YENEPOYA
[DEEMED TO BE UNIVERSITY]

SUSTAINABILITY REPORT 2022

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 Monterio
   Supervisor, Maintenance Dept.

Centre for
Environmental Studies

YENEPOYA
(DEEMED TO BE UNIVERSITY)

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SUSTAINABILITY REPORT

2022

University Road, Deralakatte, Mangalore – 575018, India
Ph: 0824 2204668 Fax: 0824 2204667
Email: registrar@yenepoya.edu.in Website: www.yenepoya.edu.in

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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
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

ENVIRONMENTAL AUDIT 2022

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.

Geographically the University main campus is located at 12.8120°N, 74.8813°E. The university includes ten constituent units The Yenepoya Medical College, The Yenepoya Nursing College, The Yenepoya Physiotherapy College, The Yenepoya Institute of Arts, Science, Commerce and Management, The Yenepoya Ayurveda Medical College and Hospital, The Yenepoya Homeopathic Medical College and Hospital, and The Yenepoya School of Allied Health Sciences catering to a total number of 11734 staff and students. The 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.

The institution is spread over four premises (Fig. 1), situated in the periphery of the coastal city of Mangalore in Karnataka. The mother campus housing the administrative building, YMC, YMCH, YDC, YRC, YTI, ASSEND and hostels is situated in 26.92 acres of natural terrain in Deralakatte, while the YSAHS is situated in 1.314 acres at Mudipu, the third premises housing the YIASCM is situated in 1.9 acres at Balmatta, Mangalore and The YAMCH, YHMCH, YNYSCH, YNC, YPC, YPCRC is situated at Naringana, Kinya spread over 63.6 acres.

The Yenepoya (Deemed to be University) has been accredited by NAAC with “A+” grade and CGPA points of 3.47 during November 2022. It has been ranked in top 100 (85th) in NIRF of MHRD, Govt. of Indian Universities category in the country. In UI GreenMetric ranking the university stands 333rd in world ranking.

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.

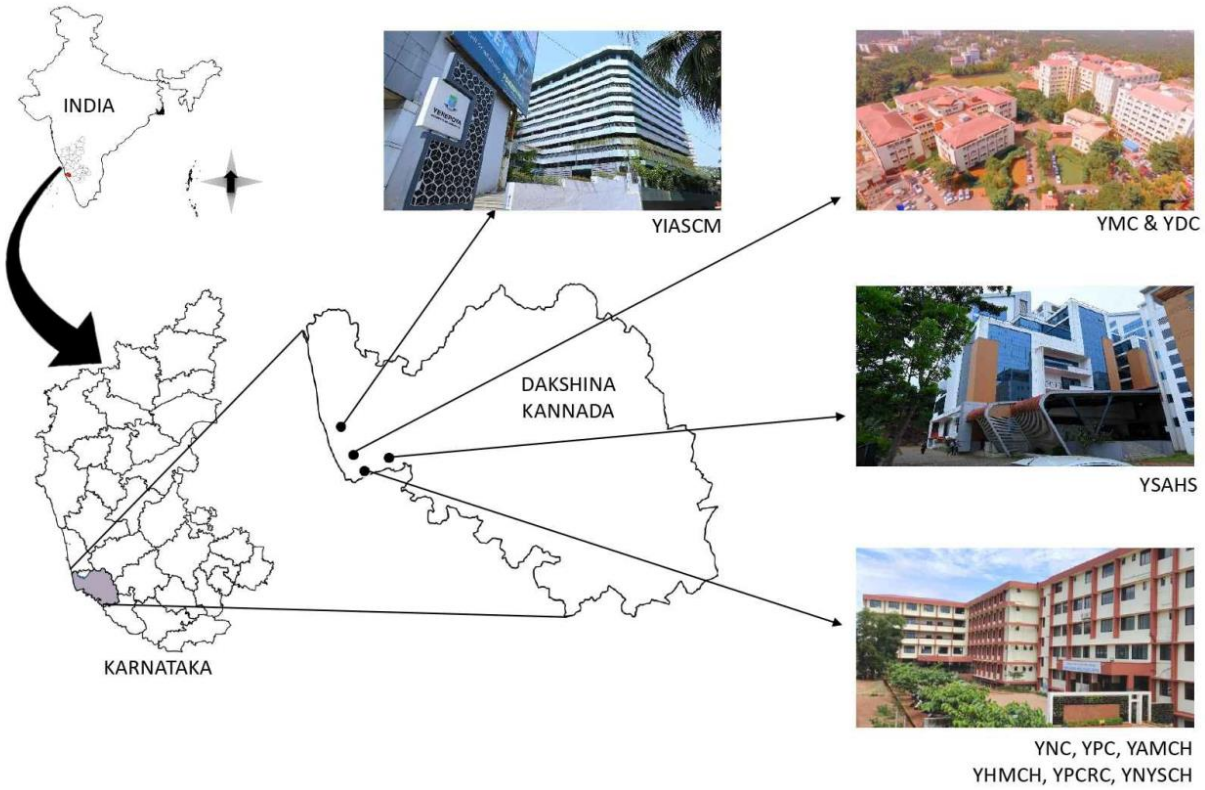


Fig. 1: Yenepoya (Deemed to be University) campus layout

2) Some basic attributes of the University campus.

