria multiplex*

Fig 32: Macrofungi of the campus

Tree Audit

Scientific name	Common name	Lat.	Long.
Acacia auriculiformis	Acacia	12.80916	74.87968
Acacia auriculiformis	Acacia	12.80808	74.87807
Acacia auriculiformis	Acacia (15)	12.80076	74.88784
Alstonia scholaris	Devil's tree	12.81207	74.88095
Alstonia scholaris	Devil's tree	12.81217	74.88095
Anacardium occidentale	Cashew	12.80936	74.87931
Annona reticulata	Ramphala	12.80929	74.87922
Aphanamixis polystachya	Rohitaka	12.81118	74.88067
Aphanamixis polystachya	Rohitaka	12.81176	74.88078
Aphanamixis polystachya	Rohitaka	12.81185	74.88096
Areca catechu	Areca nut (450)	12.81101	74.87985
Artocarpus heterophyllus	Jack fruit	12.81637	74.88047
Artocarpus heterophyllus	Jack fruit	12.81108	74.88059
Artocarpus heterophyllus	Jack fruit	12.81115	74.88066
Artocarpus heterophyllus	Jack fruit	12.81099	74.88081
Artocarpus heterophyllus	Jack fruit	12.81187	74.88067
Artocarpus heterophyllus	Jack fruit	12.81179	74.88075
Artocarpus heterophyllus	Jack fruit	12.81214	74.88101
Artocarpus heterophyllus	Jack fruit	12.81201	74.88164
Artocarpus heterophyllus	Jack fruit	12.81226	74.88171
Artocarpus heterophyllus	Jack fruit	12.81301	74.88113
Artocarpus heterophyllus	Jack fruit	12.81128	74.88109
Artocarpus heterophyllus	Jack fruit	12.81085	74.88108
Artocarpus heterophyllus	Jack fruit	12.80881	74.87956
Artocarpus heterophyllus	Jack fruit	12.80886	74.87949
Artocarpus heterophyllus	Jack fruit	12.80881	74.87946
Artocarpus heterophyllus	Jack fruit	12.80875	74.87936
Artocarpus heterophyllus	Jack fruit	12.80719	74.87864
Artocarpus heterophyllus	Jack fruit	12.80722	74.87787
Artocarpus heterophyllus	Jack fruit	12.80832	74.87787
Artocarpus heterophyllus	Jack fruit	12.80974	74.87941
Artocarpus hirsutus	Wild jack	12.81179	74.87917
Artocarpus hirsutus	Wild jack	12.81117	74.87998
Artocarpus hirsutus	Wild jack	12.81098	74.88079
Artocarpus hirsutus	Wild jack	12.81086	74.88081
Artocarpus hirsutus	Wild jack	12.81185	74.8806
Artocarpus hirsutus	Wild jack	12.81126	74.88102
Artocarpus hirsutus	Wild jack	12.80863	78.88792
Bambusa vulgaris	Bamboo (500)	12.80929	74.87985
Borassus flabellifer	Borassus	12.80714	74.87848
Butea monosperma	Muttuga	12.80958	74.87912
Callistemon citrinus	Bottle brush	12.81186	74.88162
Callistemon citrinus	Bottle brush	12.81188	74.88171
Callistemon citrinus	Bottle brush	12.81197	74.88178
Callistemon citrinus	Bottle brush	12.81225	74.88158
Callistemon citrinus	Bottle brush	12.81227	74.88157
Callistemon citrinus	Bottle brush	12.81106	74.88082
Callistemon citrinus	Bottle brush	12.81101	74.88088
Callistemon citrinus	Bottle brush	12.81076	74.88081
Callistemon citrinus	Bottle brush	12.81082	74.88092
Callistemon citrinus	Bottle brush	12.81083	74.88092
Cananga odorata	Ylang Ylang	12.80762	74.87789
Careya arborea	Wild guava	12.80947	74.87937
Caryota urens	Fish tail palm	12.81177	74.88074
Caryota urens	Fish tail palm	12.81178	74.88077

Caryota urens	Fish tail palm	12.81177	74.88081
Caryota urens	Fish tail palm	12.81171	74.88095
Caryota urens	Fish tail palm	12.81175	74.88093
Caryota urens	Fish tail palm	12.81175	74.88093
Caryota urens	Fish tail palm	12.81175	74.88093
Caryota urens	Fish tail palm	12.81171	74.88097
Caryota urens	Fish tail palm	12.81179	74.88098
Caryota urens	Fish tail palm	12.81182	74.88095
Caryota urens	Fish tail palm	12.81184	74.88062
Caryota urens	Fish tail palm	12.81185	74.88068
Caryota urens	Fish tail palm	12.81185	74.88068
Caryota urens	Fish tail palm	12.81185	74.88068
Caryota urens	Fish tail palm	12.81185	74.88070
Caryota urens	Fish tail palm	12.81192	74.88080
Caryota urens	Fish tail palm	12.81184	74.88081
Caryota urens	Fish tail palm	12.81183	74.88081
Caryota urens	Fish tail palm	12.81191	74.88084
Caryota urens	Fish tail palm	12.81191	74.88083
Caryota urens	Fish tail palm	12.81119	74.88086
Caryota urens	Fish tail palm	12.81119	74.88086
Caryota urens	Fish tail palm	12.81195	74.88085
Caryota urens	Fish tail palm	12.81195	74.88085
Caryota urens	Fish tail palm	12.81195	74.88085
Caryota urens	Fish tail palm	12.81112	74.88108
Caryota urens	Fish tail palm	12.81121	74.88098
Caryota urens	Fish tail palm	12.81211	74.88093
Caryota urens	Fish tail palm	12.81211	74.88093
Caryota urens	Fish tail palm	12.81214	74.88089
Caryota urens	Fish tail palm	12.81208	74.88095
Caryota urens	Fish tail palm	12.81206	74.88077
Caryota urens	Fish tail palm	12.81218	74.88095
Caryota urens	Fish tail palm	12.80764	74.87938
Caryota urens	Fish tail palm	12.80741	74.87831
Cassia fistula	Golden shower tree	12.81114	74.88046
Cassia fistula	Golden shower tree	12.81089	74.88081
Cassia fistula	Golden shower tree	12.81182	74.88072
Cassia fistula	Golden shower tree	12.81194	74.88097
Cassia fistula	Golden shower tree	12.81112	74.88113
Cassia fistula	Golden shower tree	12.80745	74.87830
Cassia fistula	Golden shower tree	12.80748	74.87822
Cassia fistula	Golden shower tree	12.80752	74.87806
Cassia roxburghii	Rose cassia	12.81114	74.88046
Cassia roxburghii	Rose cassia	12.81099	74.88081
Cassia roxburghii	Rose cassia	12.81082	74.88070
Cocos nucifera	Coconut tree	12.81232	74.88172
Cocos nucifera	Coconut tree	12.81242	74.88167
Cocos nucifera	Coconut tree	12.81249	74.88166
Cocos nucifera	Coconut tree	12.81252	74.88163
Cocos nucifera	Coconut tree	12.81266	74.88156
Cocos nucifera	Coconut tree	12.81271	74.88149
Cocos nucifera	Coconut tree	12.80724	74.87876
Cocos nucifera	Coconut tree	12.80966	74.87877
Cocos nucifera	Coconut tree	12.80966	74.87876
Cocos nucifera	Coconut tree	12.80966	74.87876
Cocos nucifera	Coconut tree (5)	12.80961	74.87904
Cyrtostachys renda	Red palm (10)	12.80772	74.87892
Dalbergia latifolia	Rose wood/Beete	12.81118	74.87993
Dalbergia latifolia	Rose wood/Beete	12.81118	74.88021

Dalbergia latifolia	Rose wood/Beete	12.80881	74.87935
Dalbergia latifolia	Rose wood/Beete	12.80881	74.87932
Dalbergia latifolia	Rose wood/Beete	12.80878	74.87931
Dalbergia latifolia	Rose wood/Beete	12.80877	74.87893
Delonix regia	May flower	12.80751	74.87877
Delonix regia	May flower	12.80931	74.87844
Drypetes roxburghii	Putranjeeva	12.81114	74.88126
Drypetes roxburghii	Putranjeeva	12.81114	74.88126
Drypetes roxburghii	Putranjeeva	12.81115	74.88124
Elaeocarpus ganitrus	Rudraksha	12.81117	74.88123
Ficus benjamina	Weeping fig	12.81184	74.88004
Ficus benjamina	Weeping fig	12.80807	74.87847
Ficus benjamina	Weeping fig	12.80976	74.87877
Ficus racemosa	Cluster fig	12.81206	74.88105
Ficus reliogiosa	Sacred fig	12.81114	74.88006
Ficus reliogiosa	Sacred fig	12.81261	74.88135
Flacourita jangomas	Mountain sweet thorn	12.81102	74.88082
Flacourita jangomas	Mountain sweet thorn	12.81097	74.88088
Garcinia indica	Kokam	12.81158	74.87963
Garcinia indica	Kokam	12.81158	74.87968
Garcinia indica	Kokam	12.81161	74.87969
Garcinia indica	Kokam	12.81165	74.87975
Garcinia indica	Kokam	12.81269	74.87978
Garcinia indica	Kokam	12.81175	74.87985
Garcinia indica	Kokam	12.81179	74.87989
Garcinia indica	Kokam	12.81176	74.87993
Garcinia indica	Kokam	12.81118	74.88004
Garcinia indica	Kokam	12.81184	74.88005
Garcinia indica	Kokam	12.81153	74.88047
Garcinia indica	Kokam	12.81097	74.88066
Garcinia indica	Kokam	12.81184	74.88087
Garcinia indica	Kokam	12.80878	74.87945
Lagerstroemia speciosa	Pride of India	12.81183	74.88061
Lagerstroemia speciosa	Pride of India	12.81191	74.88086
Lagerstroemia speciosa	Pride of India	12.81195	74.88085
Lagerstroemia speciosa	Pride of India	12.81195	74.88085
Lagerstroemia speciosa	Pride of India	12.81187	74.88089
Lagerstroemia speciosa	Pride of India	12.81094	74.88098
Lagerstroemia speciosa	Pride of India	12.81097	74.88107
Lagerstroemia speciosa	Pride of India	12.81105	74.88109
Lagerstroemia speciosa	Pride of India	12.81111	74.88113
Lagerstroemia speciosa	Pride of India	12.81117	74.88101
Lagerstroemia speciosa	Pride of India	12.81113	74.88090
Lagerstroemia speciosa	Pride of India	12.81118	74.88099
Lagerstroemia speciosa	Pride of India	12.81094	74.88111
Lagerstroemia speciosa	Pride of India	12.81095	74.88111
Lagerstroemia speciosa	Pride of India	12.81086	74.88111
Lagerstroemia speciosa	Pride of India	12.81078	74.88106
Lagerstroemia speciosa	Pride of India	12.81092	74.88127
Lagerstroemia speciosa	Pride of India	12.80881	74.87941
Lagerstroemia speciosa	Pride of India	12.80908	74.87935
Lagerstroemia speciosa	Pride of India	12.80913	74.87928
Lagerstroemia speciosa	Pride of India	12.80914	74.87931
Lagerstroemia speciosa	Pride of India	12.80914	74.87926
Lagerstroemia speciosa	Pride of India	12.80764	74.87888
Macaranga peltata	Uppalige	12.81228	74.88145
Macaranga peltata	Uppalige	12.80945	74.87952
Macaranga peltata	Uppalige	12.80916	74.87968

Macaranga peltata	Uppalige	12.80817	74.87847
Madhuca longifolia	Butter tree	12.80878	74.87928
Magnolia alba	White champaca	12.80861	74.88919
Magnolia alba	White champaca	12.81114	74.88056
Magnolia alba	White champaca	12.81118	74.88070
Magnolia alba	White champaca	12.81194	74.88105
Magnolia alba	White champaca	12.81135	74.88105
Magnolia alba	White champaca	12.81121	74.88107
Magnolia alba	White champaca	12.81094	74.88116
Magnolia alba	White champaca	12.80824	74.87931
Magnolia alba	White champaca	12.80822	74.87929
Magnolia alba	White champaca	12.80821	74.87932
Magnolia alba	White champaca	12.80816	74.87932
Magnolia alba	White champaca	12.80816	74.87932
Magnolia alba	White champaca	12.80814	74.87934
Magnolia alba	White champaca	12.80861	74.87917
Magnolia champaca	Yellow champaka	12.81174	74.88053
Magnolia champaca	Yellow champaka	12.81118	74.88106
Mangifera indica	Mango tree	12.81164	74.87963
Mangifera indica	Mango tree	12.81179	74.8802
Mangifera indica	Mango tree	12.81125	74.88005
Mangifera indica	Mango tree	12.81118	74.88073
Mangifera indica	Mango tree	12.81192	74.88080
Mangifera indica	Mango tree	12.81183	74.88081
Mangifera indica	Mango tree	12.81206	74.88105
Mangifera indica	Mango tree	12.81187	74.88158
Mangifera indica	Mango tree	12.81197	74.88178
Mangifera indica	Mango tree	12.81178	74.88173
Mangifera indica	Mango tree	12.81215	74.88174
Mangifera indica	Mango tree	12.81245	74.88129
Mangifera indica	Mango tree	12.81241	74.88125
Mangifera indica	Mango tree	12.81248	74.88095
Mangifera indica	Mango tree	12.80873	74.87940
Mangifera indica	Mango tree	12.80737	74.87845
Mangifera indica	Mango tree	12.80746	74.87839
Mangifera indica	Mango tree	12.80745	74.87829
Mangifera indica	Mango tree	12.80742	74.87824
Mangifera indica	Mango tree	12.80832	74.87787
Mangifera indica	Mango tree	12.80777	74.87874
Mangifera indica	Mango tree	12.80846	74.87856
Mimosops elengi	Renje	12.81049	74.88038
Mimosops elengi	Renje	12.81096	74.88092
Mimosops elengi	Renje	12.80804	74.87887
Mimosops elengi	Renje	12.80806	74.87885
Mimosops elengi	Renje	12.80803	74.87788
Mimosops elengi	Renje	12.80803	74.87788
Morinda citrifolia	Noni	12.80920	74.87936
Morinda citrifolia	Noni	12.80956	74.87939
Moringa oleifera	Nugge	12.81048	74.87986
Moringa oleifera	Nugge	12.81048	74.87986
Muntingia calabura	Bird's cherry	12.81088	74.88141
Muntingia calabura	Bird's cherry (5)	12.80825	74.87785
Muntingia calabura	Bird's cherry	12.80817	74.87847
Myristica malabarica	Rampatri	12.81102	74.88092
Myristica malabarica	Rampatri	12.81091	74.88104
Neolamarckia cadamba	Kadamba	12.81073	74.88061
Neolamarckia cadamba	Kadamba	12.81068	74.88065
Neolamarckia cadamba	Kadamba	12.81065	74.88053

Neolamarckia cadamba	Kadamba	12.81061	74.88052
Neolamarckia cadamba	Kadamba	12.81178	74.88053
Neolamarckia cadamba	Kadamba	12.81185	74.88077
Neolamarckia cadamba	Kadamba	12.81197	74.88166
Neolamarckia cadamba	Kadamba	12.81197	74.88166
Neolamarckia cadamba	Kadamba	12.81201	74.88163
Neolamarckia cadamba	Kadamba	12.81201	74.88159
Neolamarckia cadamba	Kadamba	12.81199	74.88156
Neolamarckia cadamba	Kadamba	12.81185	74.88172
Neolamarckia cadamba	Kadamba	12.81162	74.88168
Neolamarckia cadamba	Kadamba	12.81124	74.88097
Neolamarckia cadamba	Kadamba	12.81122	74.88101
Neolamarckia cadamba	Kadamba	12.81128	74.88107
Neolamarckia cadamba	Kadamba	12.81122	74.88105
Neolamarckia cadamba	Kadamba	12.80874	74.87915
Neolamarckia cadamba	Kadamba	12.80875	74.87898
Neolamarckia cadamba	Kadamba	12.80872	74.87893
Neolamarckia cadamba	Kadamba	12.80877	74.87893
Neolamarckia cadamba	Kadamba	12.80805	74.87778
Neolamarckia cadamba	Kadamba	12.80805	74.87774
Neolamarckia cadamba	Kadamba	12.80812	74.87773
Neolamarckia cadamba	Kadamba	12.80817	74.87777
Neolamarckia cadamba	Kadamba	12.80825	74.87769
Neolamarckia cadamba	Kadamba	12.80829	74.87766
Neolamarckia cadamba	Kadamba	12.80961	74.87929
Nephelium lappaceum	Rambuttan	12.80945	74.87883
Peltophorum pterocarpum	Yellow flame	12.81207	74.88082
Peltophorum pterocarpum	Yellow flame	12.81308	74.88112
Peltophorum pterocarpum	Yellow flame	12.81308	74.88112
Peltophorum pterocarpum	Yellow flame	12.81303	74.88107
Peltophorum pterocarpum	Yellow flame	12.80764	74.87939
Persea macrantha	Gulmavu tree	12.81076	74.88098
Persea macrantha	Gulmavu tree	12.81076	74.88094
Persea macrantha	Gulmavu tree	12.81073	74.88092
Persea macrantha	Gulmavu tree	12.81081	74.88096
Phyllanthus emblica	Indian gooseberry	12.81094	74.88091
Phyllanthus emblica	Indian gooseberry	12.81010	74.87984
Phyllanthus emblica	Indian gooseberry	12.80749	74.87815
Plumeria acutifolia	Temple tree	12.81173	74.88088
Plumeria acutifolia	Temple tree	12.81173	74.88088
Plumeria acutifolia	Temple tree	12.81173	74.88088
Plumeria acutifolia	Temple tree	12.81173	74.88088
Plumeria rubra	Red plumeria	12.80845	74.87879
Plumeria obtusa	White plumeria	12.80845	74.87881
Polyalthia longifolia	Ashoka	12.81083	74.88079
Polyalthia longifolia	Ashoka	12.81083	74.88079
Pongamia pinnata	Honge mara	12.81205	74.88152
Psidium gujava	Guava	12.80885	74.87931
Psidium gujava	Guava	12.80902	74.87859
Psidium gujava	Guava	12.80944	74.87875
Pterocarpus marsupium	Benga	12.81177	74.88080
Pterocarpus marsupium	Benga	12.80908	74.87895
Roystonea regia	Bottle palm	12.81205	74.88144
Roystonea regia	Bottle palm	12.81208	74.88149
Roystonea regia	Bottle palm	12.81205	74.88815
Roystonea regia	Bottle palm	12.81205	74.88152
Roystonea regia	Bottle palm	12.81208	74.88816
Roystonea regia	Bottle palm	12.80766	74.87892

Roystonea regia	Bottle palm	12.80761	74.87891
Roystonea regia	Bottle palm	12.80751	74.87892
Roystonea regia	Bottle palm	12.80753	74.87895
Roystonea regia	Bottle palm	12.80753	74.87896
Roystonea regia	Bottle palm	12.80751	74.87883
Saraca asoca	Ashoka tree	12.81196	74.88035
Saraca asoca	Ashoka tree	12.81242	74.88136
Saraca asoca	Ashoka tree	12.81235	74.88139
Saraca asoca	Ashoka tree	12.81236	74.88139
Saraca asoca	Ashoka tree	12.81236	74.88139
Saraca asoca	Ashoka tree	12.81232	74.88146
Saraca asoca	Ashoka tree	12.81232	74.88146
Saraca asoca	Ashoka tree	12.81238	74.88151
Saraca asoca	Ashoka tree	12.81239	74.88155
Saraca asoca	Ashoka tree	12.81303	74.88102
Saraca asoca	Ashoka tree	12.81113	74.88099
Saraca asoca	Ashoka tree	12.81113	74.88099
Saraca asoca	Ashoka tree	12.81295	74.88091
Saraca asoca	Ashoka tree	12.81295	74.88091
Saraca asoca	Ashoka tree	12.81096	74.88129
Saraca asoca	Ashoka tree	12.81111	74.88126
Scleropyrum pentandrum	Nayikuli	12.81193	74.88084
Simarouba glauca	Laxmitaru plant	12.80820	74.87860
Spathodea campanulata	African Tulip tree	12.81185	74.88068
Spathodea campanulata	African Tulip tree	12.80746	74.87936
Spathodea campanulata	African Tulip tree	12.80731	74.87928
Spathodea campanulata	African Tulip tree	12.80726	74.87930
Spondias dulcis	Amtekayi	12.80960	74.87957
Swietenia macrophylla	Mahagoni	12.81182	74.88013
Swietenia macrophylla	Mahagoni	12.81184	74.88018
Swietenia macrophylla	Mahagoni	12.81175	74.88019
Swietenia macrophylla	Mahagoni	12.81178	74.88018
Swietenia macrophylla	Mahagoni	12.81168	74.88025
Swietenia macrophylla	Mahagoni	12.81169	74.88803
Swietenia macrophylla	Mahagoni	12.81163	74.88003
Swietenia macrophylla	Mahagoni	12.81159	74.88031
Swietenia macrophylla	Mahagoni	12.81158	74.88031
Swietenia macrophylla	Mahagoni	12.81158	74.88031
Swietenia macrophylla	Mahagoni	12.81157	74.88031
Swietenia macrophylla	Mahagoni	12.81132	74.88053
Swietenia macrophylla	Mahagoni	12.81113	74.88057
Swietenia macrophylla	Mahagoni	12.81112	74.88062
Swietenia macrophylla	Mahagoni	12.81119	74.88065
Swietenia macrophylla	Mahagoni	12.81076	74.88079
Swietenia macrophylla	Mahagoni	12.81046	74.88017
Swietenia macrophylla	Mahagoni	12.81049	74.88014
Swietenia macrophylla	Mahagoni	12.81049	74.88014
Swietenia macrophylla	Mahagoni	12.81048	74.8809
Swietenia macrophylla	Mahagoni	12.81045	74.88006
Swietenia macrophylla	Mahagoni	12.81045	74.88006
Swietenia macrophylla	Mahagoni	12.81047	74.87999
Swietenia macrophylla	Mahagoni	12.81162	74.88057
Swietenia macrophylla	Mahagoni	12.81164	74.88057
Swietenia macrophylla	Mahagoni	12.81174	74.88054
Swietenia macrophylla	Mahagoni	12.8118	74.88060
Swietenia macrophylla	Mahagoni	12.81186	74.88081
Swietenia macrophylla	Mahagoni	12.81183	74.88088
Swietenia macrophylla	Mahagoni	12.81203	74.88108