The University is spread over an area of 93.74 acres with ten constituent units and twenty specialized centres.

- Deralakatte premises (Administrative building, YMC, YDC) :~ 26.92 acres
  - Total building space : ~15, 95,300 sq. ft.
  - Total green belt area :~13 acres
- Naringana premises (YNC, YPC, YAMCH, YHMCH, YPCRC, YNYSCH) :~63.6 acres
  - Total building space : ~24,244.39 sq.mt.
  - Total green belt area :~45 acres
- Mudipu premises (YSAHS) :~1.314 acres
  - Total building space : ~5,318.20 sq.mt.
  - Total green belt area :~0.3 acres
- Balmatta premises (YIASCM) :~1.91 acres
  - Total building space : ~7,728.69 m^2sq.mt.
  - Total green belt area :~0.1 acres

3) Objectives

- To assess the environmental performance of the University
- To improve the environmental standards
- To ascertain whether the institution complies with the statutory requirements
- To assess whether the activities are economical, efficient and effective
- To encourage Reduction, Recycling and Reuse practices
- 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

4) 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

4.1 The areas covered in this audit

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

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 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

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	Waste water 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	Waste water generation	Water and land pollution	Waste water treatment
		Solid waste generation	Water and land pollution	Scientific disposal
4	Operation ofdiesel 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	Buyback arrangement with the suppliers
		Plastic waste	Water and land pollution	Waste minimization

6	Usage 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

6) Water management

Water is used for drinking, sanitation, kitchen, laundry, housekeeping, gardening, and healthcare related activities. The university has a water collection, storage and distribution network for the supply of fresh water within the campus (Fig. 2). An efficient water management system ensures all users receive water of desired quality with uninterrupted supply and no wastage in the transit.

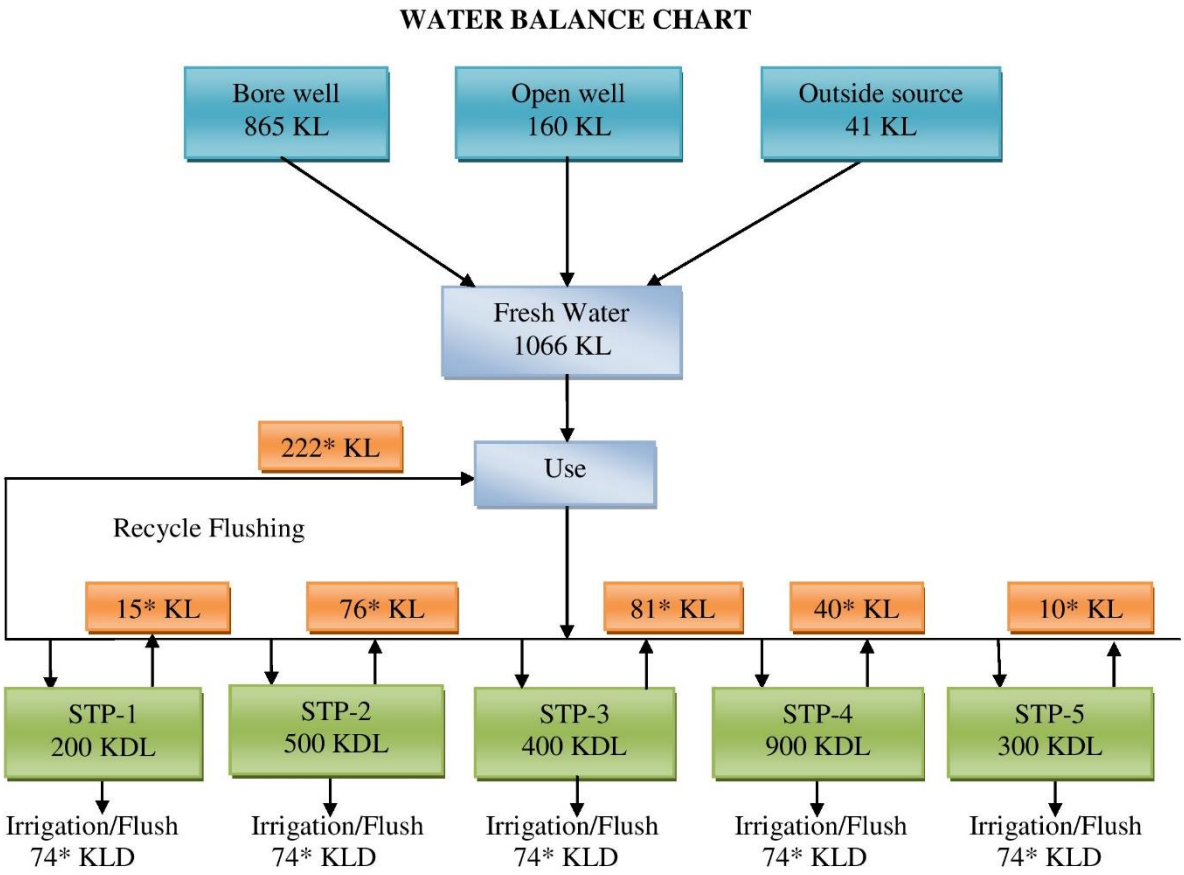


Fig 2: Flow chart of water treatment in University main campus

The campus population includes students, staff, patients, their attendants and floating population among others. Average population on the campus per day is as follows:

- 11734 staff and students
- 900 inpatients/day
- 900 patient attendants
- 2000 visitors/day

6.1 Fresh water sources

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 2. The university is heavily dependent on the ground water for its water needs.