Swietenia macrophylla	Mahagoni	12.81205	74.88083
Swietenia macrophylla	Mahagoni	12.81205	74.88087
Swietenia macrophylla	Mahagoni	12.81161	74.88164
Swietenia macrophylla	Mahagoni	12.81161	74.88164
Swietenia macrophylla	Mahagoni	12.81161	74.88169
Swietenia macrophylla	Mahagoni	12.81156	74.88169
Swietenia macrophylla	Mahagoni	12.81153	74.88172
Swietenia macrophylla	Mahagoni	12.81151	74.88171
Swietenia macrophylla	Mahagoni	12.81124	74.88098
Swietenia macrophylla	Mahagoni	12.81072	74.88093
Swietenia macrophylla	Mahagoni	12.81072	74.88091
Swietenia macrophylla	Mahagoni	12.81067	74.88080
Swietenia macrophylla	Mahagoni	12.81069	74.88086
Swietenia macrophylla	Mahagoni	12.81103	74.88150
Swietenia macrophylla	Mahagoni	12.81112	74.88148
Swietenia macrophylla	Mahagoni	12.81025	74.87991
Swietenia macrophylla	Mahagoni	12.81023	74.87984
Swietenia macrophylla	Mahagoni	12.81014	74.87983
Swietenia macrophylla	Mahagoni	12.81012	74.87986
Swietenia macrophylla	Mahagoni	12.80992	74.87986
Swietenia macrophylla	Mahagoni	12.80982	74.87986
Swietenia macrophylla	Mahagoni	12.80980	74.87988
Swietenia macrophylla	Mahagoni	12.80967	74.87986
Swietenia macrophylla	Mahagoni	12.80959	74.87967
Swietenia macrophylla	Mahagoni	12.80951	74.87984
Swietenia macrophylla	Mahagoni	12.80951	74.87986
Swietenia macrophylla	Mahagoni	12.80942	74.87983
Swietenia macrophylla	Mahagoni	12.80922	74.87983
Swietenia macrophylla	Mahagoni	12.80918	74.87982
Swietenia macrophylla	Mahagoni	12.80917	74.87982
Swietenia macrophylla	Mahagoni	12.80914	74.87978
Swietenia macrophylla	Mahagoni	12.80912	74.87977
Swietenia macrophylla	Mahagoni	12.80911	74.87977
Swietenia macrophylla	Mahagoni	12.80907	74.87973
Swietenia macrophylla	Mahagoni	12.80878	74.87961
Swietenia macrophylla	Mahagoni	12.80883	74.87958
Swietenia macrophylla	Mahagoni	12.80865	74.88918
Swietenia macrophylla	Mahagoni	12.80876	74.87915
Swietenia macrophylla	Mahagoni	12.80877	74.87916
Swietenia macrophylla	Mahagoni	12.80879	74.87906
Swietenia macrophylla	Mahagoni	12.80878	74.87903
Swietenia macrophylla	Mahagoni	12.80875	74.87904
Swietenia macrophylla	Mahagoni	12.80876	74.87896
Swietenia macrophylla	Mahagoni	12.80877	74.87898
Swietenia macrophylla	Mahagoni	12.80871	74.87894
Swietenia macrophylla	Mahagoni	12.80877	74.87893
Swietenia macrophylla	Mahagoni	12.80797	74.87887
Swietenia macrophylla	Mahagoni	12.80795	74.87886
Swietenia macrophylla	Mahagoni	12.80799	74.87875
Swietenia macrophylla	Mahagoni	12.80808	74.87864
Swietenia macrophylla	Mahagoni	12.80810	74.87861
Swietenia macrophylla	Mahagoni	12.80820	74.87860
Swietenia macrophylla	Mahagoni	12.80851	74.87856
Swietenia macrophylla	Mahagoni	12.80857	74.87852
Swietenia macrophylla	Mahagoni	12.80861	74.87852
Swietenia macrophylla	Mahagoni	12.80871	74.87852
Swietenia macrophylla	Mahagoni	12.80877	74.87848
Swietenia macrophylla	Mahagoni	12.80992	74.87826

Swietenia macrophylla	Mahagoni	12.80992	74.87828
Swietenia macrophylla	Mahagoni	12.80989	74.87835
Swietenia macrophylla	Mahagoni	12.80989	74.87836
Swietenia macrophylla	Mahagoni	12.80989	74.87836
Swietenia macrophylla	Mahagoni	12.80985	74.87844
Swietenia macrophylla	Mahagoni	12.80982	74.87853
Swietenia macrophylla	Mahagoni	12.80979	74.87858
Swietenia macrophylla	Mahagoni	12.80971	74.87891
Swietenia macrophylla	Mahagoni	12.80971	74.87893
Swietenia macrophylla	Mahagoni	12.80966	74.87897
Swietenia macrophylla	Mahagoni	12.80963	74.87909
Swietenia macrophylla	Mahagoni	12.80961	74.87913
Swietenia macrophylla	Mahagoni	12.80961	74.87913
Swietenia macrophylla	Mahagoni	12.80963	74.87921
Swietenia macrophylla	Mahagoni	12.80977	74.87929
Swietenia macrophylla	Mahagoni	12.80981	74.87935
Swietenia macrophylla	Mahagoni	12.80985	74.87935
Swietenia macrophylla	Mahagoni	12.80992	74.87937
Swietenia macrophylla	Mahagoni	12.80985	74.87974
Swietenia macrophylla	Mahagoni	12.80998	74.87955
Swietenia macrophylla	Mahagoni	12.81006	74.87959
Swietenia macrophylla	Mahagoni	12.81013	74.87963
Swietenia macrophylla	Mahagoni	12.81013	74.87965
Swietenia macrophylla	Mahagoni	12.81021	74.87797
Swietenia macrophylla	Mahagoni	12.81025	74.87973
Swietenia macrophylla	Mahagoni	12.81031	74.87978
Swietenia macrophylla	Mahagoni	12.81034	74.87982
Swietenia macrophylla	Mahagoni	12.81059	74.87971
Syzygium cumini	Black plum	12.81149	74.88049
Syzygium cumini	Black plum	12.81156	74.88057
Syzygium cumini	Black plum	12.80953	74.87969
Syzygium cumini	Black plum	12.80951	74.87976
Syzygium cumini	Black plum	12.80946	74.87974
Syzygium cumini	Black plum	12.80878	74.87932
Syzygium cumini	Black plum	12.80876	74.87929
Syzygium cumini	Black plum	12.80977	74.87869
Syzygium cumini	Black plum	12.80973	74.87882
Syzygium samarangense	Rose Apple	12.81187	74.88092
Syzygium samarangense	Rose Apple	12.81181	74.88064
Syzygium samarangense	Rose Apple	12.80756	74.87904
Syzygium samarangense	Rose Apple	12.81107	74.88067
Tabebuia rosea	Rosy Trumpet tree	12.81191	74.88112
Tabebuia rosea	Rosy Trumpet tree	12.81187	74.88121
Tabebuia rosea	Rosy Trumpet tree	12.81189	74.88125
Tabebuia rosea	Rosy Trumpet tree	12.81195	74.88128
Tabebuia rosea	Rosy Trumpet tree	12.81197	74.88130
Tabebuia rosea	Rosy Trumpet tree	12.81198	74.88135
Tabebuia rosea	Rosy Trumpet tree	12.81215	74.88136
Tabebuia rosea	Rosy Trumpet tree	12.81218	74.88130
Tabebuia rosea	Rosy Trumpet tree	12.81216	74.88125
Tabebuia rosea	Rosy Trumpet tree	12.81213	74.88118
Tabebuia rosea	Rosy Trumpet tree	12.81211	74.88113
Tecoma castanifolia	Yellow elder	12.80922	74.87936
Tectona grandis	Teak	12.81086	74.88110
Tectona grandis	Teak	12.81004	74.87986
Tectona grandis	Teak	12.80996	74.87986
Tectona grandis	Teak	12.80989	74.87985
Terminalia arjuna	Arjuna tree	12.80935	74.87896