Table 2: 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%

6.2 Fresh water storage and treatment

Water, drawn from various sources, is stored at different locations in the collection tanks of different capacities. There are 4 collection tanks at different locations for storage and further treatment (Table 3).

Table 3: 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 100 KL	200 KL
2	YMCH sump	1 x 100 KL	100 KL
3	Central kitchen sump	1 x 150 KL	150 KL
4	YMCH filter sump	1 x 200 KL	200 KL
5	Gardyenia hostels	2 x 100 KL	200 KL
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			**1200 KL**

The water is treated to meet the acceptable quality standards and to remove unwanted matter like suspended solids present. There are 4 Water Treatment Plants, one each in the hospital, campus hostel, central kitchen and Gardyenia hostels 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 and Central Kitchen 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 six RO plants of 250 LPH capacity installed at boy's hostel, two in girl's hostels and three at Gardyenia hostels. The university also provides drinking water facilities at designated locations in the hospital, administrative blocks, and college building with 81 water purifiers of different capacities. Treated water is tested for potability (Table 4).

Table 4: Water analysis reports

FEBRUARY										
Site		**Color**	**Turbidity**	**pH**	**Fluoride**	**R. Chlorine**	**Total Hardness**	**TS**	**TDS**	**TSS**
Gardyenia	A block	No color	No Turbidity	6.9	0	0	50	40	0	40
	B block			7.1	0	0	0	0	0	0
	C block			6.9	0	0	0	0	0	0
	D block			7.5	0	0	0	0	0	0
Hospital	Sump			6.9	0	0	0	320	0	320
	Filter			6.9	0	0	0	320	0	320
Hostel	Boys hostel			7.1	0	0	125	0	0	0
	Annex ladies hostel			7.3	0	0	50	160	0	160
	Ayasha 1 hostel			6.7	0	0	75	280	0	280
	Ayasha 2 hostel			6.9	0	0	75	560	80	480
	Zulekha Bhavan hostel			6.9	0	0	0	0	0	0
	Zulekha ladies hostel			7.3	0	0	100	0	0	0
	Jeppu hostel gents			6.5	0	0	50	200	80	120
	Jeppu hostel ladies			6.2	0	0	0	200	0	200
	New boys hostel			7.2	0	0	0	0	0	0
	Fathima hostel			6.4	0	0	250	200	40	160
	Bru hostel			7.02	0	0	180	360	40	320
	Hasan Chamber			6.3	0	0	0	1480	120	1360
Campus	Kinya			7	0	0	100	160	160	0
	Mudipu			7	0	0	100	0	0	0
	Balmatta			6.5	0	0	75	0	0	0

MAY										
Site		**Color**	**Turbidity**	**pH**	**Fluoride**	**R. Chlorine**	**Total Hardness**	**TS**	**TDS**	**TSS**
Gardyenia	A block	No color	No Turbidity	7.9	0	0	0	0	0	0
	B block			8.4	0	0	50	40	40	0
	C block			8.2	0	0	75	0	0	0
	D block			8.4	0	0	50	0	0	0
Hospital	Sump			8.1	0	0	145	120	120	0
	Filter			7.8	0	0	80	40	0	40
Hostel	Boys hostel			8.1	0	0	145	120	120	0
	Annex ladies hostel			8.4	0	0	45	40	0	40
	Ayasha 1 hostel			7.6	0	0	115	0	0	0
	Ayasha 2 hostel			8.6	0	0	155	0	0	0
	Zulekha Bhavan hostel			7.6	0	0	45	0	0	0
	Zulekha ladies hostel			8.2	0	0	50	0	0	0
	Jeppu hostel gents			8.9	0	0	95	0	0	0
	Jeppu hostel ladies			8.2	0	0	120	0	0	0
	New boys hostel			7.9	0	0	90	0	0	0
	Fathima hostel			8.6	0	0	65	0	0	0
	Bru hostel			8.6	0	0	65	0	0	0
	Hasan Chamber			6.8	0	0	55	80	0	80
Campus	Kinya			7.6	0	0	75	0	0	0
	Mudipu			8.1	0	0	75	40	0	40
	Balmatta			8.6	0	0	60	0	0	0

JULY										
Site		**Color**	**Turbidity**	**pH**	**Fluoride**	**R. Chlorine**	**Total Hardness**	**TS**	**TDS**	**TSS**
Gardyenia	A block	No color	No Turbidity	7.6	0	0	0	40	40	0
	B block			7.6	0	0	25	40	0	40
	C block			7.3	0	0	25	0	0	0
	D block			7.2	0	0	25	0	0	0
Hospital	Sump			7.8	0	0	50	0	0	0
	Filter			7.8	0	0	50	0	0	0
Hostel	Boys hostel			7.8	0	0	0	0	0	0
	Annex ladies hostel			7.9	0	0	0	120	120	0
	Ayasha 1 hostel			6.7	0	0	50	240	240	0
	Ayasha 2 hostel			7	0	0	75	120	80	40
	Zulekha Bhavan hostel			7.3	0	0	0	0	0	0
	Zulekha ladies hostel			7.3	0	0	0	0	0	0
	Jeppu hostel gents			6.5	0	0	100	400	200	200
	Jeppu hostel ladies			6.4	0	0	100	320	200	120
	New boys hostel			6.7	0	0	0	0	0	0
	Fathima hostel			6.9	0	0	25	0	0	0
	Bru hostel			6.9	0	0	25	0	0	0
	Hasan Chamber			7.6	0	0	0	0	0	0
Campus	Kinya			6.9	0	0	25	0	0	0
	Mudipu			7.5	0	0	75	280	80	200
	Balmatta			6.7	0	0	50	0	0	0

SEPTEMBER										
Site		**Color**	**Turbidity**	**pH**	**Fluoride**	**R. Chlorine**	**Total Hardness**	**TS**	**TDS**	**TSS**
Gardyenia	A block	No color	No Turbidity	8.2	0	30	25	240	240	0
	B block			8.1	0	0	25	120	80	40
	C block			7.7	0	0	25	120	40	80
	D block			7.6	0	0	25	440	0	440
Hospital	Sump			7.3	0	0	0	520	520	0
	Filter			7.2	0	0	75	400	0	400
Hostel	Boys hostel			7.9	0	0	0	0	0	0
	Annex ladies hostel			6.8	0	20	25	320	0	320
	Ayasha 1 hostel			6.6	0	50	25	680	640	40
	Ayasha 2 hostel			8.1	0	20	125	840	760	80
	Zulekha Bhavan hostel			8.1	0	0	0	0	0	0
	Zulekha ladies hostel			7.8	0	0	0	680	0	680
	Jeppu hostel gents			7.4	0	0	50	840	760	80
	Jeppu hostel ladies			6.9	0	0	75	280	0	280
	New boys hostel			7.4	0	0	0	200	0	200
	Fathima hostel			7.5	0	20	25	360	360	0
	Bru hostel			6.5	0	0	0	600	0	600
	Hasan Chamber			6.6	0	0	0	160	160	0
Campus	Kinya			6.6	0	0	25	160	0	160
	Mudipu			7.1	0	0	0	480	0	480
	Balmatta			6.3	0	20	25	40	0	40

OCTOBER										
Site		**Color**	**Turbidity**	**pH**	**Fluoride**	**R. Chlorine**	**Total Hardness**	**TS**	**TDS**	**TSS**
Gardyenia	A block	No color	No Turbidity	6.6	0	0	0	320	120	200
	B block			8.1	0	0	25	0	0	0
	C block			7.5	0	0	25	40	40	0
	D block			7.7	0	0	25	0	0	0
Hospital	Sump			7.5	0	0	50	0	0	0
	Filter			7.5	0	0	50	0	0	0
Hostel	Boys hostel			7.1	0	0	100	520	200	320
	Annex ladies hostel			7.4	0	0	360	200	160	50
	Ayasha 1 hostel			6.8	0	0	0	0	0	0
	Ayasha 2 hostel			6.5	0	0	25	520	120	400
	Zulekha Bhavan hostel			8.1	0	0	0	0	0	0
	Zulekha ladies hostel			8.1	0	0	0	40	0	40
	Jeppu hostel gents			7.5	0	0	175	40	40	0
	Jeppu hostel ladies			6.5	0	0	0	0	0	0
	New boys hostel			6.7	0	0	0	0	0	0
	Fathima hostel			7.8	0	0	0	360	120	240
	Bru hostel			6.6	0	0	0	560	80	480
	Hasan Chamber			6.8	0	0	0	40	40	0
Campus	Kinya			6.5	0	0	0	40	0	40
	Mudipu			7.2	0	0	100	320	80	240
	Balmatta			6.5	0	0	0	0	0	0

NOVEMBER										
Site		**Color**	**Turbidity**	**pH**	**Fluoride**	**R. Chlorine**	**Total Hardness**	**TS**	**TDS**	**TSS**
Gardyenia	A block	No color	No Turbidity	7.3	0	0	0	0	0	0
	B block			7.2	0	0	25	0	0	0
	C block			6.6	0	0	25	80	0	80
	D block			8.2	0	0	0	40	0	40
Hospital	Sump			6.8	0	0	50	200	200	0
	Filter			6.8	0	0	50	200	200	0
Hostel	Boys hostel			7.3	0	0	0	80	80	0
	Annex ladies hostel			7.2	0	0	25	0	0	0
	Ayasha 1 hostel			6.7	0	0	0	40	40	0
	Ayasha 2 hostel			6.7	0	0	0	40	40	0
	Zulekha Bhavan hostel			6.8	0	0	0	200	160	40
	Zulekha ladies hostel			6.8	0	0	0	240	80	160
	Jeppu hostel gents			6.6	0	0	125	200	80	120
	Jeppu hostel ladies			7.2	0	0	125	280	0	280
	New boys hostel			6.9	0	0	0	160	0	160
	Fathima hostel			8.1	0	0	0	160	80	80
	Bru hostel			6.7	0	0	0	0	0	0
	Hasan Chamber			7	0	0	0	160	160	0
Campus	Kinya			6.5	0	0	0	40	40	0
	Mudipu			8.3	0	0	75	280	160	120
	Balmatta			7	0	0	25	0	0	0