Terminalia arjuna	Arjuna tree	12.80939	74.87894
Terminalia catappa	Wild almond	12.81162	74.87966
Terminalia catappa	Wild almond	12.81162	74.87969
Terminalia catappa	Wild almond	12.81169	74.87977
Terminalia catappa	Wild almond	12.81173	74.87798
Terminalia catappa	Wild almond	12.81106	74.88029
Terminalia catappa	Wild almond	12.81142	74.88050
Terminalia catappa	Wild almond	12.81143	74.88060
Terminalia catappa	Wild almond	12.81142	74.88056
Terminalia catappa	Wild almond	12.81137	74.88063
Terminalia catappa	Wild almond	12.81137	74.88063
Terminalia catappa	Wild almond	12.81137	74.88063
Terminalia catappa	Wild almond	12.81129	74.88066
Terminalia catappa	Wild almond	12.81123	74.88063
Terminalia catappa	Wild almond	12.81113	74.88057
Terminalia catappa	Wild almond	12.81109	74.88070
Terminalia catappa	Wild almond	12.81811	74.88069
Terminalia catappa	Wild almond	12.81102	74.88080
Terminalia catappa	Wild almond	12.81076	74.88079
Terminalia catappa	Wild almond	12.81073	74.88077
Terminalia catappa	Wild almond	12.81061	74.88071
Terminalia catappa	Wild almond	12.81106	74.88069
Terminalia catappa	Wild almond	12.81106	74.88069
Terminalia catappa	Wild almond	12.81172	74.88079
Terminalia catappa	Wild almond	12.81178	74.88091
Terminalia catappa	Wild almond	12.81189	74.88077
Terminalia catappa	Wild almond	12.81195	74.88084
Terminalia catappa	Wild almond	12.81209	74.88110
Terminalia catappa	Wild almond	12.81291	74.88099
Terminalia catappa	Wild almond	12.81291	74.88098
Terminalia catappa	Wild almond	12.81176	74.88171
Terminalia catappa	Wild almond	12.81232	74.88172
Terminalia catappa	Wild almond	12.81258	74.88139
Terminalia catappa	Wild almond	12.81252	74.88141
Terminalia catappa	Wild almond	12.81232	74.88145
Terminalia catappa	Wild almond	12.81228	74.88148
Terminalia catappa	Wild almond	12.81228	74.88149
Terminalia catappa	Wild almond	12.81287	74.88081
Terminalia catappa	Wild almond	12.81282	74.88078
Terminalia catappa	Wild almond	12.81241	74.88124
Terminalia catappa	Wild almond	12.81095	74.88102
Terminalia catappa	Wild almond	12.81086	74.88111
Terminalia catappa	Wild almond	12.81087	74.88140
Terminalia catappa	Wild almond	12.80807	74.87879
Terminalia catappa	Wild almond	12.80859	74.87877
Terminalia catappa	Wild almond	12.80873	74.87894
Terminalia catappa	Wild almond	12.80781	74.87898
Terminalia catappa	Wild almond	12.80773	74.87898
Terminalia catappa	Wild almond	12.80758	74.87787
Terminalia catappa	Wild almond	12.80780	74.87782
Terminalia catappa	Wild almond	12.80783	74.87778
Terminalia catappa	Wild almond	12.80785	74.87781
Terminalia catappa	Wild almond	12.80785	74.87775
Terminalia catappa	Wild almond	12.80795	74.87775
Terminalia catappa	Wild almond	12.80802	74.87776
Terminalia catappa	Wild almond	12.80824	74.87768
Terminalia catappa	Wild almond	12.80825	74.87860
Terminalia catappa	Wild almond	12.81052	74.87978

Wodyetia bifurcata	Foxtail palm	12.81188	74.88020
Wodyetia bifurcata	Foxtail palm	12.81193	74.88026
Wodyetia bifurcata	Foxtail palm	12.81193	74.88025
Wodyetia bifurcata	Foxtail palm	12.81193	74.88025
Wodyetia bifurcata	Foxtail palm	12.81119	74.88030
Wodyetia bifurcata	Foxtail palm	12.81188	74.88033
Wodyetia bifurcata	Foxtail palm	12.81225	74.88151
Wodyetia bifurcata	Foxtail palm	12.81222	74.88147
Wodyetia bifurcata	Foxtail palm	12.81224	74.88145
Wodyetia bifurcata	Foxtail palm	12.81222	74.88144
Wodyetia bifurcata	Foxtail palm	12.81217	74.88139
Wodyetia bifurcata	Foxtail palm	12.81216	74.88138
Wodyetia bifurcata	Foxtail palm	12.81216	74.88139
Wodyetia bifurcata	Foxtail palm	12.81216	74.88138
Wodyetia bifurcata	Foxtail palm	12.81291	74.88083
Wodyetia bifurcata	Foxtail palm	12.81292	74.88086
Wodyetia bifurcata	Foxtail palm	12.81293	74.88096
Wodyetia bifurcata	Foxtail palm	12.80809	74.87935
Wrightia tinctoria	Stri kutaja	12.81081	74.88104
Wrightia tinctoria	Stri kutaja	12.81090	74.88097
Wrightia tinctoria	Stri kutaja	12.81091	74.88097
Wrightia tinctoria	Stri kutaja	12.81091	74.88097
Wrightia tinctoria	Stri kutaja	12.81091	74.88097
Wrightia tinctoria	Stri kutaja	12.81091	74.88097
Wrightia tinctoria	Stri kutaja	12.81091	74.88097
Wrightia tinctoria	Stri kutaja	12.81091	74.88097
Wrightia tinctoria	Stri kutaja	12.81093	74.88102
Wrightia tinctoria	Stri kutaja	12.81093	74.88102

SUSTAINABILITY @ YDU 2023

Higher education institutions play a paramount role in the promotion and implementation of the 2030 Agenda for Sustainable Development Goals (SDG) developed by the United Nations. Universities can achieve the reduction of their ecological footprint well beyond standards by pursuing and improving a sustainable campus

24. ADVISORY BOARD

A sustainable university educates its staff and students for sustainable development, offers training on environmental and social footprints of its campus operations, and empowers them to act and make sustainability a central priority. The university has constituted an Environment Advisory Council (EAC) and appoints experts for three-year terms. The committee was last renewed in June 2022. The advisory council provides tailored advice that focuses on specific areas of sustainable development. The members also provide university with advice on environmental education.

Environmental Advisory Council

1. Vice Chancellor	: Chairman
2. Pro Vice-Chancellor	: Co-Chairman
3. Registrar	: Member
4. Finance Officer	: Member
5. Campus Administrative Officer	: Member
6. Manager, Maintenance Department	: Member
7. Environmental Engineer	: Member
8. Dr. T. V Ramachandra Coordinator Energy and Wetland Research Group The India Institute of Science, Bangalore	: External Member
9. Dr. R. Mary Josephine Nature Science Foundation, Coimbatore, Tamilnadu	: External Member
10. Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 16.08.2023

The term "Green Audit" refers to an environmental audit. This audit examines several aspects of organizational/institutional activities. Audits evaluate whether a company's operations have any effect on the air, water, or soil. These audits aid in avoiding compliance difficulties.

Green Audit Committee

1. Vice Chancellor	: Chairman
2. Pro Vice Chancellor	: Co-Chairman
3. Registrar	: Member
4. Finance Officer	: Member
5. Campus Administration Officer	: Member
6. Maintenance Manager	: Member
7. Environmental Engineer	: Member
8. Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 16.08.2023

A Campus Sustainability Committee (CSC) is constituted to oversee the implementation of the Sustainability Action Plan (SAP) developed under SATAT, a UGC Framework for Eco-friendly and Sustainable Campus development in Higher Educational Institutions.

Campus Sustainability Committee

1.	Vice Chancellor	: Chair Person
2.	Pro Vice-Chancellor	: Co-Chairman
3.	Registrar	: Member
4.	Director, Purchase	: Member
5.	Director, IT	: Member
6.	Finance Officer	: Member
7.	Campus Administration Officer	: Member
8.	Hospital Superintendent	: Member
9.	Maintenance Manager	: Member
10.	Environmental Engineer	: Member
11.	Transport Superintendent	: Member
12.	Manager, Food Craft	: Member
13.	Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 16.08.2023

The environmental compliance committee ensures statutory compliances related to Karnataka State Pollution Control Board and performs compliance and internal audits in accordance with the annual audit plans and helps to ensure that external scientific audits occur as planned.

Environmental Compliance Committee

1.	Vice Chancellor	: Chairman
2.	Pro Vice Chancellor	: Co-Chairman
3.	Registrar	: Member
4.	Maintenance Manager	: Member
5.	Environmental Engineer	: Member
6.	Hospital Superintendent	: Member
7.	Mr. Joy, Dept. of Maintenance	: Member
8.	Deputy Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 16.08.2023

25. WATER CONSERVATION

6 CLEAN WATER AND SANITATION

GOAL

Ensure access to water and sanitation for all

ONWARD ACTIONS

- Awareness programs are conducted on how to wash hands properly.
- Water purification systems are installed for drinking water
- Water sources such as tube wells, open wells, rainwater harvesting ponds are regularly cleaned and monitored.
- Posters are displayed to conserve water.
- Wastewater generated on the campus is recycled in Sewage Treatment Plants and reused for irrigation.

Rainwater harvesting is being carried out in the premises to conserve water for internal use. There are two rainwater collection ponds (Fig. 33) having a combined water storage capacity of 5.3 crore liters. The ponds have helped to revive the underground water table and provide water during the lean period. This helps to meet about 80 percent of the water requirement of the campus. Percolation trenches are used to treat runoff from impervious surfaces to allow rainwater soak into the ground. The University has a daily water requirement of 1400 KL.

Fig 33: Rain water harvesting pond and percolation trenches

Roof rainwater harvesting units (Fig. 34) are installed in eleven buildings and the water is channeled to recharge bore wells (Table 35).

Table 34: Location of Roof rain water harvesting systems

Unit No.	Location
1	Bore well behind the library building
2	Bore well behind the Medical College building
3	Bore well beside the Yendurance zone
4	Bore well beside Vermicompost unit
5	Bore well near the YMK men's hostel
6	Bore well near the Zulekha ladies hostel
7	Bore well beside the Central Kitchen
8	Open well in front of Gardyenia B block
9	Bore well behind the Gardyenia B block
10	Bore well beside Campus hostel
11	Bore well behind the Lotus cafe

Fig 34: Roof rainwater harvesting units

Water conservation measures in the university include aerators, foam taps, sensor taps and water sprinklers (Table 36) (Fig. 35). Aerators installed in taps reduce the flow of water and thus help in conservation. Flow meters are installed to monitor and control water consumption. Daily monitoring of water consumption is done by the staff of maintenance department. Any irregularities or excess water usage is noted and informed to concerned authority to identify the leakage and breakage in the pipeline. Sensors are installed at the overhead tanks and water sumps of all the buildings to stop overflow of the water during the filling time. Automatic sensor tap has been provided in the various location of University to stop the wastage of water. Consumption and conservation of water is audited regularly. Awareness programmes are organized for the students through the eco club.

Table 35: Water conservation devices used

Water efficient device	Total Number	Total number installed
Taps	4250	Aerators - 1100
		Sensor taps - 28
		Foam taps - 2872
Sprinklers	250	-

Aerators

Sensor taps

Sprinklers

Float switch

Fig. 35: Water conservation devices

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

GOAL

Ensure sustainable consumption and production patterns

ONWARD ACTIONS

- The University procurement policy involves checking the supply chain for sustainable practices
- The University keeps track of the waste generated on the campus and is managed as per regulations
- Recycling of biodegradable waste is done on the campus
- Initiatives such as zero paper office and online 'Data Management System' are implemented that encourage a reduce, reuse, recycle policy

26. RECYCLING OF BIODEGRADABLE WASTE

Biodegradable waste management is important because it helps us to protect the environment. It also helps us to reduce our reliance on landfill, which can be a harmful process. By composting and recycling biodegradable materials, we are able to create products that are beneficial to the environment.