6.3 Fresh water consumption

Standard water consumption is 135 liters per capita per day for the resident population and 45 liters per capita per day for day users. However, the water consumption pattern changes with each location, depending on the type of activities. Water consumption for the year 2022 is given in Table 5. Comparison of water consumption is presented in Fig. 3

Table 5: Water consumption across different units and premises

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	9956	9307	965	1007	4286	4811	1470	1005	650	2155
February	9903	8934	947	632	4126	4513	1394	882	756	2180
March	11698	10645	1142	669	3986	5200	1616	1029	775	1900
April	9945	10422	1002	565	2464	5281	1481	838	850	2100
May	10806	10595	1150	748	5815	5192	1487	980	885	1850
June	11173	10616	1488	714	5390	5015	1526	1382	902	200
July	10810	10298	1442	956	5662	4869	1467	1941	925	1700
August	10827	10442	1450	1474	6069	4611	1609	1641	870	1900

September	10977	11328	1294	829	6034	4606	1554	1685	925	1885
October	11289	10894	1184	640	6275	4436	1583	1666	989	4000
November	11895	10710	1278	768	6227	4942	1505	1642	945	3800
December	10797	11021	1430	832	6237	4854	1590	1691	825	41500
Total	**130076**	**125212**	**14772**	**9834**	**62571**	**58330**	**18282**	**16382**	**10297**	**65170**

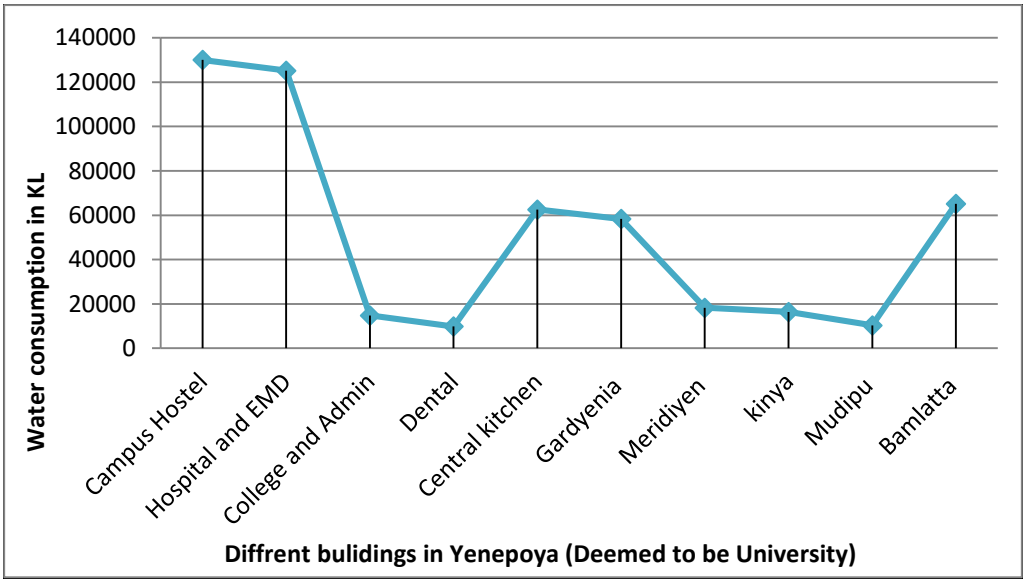


Fig. 3: Water consumption 2022

6.4 Wastewater management - generation

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 3083 students which is one of the major contributors of waste water generated in the campus.

6.5 Types of wastewater generated

Depending on the characteristics and source of wastewater generated in the campus, it is divided into four types as given in Table 6.

Table 6: Types of wastewater

Sl. No.	Types of waste water	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

6.6 Wastewater treatment facilities

The treatment and disposal of wastewater is carried out as per the applicable discharge norms. There are 4 Sewage Treatment Plants (STP) and 2 Effluent Treatment Plants (ETP) which are being operated. Details of treatment facilities provided for these wastewater streams are given in the Table 7.

Table 7: Treatment Plants and Disposal Methods

Sl. No.	Types of wastewater	Treatment plant	Disposal Method
1	Liquid biomedical effluent	ETP of 10 KLD 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 hospital	STP 500 KLD capacity	Toilet flushing, irrigation, etc
5	Sewage and Sullage from campus hostel	STP of 200 KLD capacity	Toilet flushing, irrigation, etc
6	Sewage and Sullage from Gardyenia hostel	STP of 400 KLD capacity	Toilet flushing, irrigation, etc
7	Sewage and Sullage from Meridiyen quarters	STP of 300 KLD capacity	Toilet flushing, irrigation, etc

6.7 Treatment of effluent in ETP

An ETP of 10 KLD for liquid biomedical waste treatment (LBMW) and 2 STP's of 500 KLD and 200 KLD capacity is provided to treat waste water from the hospital, dental college, medical college, nursing college, Physiotherapy College, hospital canteen and administration block (Fig. 4).

Fig. 4: Effluent treatment plant

The effluent and sewage 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. The wastewater from kitchen and laundry is treated in ETP of 300 KLD with primary and secondary treatment.

6.8 Treatment of sewage and sullage in STP

All the four STPs are designed with activated sludge process in extended aeration mode (Fig. 5). The treated discharge is dosed with sodium hypochlorite for disinfection and used for flushing and irrigation. The quantity of waste water treated is given in Table 8. As the recycled water is used for flushing, the quantity of wastewater treated is more than the fresh water consumed.

Fig. 5: Sewage treatment plant

Table 8: Summary of treated wastewater

Month	Hospital CETP (500 KLD)	Hostel STP (200 KLD)	Gardyenia hostel STP (300 KLD)	Central kitchen ETP (300 KLD)	Ayush Campus STP (300 KLD)
January	14662	12942	6254	5571	570
February	13666	12873	5866	5363	460
March	16192	15207	6760	5104	514
April	15585	12928	6865	3203	585
May	16287	14047	6749	7559	561
June	16663	14524	6519	7007	834
July	16504	14053	6329	7360	966
August	17374	14075	5994	7889	1128

September	17486	14270	5987	7845	1095
October	16533	14675	5766	8157	975
November	16582	15463	6424	8095	1005
December	17267	14036	6310	8108	1264
Total	**194801**	**169093**	**75823**	**81261**	**9957**

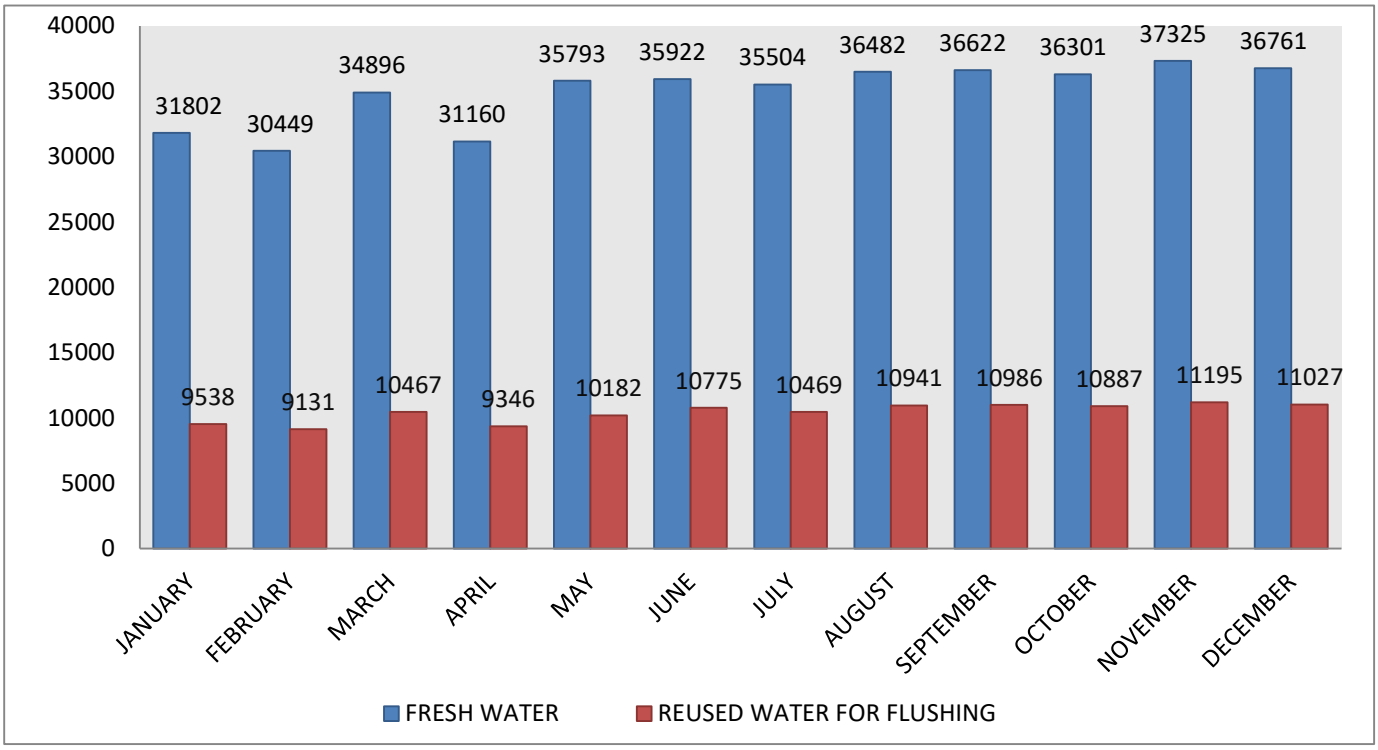
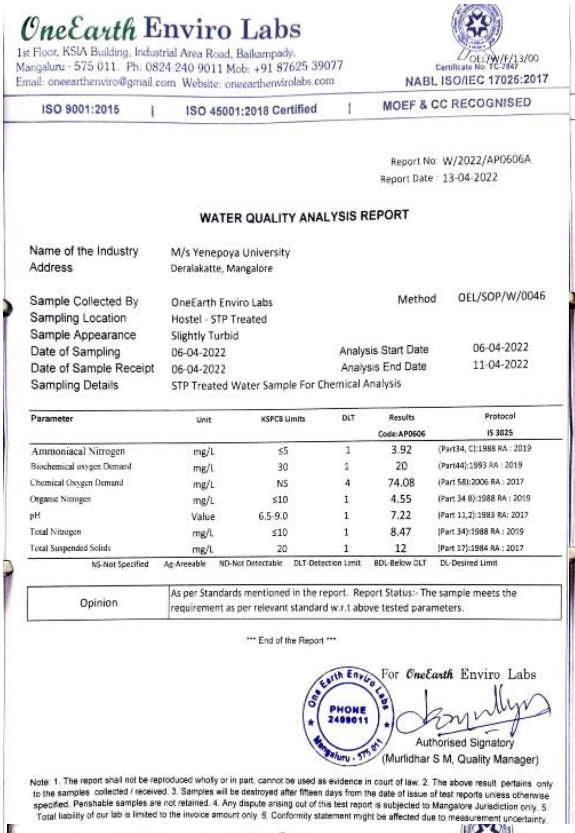