26.1 Vermicomposting

Garden waste along with vegetable waste from central kitchen are subjected to vermicomposting using earthworms (Fig. 36). The vermicomposting unit is operated throughout the year as the raw material is available for composting. The compost, rich in nutrients, is used in campus gardens and also sold to generate value for the produce. There are six vermicompost units in the campus with a capacity of 400kg each. The total amount produced in the vermi-compost unit in the year 2023 is 3365 kg (Table 37).

Fig. 36: Vermicompost Unit and composting process

Table 36: Summary of vermicompost generated

Date of harvest	Unit No.	Harvest (Kg)
23.04.2023	2	280
27.04.2023	4	259
02.05.2023	6	265
27.07.2023	1	290
29.07.2023	3	249
03.08.2023	5	252
27.09.2023	2	270
04.10.2023	4	278
12.10.2023	6	269
08.12.2023	1	328
12.12.2023	3	323
29.12.2023	5	302
Total		**3365**

Composting leaves makes a dark, rich, earthy, organic matter that can be used like soil. It adds nutrients to the garden soil and the larger particle size helps enhance the filth and loosen compacted earth. Compost retains moisture and repels weeds when used as a top dressing or mulch. The garden waste of the campus mainly the leaves are composted using mesh and sprinkling vermiwash to facilitate the degradation process (Fig. 37).

Fig. 37: Mesh composting

26.2 Food waste recycling

Food waste processing is an essential component of a sustainable environment, and it plays a critical role in conserving resources, reducing pollution, and minimizing landfill space.

Fig. 38: Food waste composting unit

Fig. 39: Food waste shredder

Fig. 40: Food waste composting process

The food waste of the campus is collected at a common collection point and transferred to food recycling unit (Fig. 38). The waste is first treated in a shredder (Fig 39) and later composted using microbes. The shredders play a crucial role in food waste processing by reducing the size of waste materials, which allows for more efficient handling, transportation, and disposal. Shredded food waste provides a more uniform particle size, which is advantageous for composting processes. The reduced particle size increases the surface area for microbial activity, resulting in a faster and more efficient composting process. The process converts organic materials into nutrient-rich soil amendment through natural decomposition (Fig 40). Approximately 800kg of vegetable and food waste is composted in the food recycling unit daily.

27. ENERGY CONSERVATION

The conservation of energy includes reducing the consumption of non-renewable resources, increasing the consumption from renewable resources and using energy efficient appliances which creates sustainable energy management. As the activities in the university increase, energy needs also grow substantially. It is very essential that there is enhanced attention towards energy conservation. The university is harnessing solar energy for its energy needs in addition to conventional sources. Solar plant is installed (Fig. 41) for generation of electricity in 2830 m2 area with a capacity of 454.675 kw plant and solar water heating systems is hostels generate 16,000 L of hot water at Deralakatte campus. Briquettes (made up of agro-waste) have good calorific value and are used for generation of steam in central Kitchen.

Fig 41: Rooftop Solar panels

Energy efficient lighting helps lower electricity bills and carbon dioxide emissions, all without reducing the quality of light. University is in the process of replacing CFL bulbs with LED bulbs (Fig. 42).

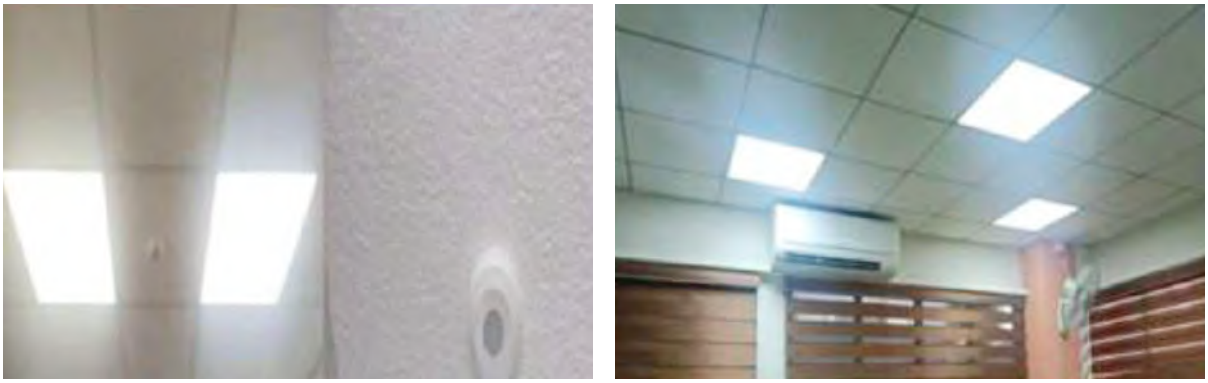


Fig. 42: Sensor for Lighting and LED bulbs

28. SUSTAINABLE TRANSPORT

Fig 43: E- Vehicles

The university has introduced a fleet of electric vehicles (Fig. 43) for meeting its in-house transportation requirements. These vehicles enable the movement of staff and students within the campus in a manner that is convenient, fun and eco-friendly at the same time. The vehicles are provided along with charging infrastructure and docking points that have been created at multiple locations across the campus thereby enabling students to pick up the vehicles at one location and drop them off at another.

29. GOING PLASTIC FREE

The university is committed for a journey towards plastic free campus. Many policies and measures are taken to replace single use plastic and reduce plastic waste and pollution on the campus (Fig 44, 45).

Fig. 44: Patients and their attendants are encouraged to use cloth bags and steel containers for carrying food

Fig. 45: Display boards to discourage the use of plastic

30. PAPER REDUCTION POLICY

IT department can contribute substantially to reduce environmental impact. In collaboration with Centre for Environmental Studies, the department strives to reduce pollution load. Such actions not only reduce environmental impact but also beneficial by cost reduction, time management, fasten communication etc. The daily practices have an attributed carbon footprint, while excess carbon dioxide negatively impacts the natural environment. By becoming greener the carbon foot print may be reduced.

E-Governance

- E-Governance is managed in the university at administration, services and support areas. It reduces the paper trail and also makes information tracking online with the click of a button.
- Management of human resources and communications are online including the leave application and approvals. Salary processing, as well as salary-slip decimation, happens online. Staff attendance is captured using biometric devices.
- University hospital operations are computerized and as a part of this, all patient medical records are managed in digital form. Patient care including IP/OP and ordering of lab and radiology tests and reporting, are processed and delivered digitally. Pharmacy prescriptions ordered online.
- All student data is managed online including the examination and result generation processes. Students' attendance captured through biometric devices and summary of attendances sent to parents using SMS and email services. Student course work is delivered to students using the learning management system.
- An online issue tracking and reporting mechanism implemented which takes care of issues raised to IT, Maintenance and biomedical sections of the university. All inventory of stock is managed on centralized software through which indenting for items and purchase is handled. Inventory, stock and asset control is managed through the software system.

IT Services section has successfully implemented the following initiatives:

1) Implementation of Electronic Medical Records
2) Sustainable Print Service
3) Computer system sleep management
4) Remote Access
5) Online learning/E-Learning
6) Procurement
7) PACS

1) Implementation of Electronic Medical Records

- The use of an electronic medical records system offers these clinical advantages:
- No bulky paper records to store.
- Easier access to clinical data.
- The ability to establish and maintain effective clinical workflows.
- Fewer medical errors, improved patient safety and stronger support for clinical decision-making.
- Enhancing privacy and security of patient data.
- Securely sharing electronic information with patients and other clinicians.
- Ability to gather and analyze patient data that enables outreach to discreet populations.
- The opportunity to interact seamlessly with affiliated hospitals, clinics, labs and pharmacies.

2) The Sustainable Print Service (SPS) has been implemented in various departments where the confidentiality of the document is confined to a designated group of employees. Shared printing services are used wherever possible.

3) Most of the University PCs will go in to sleep mode after a defined period of inactivity based on the type of work assigned to them, reducing their energy usage.

4) All computer systems in the campus are remotely accessible using VNC software and computer sleep policies are in place during operational hours. Wake on LAN allows our staff to switch on any PC in our network remotely, for remote working or troubleshooting wherever and whenever they want. Remote connection to university computer services and applications allows flexible access without the need to travel or keep PCs powered on.

5) The ILIAS based online learning portal, offers opportunities to reduce the amount of printed material by viewing materials online. All the course content which used to be distributed using the paper has been replaced with online content. Assignments can be produced, submitted, marked and feedback given without the need to be printed out. Results and notices are put up online instead of paper-based notices. These initiatives have also reduced paper consumption. University email accounts can be accessed using mail.yenepoya.edu.in and the full Outlook client can be configured for staff working from home. A shared file to access a shared content in the university network wherever required. VPN (virtual private network) allows user's access to university restricted services and applications that are not otherwise available.

6) Procurement: Requests are sent On-line to the Purchase department for procurement of various items from by all departments, thus reducing the use of paper.

7) Implementation of PACS (picture archiving and communication systems):
A picture archiving and communication system (PACS) is a computerised means of replacing the roles of conventional radiological film: images are acquired, stored, transmitted, and displayed digitally. When such a system is installed throughout the hospital, a filmless clinical environment is maintained. Once an image has been acquired onto PACS it cannot be lost, stolen, or misfiled. The numerous PACS terminals throughout the hospital allow simultaneous multi-location viewing of the same image, if desired, whereas conventional film can only physically exist in one place at any one time. PACS does allow some direct economic savings from the lack of expenditure on film, film packets, and film processing chemicals.

31. PARTNERSHIPS AND COLLABORATIONS

GOAL

Strengthen the means of implementation and revitalize the global partnership for Sustainable Development

ONWARD ACTIONS

- The university has signed the SDG Accord as a formal commitment to playing our part in meeting the SDGs
- The university has developed a 5-year Sustainable Action Plan (SAP) and a Campus Sustainability Committee to oversee the implementation of the SAP
- The university has collaborations with other institutions and organizations for sharing best practices on SDG

The YDU has forged collaborations with numerous premier institutions to effectively manage various types of waste, promote sustainable energy usage, and safeguard the environment. Through these partnerships, the university aims to implement robust waste management practices, ensuring responsible disposal and recycling. Emphasizing sustainable energy practices, Yenepoya strives to minimize its carbon footprint and optimize energy consumption. By joining hands with other esteemed institutions, the university is committed to creating a greener and more eco-conscious campus, contributing to environmental preservation and fostering a culture of environmental stewardship. The list of collaborations is given in Table 38.

Table 37: Partnerships and Collaborations

Sl. No.	Partnership/Collaboration	Organization
1.	Resustainability Healthcare Solutions Ltd. Biomedical waste management	
2.	4PEL Solar Energy private limited for Roof top solar Clean energy	
3.	Indus trust, Bangalore Clean energy	
4.	Brinadavan hydro power, Bangalore Energy wheeling	
5.	Moogambigai Metal Refineries e-waste	
6.	Maniranjan Pvt. Ltd., Mangalore	
7.	Hubert Enviro, Mangalore Water purification	
8.	Aqua blue water system, Bangalore Water management services	
9.	KarRecycle , Bangalore Hazardous waste	

31.1 MoU Copies

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Government of Karnataka

e-Stamp

Certificate No.	:	IN-KA39394811429174S
Certificate Issued Date	:	07-Oct-2020 12:41 PM
Account Reference	:	NONACC (FI)/ kakaicl08/ MANGALORE7/ KA-DK
Unique Doc. Reference	:	SUBIN-KAKAKSFCL08746895605772655
Purchased by	:	RAMKY ENERGY AND ENVIRONMENT LTD
Description of Document	:	Article 12 Bond
Description		SERVICE MOU
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	RAMKY ENERGY AND ENVIRONMENT LTD
Second Party	:	YENEPOYA MEDICAL AND DENTAL COLLEGE HOSPITAL
Stamp Duty Paid By	:	RAMKY ENERGY AND ENVIRONMENT LTD
Stamp Duty Amount(Rs.)	:	20 (Twenty only)

Memorandum of Understanding

This Memorandum of Understanding is made on this 01st October 2020

BETWEEN

M/s. Ramky Energy & Environment Ltd is having its registered office at Ramky Towers Grandiose, Opp. Rolling Hills, Anjaiah Nagar, Gachibowli, Hyderabad-500032. and having plant office at Plot No.47/B, Karnad Industrial Area, KIADB, Mulky, Mangaluru - 574154. Hereafter refer to as **M/s. Ramky Energy & Environment Ltd.**

AND

M/s. Yenepoya Medical & Dental College Hospital, Derlakatte, Mangaluru. Here in after refer as **M/s. Yenepoya Medical & Dental College Hospital,**

1 Cont...2

सत्यमेव जयते

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Government of Karnataka

e-Stamp

Certificate No.	:	IN-KA59670404625050V
Certificate Issued Date	:	18-Aug-2023 12:18 PM
Account Reference	:	NONACC (FI)/ kacrsf08/ DERALAKATTE/ KA-DK
Unique Doc. Reference	:	SUBIN-KAKACRSFL08941651905268908V
Purchased by	:	YENEPOYA DEEMED TO BE UNIVERSITY
Description of Document	:	Article 12 Bond
Description	:	MOU
Consideration Price (Rs.)	:	0 (Zero)
First Party	:	YENEPOYA DEEMED TO BE UNIVERSITY
Second Party	:	MOOGAMBIGAI METAL REFINERIES MANGALORE
Stamp Duty Paid By	:	YENEPOYA DEEMED TO BE UNIVERSITY
Stamp Duty Amount(Rs.)	:	50 (Fifty only)

For VIJAYA CREDIT CO-OP. SOCIETY LTD., BRANCH : DERALAKATTE

Authorised Signatory

MEMORANDUM OF UNDERSTANDING

Between

Yenepoya (Deemed to be University), Deralkatte

Represented by registrar, Yenepoya (Deemed to be University)

And

18/08/2023

Registrar
YENEPOYA
(Deemed to be University)

For MOOGAMBIGAI METAL REFINERIES

Authorised Signature

HECS

Hubert Enviro Care Systems P Ltd
A21, 3rd Phase, TVK Industrial Estate,
Guindy, Chennai - 600032
GST: 33AABCH5835N1ZD

QUOTE

PSTPS3602
May 15, 2023

Stage	Budgetary
Valid Till	Sep 15, 2023
Sales Person	Sowbakya V labsales
Amount	₹ 16,245.00

Bill To
M/s Yenepoya University, Mangalore
Kind Attn :Mr.Vinayaka Bhatta .
Contact No: (966) 363-3242
University Road, Deralakatte | Mangalore - 575018 | Karnataka | India
GST:

Ship To
M/s Yenepoya University, Mangalore
Kind Attn : Mr. Vinayaka Bhatta .
Contact No : (966) 363-3242
University Road, Deralakatte | Mangalore - 575018 | Karnataka | India
GST:

Scope of Work:

Hubert Enviro Care Systems P Ltd seeks to provide testing and analytical services mentioned below in line with your requirement.

Commercial Remuneration:

Item & Description	List Price	Qty	Discount	Amount
STP Treated Water Parameters 1) pH 2) Ammonical Nitrogen - mg/l 3) Total Nitrogen - mg/ 4) Total Suspended solids - mg/ 5) COD - mg/l 6) BOD - mg/l 7) Fecal coliform - MPN/100 ml Frequency: Monthly 3 samples (April to September)	₹ 950.00	18	₹ 855.00	₹ 16,245.00
NOTE: Sample will be couriered by the client As per our terms & conditions, 100% payment has to be made in advance for proceeding with sample collection. Mode of payment: A Cheque in favour of Hubert Enviro Care SystemsP Ltd. NEFT Account Name: Hubert Enviro Care Systems P Ltd Bank Account number: 0211648534 IFSC Code:KKBK0008479 Bank Name:KOTAK MAHINDRA BANK	₹ 0.00	1	₹ 0.00	₹ 0.00
		Sub Total		**₹ 16,245.00**
		GST		**₹ 2,924.10**

Accreditation and Certifications: MoEF Recognized, NABL, FSSAI Notified,
ISO 9001, ISO 14001, ISO 45001

KarRecycle Center LLP

AUTHORISED COMMON COLLECTION CENTER FOR USED OILS & WASTE OILS

AGREEMENT

This agreement made and executed at Bengaluru this 01st day of May in the year Two Thousand and Twenty Two, (01-05-2022)

Between:

M/S Yenepoya University Medical College and Hospital... having its facility at Nityananada Nagar, Deralakatte Post, Mangaluru -Taluk, Dakshina Kannada District - 575018, hereinafter called as **FIRST PARTY.**

AND

M/S. KARRECYCLE CENTRE LLP having it's facility at No. 114 C, 1st cross, 5th Main, Yeshwanthpur Industrial Area, Opposite Peenya Metro Station, Tumkur Road, Bengaluru-560 022 is the common collection centre for collecting the Hazardous waste authorized by Karnataka State Pollution Control Board is hereinafter called as **SECOND PARTY.**

I **SECOND PARTY** agrees that they will:

1) Collect & dispose the Hazardous waste mentioned in the agreement as per the Hazardous Waste (Management, Handling & Transpourdary) Rules 2008 and as amended thereof.
2) Ensure that there is no spillage in the areas of collection or the areas where the movement of the waste takes place and also proper housekeeping of the area where hazardous waste is transported timely.
3) Hazardous waste shall be collected by the representative with proper authority.
4) Shall ensure that incase of accident on road, the waste should not be misused, the entire quantity shall be transferred to another vehicle and transported to their site safely at the cost of SECOND PARTY.
5) Form 10 shall be provided during the time of collection of waste.
6) The hazardous waste shall be collected from the units as mentioned in Annexure - I.
7) Transport emergency card as per Form-11 and hazardous waste manifest as per Form-10 to be sent along with every consignment.

II **FIRST PARTY** agrees that;

1) All Hazardous Waste generated shall be packed in leak proof containers to avoid any kind of leakages during its transportation. It is to be disposed off along with its packing material, containers etc. It is the responsibility of generator to store the material in proper manner.
2) They will pack the HW Waste preferably stored in sealed, leak proof containers and ensures that there is no spillage of Hazardous Waste en-route during its transportation to its final destination.
3) **FIRST PARTY** shall ensure that all the Hazardous Waste must be weighed and tagged before its disposal to the KarRecycle's local facility.
4) The containers should be labeled as per Form- 12, Provide only the approved Waste mentioned in agreement.

KarRecycle Center LLP Bangalore 560 022

No. 114/C, 1st Cross, 5th Main, Yeshwanthpur Industrial Area, Opp. Peenya Metro Station.
Tumkur Road, Bangalore 560 022. ✆ 080 2839 5222, Mob : 7090261555
e-mail : info@karrecycle.com
VISIT US @ www.karrecycle.com

GOAL

Take urgent action to combat climate change and its impacts

ONWARD ACTIONS

- The University integrates Environmental Education into all its disciplines
- A five year 'Sustainable Action Plan' with targets for implementation are in progress
- Research on recycling organic waste are encouraged
- Awareness lectures and competitions on mitigating Climate Change are organized
- An initiative “My Mug Campaign” is encouraged to reduce carbon footprint

GOAL

Conserve and sustainable use the oceans, seas and marine resources for sustainable development

ONWARD ACTIONS

- Beach cleaning activities are conducted
- An initiative “My Mug Campaign” is practiced to avoid plastic cups for drinking coffee/tea
- Awareness talks and competitions on the impacts of plastics are organized
- Posters to avoid ‘single use plastics’ is displayed
- The café s on the campus have replaced plastic cutlery with wooden cutlery

GOAL

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

ONWARD ACTIONS

- The university maintains indigenous plant species to support biodiversity on campus
- We regularly conduct survey and document the flora, fauna and mushroom of the campus
- The campus has about 40% of green space making sustainable use of the land
- The eco club organizes programs on environmental awareness, competitions, tree plantations and field visits for its members
- Tree audit and its carbon sequestration potential is calculated as a part of environmental audit report

32. INSTITUTIONAL SOCIAL RESPONSIBILITY

Yenepoya (Deemed to be University) is committed to encourage students, and staff to provide social services to their local communities. The university indulges in a plethora of social activities to benefit the local population. The ISR activities for the year 2023 is about Rs. 22,58,800 as given in table 39.

Table 38: ISR activities of the University during 2023

Activities	Description	Date of completion	Amount in Rs.
Plantations	350 saplings planted in various locations	25.12.2023	15,000
Animal adoption programme in Biological park at Pilikula Nisargadhama	Animal welfare facilities for a year	14.10.2023	1,00,000
Auto stand with water facility	Auto rickshaw stand with w ater facility was provided for Auto Rickshaw’s drivers	14.01.2023	6,00,000
Laboratory at Pachhambala ashram	A science laboratory was constructed for the students residing at Pachhambala orphonage	03.06.2023	3,00,000
Vehicle donation	Tempo traveler vehicles are provided to Kinya and Naringana panchayath for waste collection	15.01.2023	8,00,000

Computer systems donated to:	• Malija Ullslam English Medicum School • Ullal Police station	24.05.2023 27.01.2023	67,000
Colour printer donated to:	Kavoor Police station	02.08.2023	13,000
Projector donated to:	Govt. High school, Kumpala	07.06.2023	25,000
Four computer systems donated to:	Themar Abdulla Memorial Foundation orphonage		40,000
LED street light repair and replacement	Nityananda Nagar main road	16.01.2023	8,800
Furnitures donated to:	Furnitures and partition work done for Govt. school, Balthila	12.12.2013	1,25,000
Aid for disabled persons	Thirty disabled persons were given financial aid at Harekala Panchayath	02.02.2023	90,000
Sign boards	Sixty signage boards of “Swachh Bharat” were given to Harekala Panchayath	15.08.2023	75,000
		Total	**22,58,800**

33. ENVIRONMENTAL EDUCATION

At the Yenepoya campus, environmental education is integrated with curriculum to improve environmental literacy of students on various issues related to environment and adopting sustainable lifestyle. A total of 1156 students have completed courses in environmental programs (Table 32). Involvement of students towards exploring and documenting biodiversity along with cultivation of desired plant species educates them on the value of ecosystem, ecosystem services and conservation. The Yenepoya campus biodiversity register serves as a learning kit for the students of the university.