Fig. 6: Water consumption and re-used water quantity

Fig.6 shows the water consumption and reused water quantity. This shows the significant impact of water conservation efforts on the campus. By comparing freshwater consumption and reused water for flushing, it highlights the successful implementation of sustainable practices. The consistent trend of reused water indicates the successful reduction of freshwater usage during all the months of the year, emphasizing the importance of recycling and preserving water resources for environmental preservation. The treated wastewater samples are collected by MoEF-NABL accredited laboratory (OneEarth Enviro Labs) for analysis with reference to the prescribed standards on monthly basis. The treated effluent confirms to the standards prescribed Fig 7.



OneEarth Enviro Labs
1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

OEL/W/F/13/00 Certificate No. TC-7847
NABL ISO/IEC 17025:2017

ISO 9001:2015 | ISO 45001:2018 Certified | MOEF & CC RECOGNISED

Report No: W/2022/AP0606A
Report Date : 13-04-2022

WATER QUALITY ANALYSIS REPORT

Name of the Industry: M/s Yenepoya University
Address: Deralakatte, Mangalore

Sample Collected By: OneEarth Enviro Labs — Method: OEL/SOP/W/0046
Sampling Location: Hostel - STP Treated
Sample Appearance: Slightly Turbid
Date of Sampling: 06-04-2022 — Analysis Start Date: 06-04-2022
Date of Sample Receipt: 06-04-2022 — Analysis End Date: 11-04-2022
Sampling Details: STP Treated Water Sample For Chemical Analysis

Parameter	Unit	KSPCB Limits	DLT	Results Code:AP0606	Protocol IS 3025
Ammoniacal Nitrogen	mg/L	≤5	1	3.92	(Part34, C):1988 RA : 2019
Biochemical oxygen Demand	mg/L	30	1	20	(Part44):1993 RA : 2019
Chemical Oxygen Demand	mg/L	NS	4	74.08	(Part 58):2006 RA : 2017
Organic Nitrogen	mg/L	≤10	1	4.55	(Part 34 B):1988 RA : 2019
pH	Value	6.5-9.0	1	7.22	(Part 11,2):1983 RA: 2017
Total Nitrogen	mg/L	≤10	1	8.47	(Part 34):1988 RA : 2019
Total Suspended Solids	mg/L	20	1	12	(Part 17):1984 RA : 2017

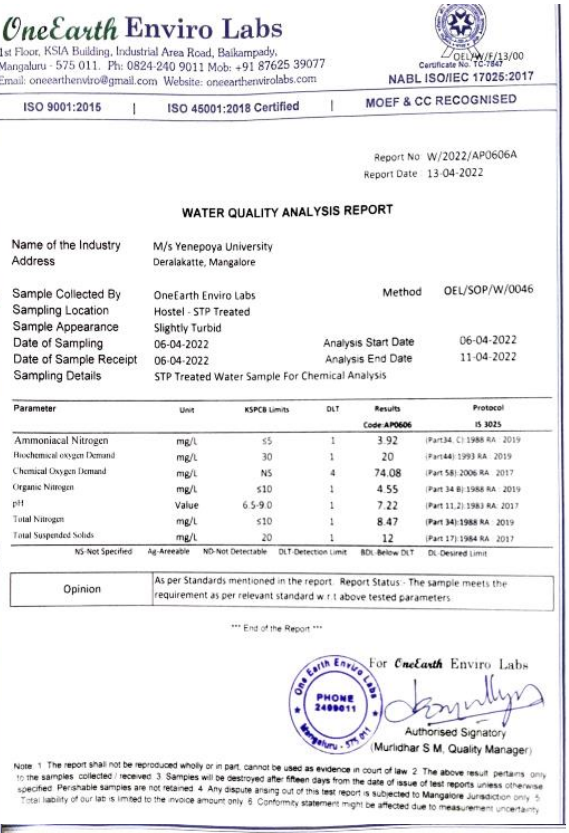
NS-Not Specified Ag-Areeable ND-Not Detectable DLT-Detection Limit BDL-Below DLT DL-Desired Limit

Opinion	As per Standards mentioned in the report. Report Status:- The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs
Authorised Signatory
(Murlidhar S M, Quality Manager)

Note: 1. The report shall not be reproduced wholly or in part, cannot be used as evidence in court of law. 2. The above result pertains only to the samples collected / received. 3. Samples will be destroyed after fifteen days from the date of issue of test reports unless otherwise specified. Perishable samples are not retained. 4. Any dispute arising out of this test report is subjected to Mangalore Jurisdiction only. 5. Total liability of our lab is limited to the invoice amount only. 6. Conformity statement might be affected due to measurement uncertainty.