Table 39: Student statistics completing environmental programs

Academic program	Batch	Total no. of students passed
Environmental Science		
IV BDS	2019	16
III MBBS	2020	147
IV Sem B.Sc. Technology	2021	308
II BHA		32
II BPT	2021	93
IV BOT		24
II BASLP	2022	22
Vermitechnology		
IV Sem B.Sc. Technology	2020	199
IV & VI Sem BPH	2020-2021	3
III & IV Sem B.Sc. Technology	2020-2021	40
IV & VI Sem B.Sc. Technology	2020-2021	38
IV Sem BPT		1
I Sem B.Sc. Technology	2022	41
I BPT		2
I BOT		5
II Sem B.Sc. Technology	2022	62
II Sem BOT		1
II Sem BHA		6
Environment, Ecology and Tourism		
B.Sc Forensic Science	2022	37
Total		**1156**

34. ECO CLUB ACTIVITIES

34.1 Rural annual Kambala Race

On 23rd January 2023, eco-club coordinators, faculty and students from Yenepoya Institute of Arts, Science, Commerce and Management visited the Kambala Race at Gold Finch ground at Kulur, Mangalore (Fig 46).

Fig 46: Kambala at Gold Finch ground, Kulur

34.2 The campus bird count

The campus bird count at the Yenepoya (Deemed to be University) documented the birds the team encountered during the visits held on 14th and 22nd of February. A total of 34 species were seen and many photographed (Fig 47). The birds encountered include House crows, Pale billed flower pecker, Indian golden oriole, Indian paradise flycatcher, Common kingfisher, White throated kingfisher, White breasted water hen, Common tailor bird, Palm swifts, Rock pigeons, Pied kingfisher, Brahminy kite, Black kite, Bee eater, Ashy drongo, Racket tailed drongo, Common iora, Golden fronted leafbird, Jungle babblers, Red whiskered bulbul, Black hooded oriole, Asian koel, White cheeked barbet, Pond heron, House sparrow, Purple rumped sunbird, Loten sunbird, Black rumped flameback, Silver bill, Red vented Bulbul, Spotted dove, Cattle egret, Minivet, Red wattled lapwing. The checklist is uploaded on the eBird website.

Fig 47: Campus bird count

34.3 Visit to Shivaram Karanth balavana and Koti Chennayya birth place

On 14th March 2023, from the eco-club of The Yenepoya Institute of Arts, Science, Commerce and Management (YIASCM) one-day study visit to Shivaram Karanth Balavana and Koti Chennayya Birth Place, Padumale was organized. The study visit was focused to experiential learning wherein we got to know about the traditional culture and memorial in Puttur, originally residence of Jnanapeetha awardee Kota Shivarama Karantha and the Art Gallery- with few art works related to Shivarama Karanth's books & novels and many generic ones. Padumale, the birth place of Koti-Chennaya, legendary twin heroes of Tulunadu, the other name of undivided Dakshina Kannada, will be given a new lease of life with grandiose plans in the making for its restoration. Nearly 50 students were taken to study visited (Fig 48). The study visit came up with treasure of knowledge.

Fig 48: Visit to Shivaram Karanth Balavana and
Koti Chennayya Birth Place, Padumale

34.4 World Water Day

World water day was observed from 20.03.2023 to 24.03.2023 in order to support water conservation and promote water saving attitude among staff and students. The various activities organized like, launching of posters on water conservation, installation of information board on water usage, leakage check, visit to water treatment plant and sewage treatment plant followed by a guest lecture on 'Accelerating change: be the change by Er. Rajendra Kalbhavi, Director, Nirmiti Kendra, who provided case studies of water conservation experienced by him (Fig 49).

Fig 49: World water week celebrations

34.5 Installation of Bird feeders

The eco club of Yenepoya Pharmacy College & Research Centre, initiated the Bird Feeder activity at Ayush Campus, on 28.03.2023. The main aim of the event was to quench the thirst of birds during summer season. The activity was inaugurated by Principal, Dr. Mohammed Gulzar Ahmed by filling the feeder with grains and water. Later he told the importance of feeding the animals and birds and also shared Sir's childhood experience in petting the birds at home. The feeder of different models was prepared using the bamboo shoot grown at our campus. The feeder was hung using iron strings on trees, containing 2 compartments to fill water and food (Fig 50). Students were asked to bring feed to the birds.

Fig 50: Installing bird feeders

34.6 Coastal clean-up drive

On 7th May 2023, the eco club of YIASCM organised a coastal clean-up drive at Tannirbhavi Beach, Mangalore. The clean-up drive was focused on the objective of social responsibility and community engagement wherein students got to know their responsibility towards social service. Nearly 30 students participated in the clean-up drive. The event came up with treasure of knowledge of awareness and thoughts of responsibility (Fig 51).

Fig 51: Beach cleaning at Tannirbhavi

34.7 Training Programme on "Carbon footprint calculation"

Fig 52: Session on carbon footprint calculation

An online training program on “Carbon footprint calculation” was organized on 18.05.2023. A total of 45 participants from Yenepoya School of Allied Health Sciences attended the training programme. Ms. R. S. Thulaja, Programme Officer, Nature Science Foundation (NSF), Coimbatore was the resource person who gave an introduction to carbon foot print (Fig 52). She explained ways to reduce carbon foot print by recycling and reusing items. She also explained the impact of carbon foot print on our environment. Various examples were given and the calculations were explained using conversion factor.

34.8 International year of millets

On the occasion of International day for Biological Diversity, the eco club of Yenepoya Nursing College, in collaboration with Nature Science Foundation, Coimbatore, organized International Millet Year 2023 from May 22 - 25, 2023. The cooking competition, titled 'Modern food from traditional millet' was held at the college Nutrition Lab, where ten teams participated (Fig 53). On May 24, 2023, a guest talk on 'Millet miracle-foods for future' was delivered by Mr. Addoor Krishna Rao, Honorary President, Organic Farmer Consumer Forum, Mangaluru (Fig 54). A total of 125 participants attended the guest talk. Dr. Puneeth Raghavendra, Principal, College of Naturopathy and Yogic Sciences was the chief guest of the program who spoke on the significance of the millets in our life. The presidential address was delivered by the principal Dr. Leena K. C. Prizes were distributed to the winners of the cooking competition. Millet refreshments were distributed to raise awareness and motivate participants towards a healthy lifestyle. On 25.05.2023 a Millet exhibition was held in the main campus by Savayava Malighe, Gandhinagar, Mangaluru with the purpose of supporting farmers and promoting awareness on millets (Fig 55).

Fig 53: Prize distribution

Fig 54: Guest talk by Mr. Addoor Krishna Rao

Fig 55: Millet exhibition

34.9 World Environment Day

World Environment Day was organized on 5th June by planting saplings. Three saplings of *Mangifera indica, Artocarpus heterophyllus* and *Annona muricata* are planted by the Centre for Environmental Studies in the Munnur Higher Primary School, Kuttar. The saplings were planted by students of the school. Reserved police personnel also joined in the plantation drive (Fig 56).

Fig 56: Plantation of saplings

34.10 Webinar

The Department of Dravyaguna Vignana in association with eco club organized a guest talk on 05.06.2023 at Yenepoya Ayurveda Medical College and Hospital on the topic 'E-waste managemnt' by Mr. Vinayaka Bhatta, Environmental engineer (Fig 57). The program was presided by the principal Dr. Gururaja H. A total of 133 staff and students participated in the guest lecture.

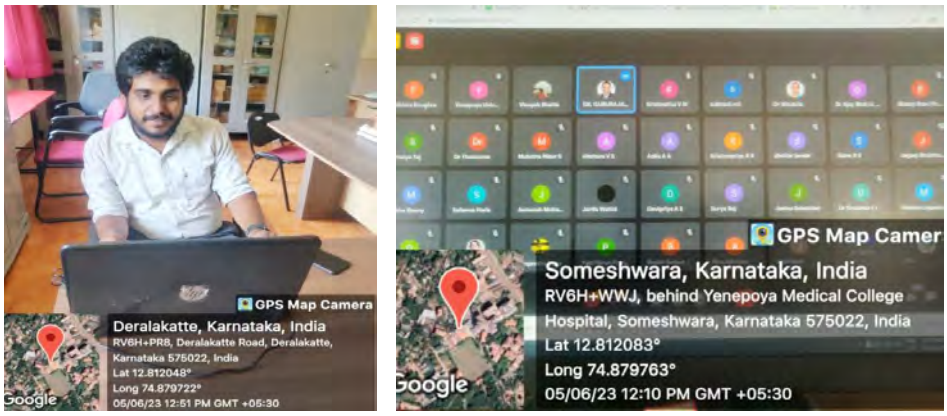

Fig 57: Guest talk by Mr. Vinayaka Bhatta

34.11 Essay competition

On the occasion of the World Environment Day an essay competition was conducted titled “Best Solutions for beating Plastic Pollution” on 5th June 2023 for the students of all constituent units of Yenepoya (Deemed to be University). The competition was conducted in all constituent colleges and the winning essays were considered for judgement at the University level (Fig 58).

Fig 58: Prize distribution for the winners at college level

The above eleven essays were judged for the university level competition and the winners were first prize by Mr. Mohammed Tameem, (I D. Pharma) and second prize by Ms. Aysha Dhilna (III MBBS) (Fig 59):

First prize - Mr. Mohammed Tameem

Second Prize - Ms. Aysha Dhilna

Fig 59: Winners of the essay competition

34.12 Changing Tides – The Yen Way

As a part of the Silver Jubilee celebration of Yenepoya Medical College the eco club conducted a game program titled 'Changing Tides - The Yen Way' on 4th July 2023. A total of 6 teams with 7 participants in each team from different constituent units of YDU participated in the competition. The game program consisted of 6 rounds and the winners were awarded cash prizes.

- First Round: Quiz Round
- Second Round: Movies name related to Environment (any language)
- Third Round: Express yourself as an endangered species
- Fourth Round: Draw a map of world and mark the hotspots in the world
- Fifth Round: Make a painting on the theme “Beating Plastic Pollution”
- Sixth Round: Best out of Waste-Make an art from waste materials

Fig 60: Changing Tides – The Yen Way

34.13 Vanamahotsava

The Centre for Environment Studies celebrated Vanamahotsava on 14.07.2023 in the campus. Dr. Laxmikanth Chatra, Principal, Yenepoya Dental College inaugurated the event by planting a sapling of *Mimusops elengi* (Bakula) and distributing the vegetable seeds of brinjal, ladies finger, cucumber, bottle gourd, cow pea and ridge gourd to the staff and students of the University (Fig 61). A variety of saplings of Mango, Jackfruit, Bakula, Bilwa, Honge etc…collected from the forest department was distributed among the participants. Various plant cuttings from the campus such as different varieties of hibiscus, croton, ornamental plants and flowering plants were distributed. A total of above 200 participants collected their saplings and seed packets.

Fig 61: Distribution of seed packets and saplings

34.14 Guest Lecture

A webinar on the topic “Biomedical waste –Management” was delivered by Dr. Ravi D. R on 21.07.2023. The lecture was organized by Centre for Environmental Studies. The resource person explained about bio medical waste as potentially infectious waste generated in healthcare facilities during diagnosis, treatment, or research. Proper management, segregation, and disposal are essential to minimize its adverse effects on the environment and public health. Effective waste management practices ensure safe handling and treatment of biomedical waste, reducing the risk of contamination and disease transmission. Adequate training and infrastructure are crucial for healthcare facilities to manage biomedical waste responsibly and protect the community and ecosystem (Fig 62). The lecture was attended by 100 participants.

Fig 62: Guest talk by Dr. Ravi

34.15 Trekking to Ermayii waterfalls

One of the primary goals of our eco-club is to foster a closer connection with nature among its members. One activity that represents this ethos is trekking, which provides lots of benefits for the mind, body, and soul. To break the routine monotony of daily life for both our staff and students, we organized a trek on 1st Nov to Ermayii waterfalls – a mesmerizing natural wonder nestled near Kajoor in the Chikkamagaluru district of Karnataka. Enveloped by lush forests, this waterfall provided a truly enchanting experience during the trek. A total of sixty-four enthusiastic participants, comprising both staff and students, embarked on this breath-taking journey (Fig 63). Beginning early in the morning, we enjoyed a delightful breakfast on the banks of a stream, surrounded by the awe-inspiring views of the Kudremukh Mountains in the distance. The refreshing stream water provided an energizing start to the day, complemented by a hearty breakfast in the lap of nature.

Fig 63: Faculty and students at the trek

Our trek continued towards the waterfalls, a 2-kilometer walk through the fascinating forest. Along the way, we discovered a river, crossed a bridge, and admired the diverse flora and fauna. Upon reaching the waterfall, its majestic beauty unfolded before us. All participants immersed themselves in the refreshing water, feeling the rejuvenating effects of the waterfalls. The force of the waterfall created a small pond, allowing us to relax and enjoy the serene surroundings. The next phase involved a climb through the rocks to reach the top beside the waterfalls, adding an adventurous element to our experience. From the top, the view of the waterfalls was nothing short of spectacular. The atmosphere at the peak was both breath-taking and relaxing, providing a truly mind-blowing experience (Fig 64).

After spending quality time in the water, capturing memories through photos and videos, we concluded our adventure-packed day. Packed food accompanied us, ensuring we could replenish our energy throughout the day. In the end, it was a lively and memorable day-an experience that will be imprinted in our memories for a long time to come.

Fig 64: Ermayii waterfalls

35. CONCLUSION

Through the dedicated efforts of the Centre for Environmental Studies and the maintenance team, the university has undertaken a series of campaigns and programs aimed at educating both students and staff on the critical importance of natural resource preservation, responsible resource utilization, recycling, and reuse. These initiatives have positioned environmental education, comprehensive training, and projects such as vermicomposting as the hallmarks of the institution's commitment to environmental stewardship.

The university has developed a comprehensive sustainable action plan slated for implementation over five years. A dedicated team has been established to oversee the execution of this plan, ensuring its success. The university is taking multiple measures to promote sustainability, including the utilization of renewable energy resources, active biodiversity conservation efforts, and educational campaigns focused on water conservation.

Furthermore, the university is committed to a range of initiatives designed to reduce its environmental footprint. These initiatives include decreasing paper consumption, minimizing the use of plastics, and offering environmental education programs for students. This commitment underscores the university's dedication to environmental sustainability.

The University boasts an extensive and well-organized solid waste management system within the campus, a testament to the proactive response from the management. The pristine cleanliness of the campus reflects the dedication and vigilance with which we approach environmental responsibility.

This environmental audit has diligently assessed the wide range of activities undertaken within the campus, demonstrating the active collaboration of management, staff, and students in these vital initiatives. By preserving nature and fostering awareness in the community, we not only contribute to a healthier society today but also lay the groundwork for a more sustainable future tomorrow.

Yenepoya (Deemed to be University) is undeniably heading in the right direction, and its intent to continue in this trajectory is evident. Numerous Environmental Management Plans have been proposed, underscoring its commitment to conservation, resource optimization, and the support of biodiversity within the campus. These initiatives collectively underscore its unwavering dedication to establishing the institution as a sustainable and environmentally responsible campus.

36. RECOMMENDATIONS

a. Water Conservation

- Upgrade water fixtures – consider replacing outdated tap fittings with modern taps to reduce water wastage.
- Educational initiatives – conduct awareness programs on water conservation to educate students and staff about the importance of saving water.
- Reuse treated water – implement a system for reusing water treated by Sewage Treatment Plants (STP) for non-potable purposes such as cleaning floors, running coolers, and any other suitable applications.

b. Energy Conservation

- Energy education – organize awareness programs to promote energy conservation practices and raise awareness among the campus community.
- LED lighting – Transition to energy-efficient LED bulbs and lighting solutions to reduce electricity consumption and lower energy costs.

c. Solid Waste management

- Vermicomposting expansion – extend the existing vermicomposting process by adding more units to efficiently manage organic waste.
- Waste segregation training – conduct training programs to educate students and staff on the proper segregation and management of solid waste.
- Vermicompost training – provide training on vermicomposting techniques to encourage the recycling or organic waste.

d. Eco Club

- Environmental awareness – encourage environmental awareness among students through various activities, workshops, and events that highlight the importance of environmental conservation.
- Carbon foot print training – organize training programs on carbon footprint assessment and reduction to instill a sense of responsibility among students and staff.
- Flora and fauna projects – engage students in projects that involve the identification and preservation of local flora and fauna, fostering a sense of connection to the environment.
- Field visits and trekking – organize field visits and trekking expeditions to expose students to real-world environmental challenges and instill a deeper appreciation for nature.

These recommendations provide a clearer and more organized approach to addressing water and energy conservation, solid waste management, and the activities of the Eco Club within the institution. They emphasize a combination of practical measures and educational initiatives to create a holistic and sustainable approach to environmental management.

The university has a crucial role in contributing to the well-being of the community it serves. Documenting and actively addressing its social responsibilities is not only a commendable initiative but also a fundamental aspect of its commitment to societal progress. To enhance its impact, the university should consider expanding its green community engagement programs. These initiatives could range from educational outreach and skill development programs to collaborative research projects with local organizations.

Incorporating sustainable and community-focused practices into the university's mission not only aligns with ethical standards but also positions the institution as a responsible and responsive member of society. This approach can attract positive attention, build stronger relationships with local communities, and contribute to a positive institutional reputation. Ultimately, by integrating social responsibility into its core identity, the university can play a pivotal role in addressing societal challenges and fostering a sense of shared responsibility for the community.

6 CLEAN WATER AND SANITATION 	**GOAL** Ensure access to water and sanitation for all	**ONWARD ACTIONS** • Awareness programs are conducted on how to wash hands properly. • Water purification systems are installed for drinking water • Water sources such as tube wells, open wells, rainwater harvesting ponds are regularly cleaned and monitored. • Posters are displayed to conserve water. • Wastewater generated on the campus is recycled in Sewage Treatment Plants and reused for irrigation.
7 AFFORDABLE AND CLEAN ENERGY 	**GOAL** Ensure access to affordable, reliable, sustainable and modern energy for all	**ONWARD ACTIONS** • Energy efficient LED bulbs and appliances are used • Alternative sources of energy such as solar power are used • Posters are displayed to save energy by switching off lights and fans when not in use • Awareness programs on energy competitions, guest lectures, quiz and others organized
12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	**GOAL** Ensure sustainable consumption and production patterns	**ONWARD ACTIONS** • The University procurement policy involves checking the supply chain for sustainable practices • The University keeps track of the waste generated on the campus and is managed as per regulations • Recycling of biodegradable waste is done on the campus • Initiatives such as zero paper office and online 'Data Management System' are implemented that encourage a reduce, reuse, recycle policy
13 CLIMATE ACTION 	**GOAL** Take urgent action to combat climate change and its impacts	**ONWARD ACTIONS** • The University integrates Environmental Education into all its disciplines • A five year 'Sustainable Action Plan' with targets for implementation are in progress • Research on recycling organic waste are encouraged • Awareness lectures and competitions on mitigating Climate Change are organized • An initiative "My Mug Campaign" is encouraged to reduce carbon footprint
14 LIFE BELOW WATER 	**GOAL** Conserve and sustainable use the oceans, seas and marine resources for sustainable development	**ONWARD ACTIONS** • Beach cleaning activities are conducted • An initiative "My Mug Campaign" is practiced to avoid plastic cups for drinking coffee/tea • Awareness talks and competitions on the impacts of plastics are organized • Posters to avoid 'single use plastics' is displayed • The café s on the campus have replaced plastic cutlery with wooden cutlery
15 LIFE ON LAND 	**GOAL** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	**ONWARD ACTIONS** • The university maintains indigenous plant species to support biodiversity on campus • We regularly conduct survey and document the flora, fauna and mushroom of the campus • The campus has about 40% of green space making sustainable use of the land • The eco club organizes programs on environmental awareness, competitions, tree plantations and field visits for its members • Tree audit and its carbon sequestration potential is calculated as a part of environmental audit report
17 PARTNERSHIPS FOR THE GOALS 	**GOAL** Strengthen the means of implementation and revitalize the global partnership for Sustainable Development	**ONWARD ACTIONS** • The university has signed the SDG Accord as a formal commitment to playing our part in meeting the SDGs • The university has developed a 5-year Sustainable Action Plan (SAP) and a Campus Sustainability Committee to oversee the implementation of the SAP • The university has collaborations with other institutions and organizations for sharing best practices on SDG

YENEPOYA
(Deemed to be University)

University Road, Deralakatte, Mangalore – 575018, India
Ph: 0824 2204668
Website: www.yenepoya.edu.in