OneEarth Enviro Labs
1st Floor, KSIA Building, Industrial Area Road, Baikampady,
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Report No: W/2022/AP0606A
Report Date : 13-04-2022

WATER QUALITY ANALYSIS REPORT

Name of the Industry: M/s Yenepoya University
Address: Deralakatte, Mangalore

Sample Collected By: OneEarth Enviro Labs — Method: OEL/SOP/W/0046
Sampling Location: Hostel - STP Treated
Sample Appearance: Slightly Turbid
Date of Sampling: 06-04-2022 — Analysis Start Date: 06-04-2022
Date of Sample Receipt: 06-04-2022 — Analysis End Date: 11-04-2022
Sampling Details: STP Treated Water Sample For Chemical Analysis

Parameter	Unit	KSPCB Limits	DLT	Results Code:AP0606	Protocol IS 3025
Ammoniacal Nitrogen	mg/L	≤5	1	3.92	(Part34, C):1988 RA : 2019
Biochemical oxygen Demand	mg/L	30	1	20	(Part44):1993 RA : 2019
Chemical Oxygen Demand	mg/L	NS	4	74.08	(Part 58):2006 RA : 2017
Organic Nitrogen	mg/L	≤10	1	4.55	(Part 34 B):1988 RA : 2019
pH	Value	6.5-9.0	1	7.22	(Part 11,2):1983 RA: 2017
Total Nitrogen	mg/L	≤10	1	8.47	(Part 34):1988 RA : 2019
Total Suspended Solids	mg/L	20	1	12	(Part 17):1984 RA : 2017

NS-Not Specified Ag-Areeable ND-Not Detectable DLT-Detection Limit BDL-Below DLT DL-Desired Limit

Opinion	As per Standards mentioned in the report. Report Status:- The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs
Authorised Signatory
(Murlidhar S M, Quality Manager)

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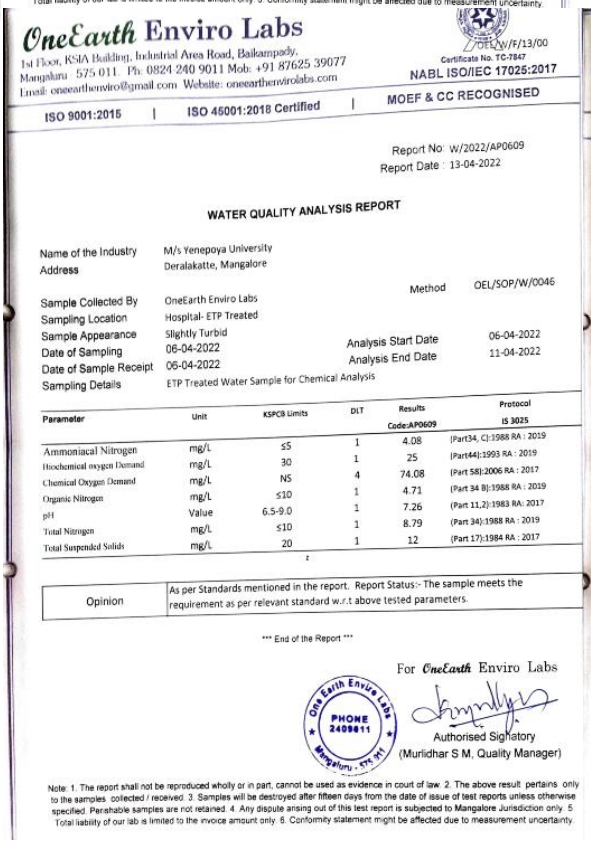

OneEarth Enviro Labs
1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

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Report No: W/2022/AP0609
Report Date : 13-04-2022

WATER QUALITY ANALYSIS REPORT

Name of the Industry: M/s Yenepoya University
Address: Deralakatte, Mangalore

Sample Collected By: OneEarth Enviro Labs — Method: OEL/SOP/W/0046
Sampling Location: Hospital- ETP Treated
Sample Appearance: Slightly Turbid
Date of Sampling: 06-04-2022 — Analysis Start Date: 06-04-2022
Date of Sample Receipt: 06-04-2022 — Analysis End Date: 11-04-2022
Sampling Details: ETP Treated Water Sample for Chemical Analysis

Parameter	Unit	KSPCB Limits	DLT	Results Code:AP0609	Protocol IS 3025
Ammoniacal Nitrogen	mg/L	≤5	1	4.08	(Part34, C):1988 RA : 2019
Biochemical oxygen Demand	mg/L	30	1	25	(Part44):1993 RA : 2019
Chemical Oxygen Demand	mg/L	NS	4	74.08	(Part 58):2006 RA : 2017
Organic Nitrogen	mg/L	≤10	1	4.71	(Part 34 B):1988 RA : 2019
pH	Value	6.5-9.0	1	7.26	(Part 11,2):1983 RA: 2017
Total Nitrogen	mg/L	≤10	1	8.79	(Part 34):1988 RA : 2019
Total Suspended Solids	mg/L	20	1	12	(Part 17):1984 RA : 2017

Opinion	As per Standards mentioned in the report. Report Status:- The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs
Authorised Signatory
(Murlidhar S M, Quality Manager)

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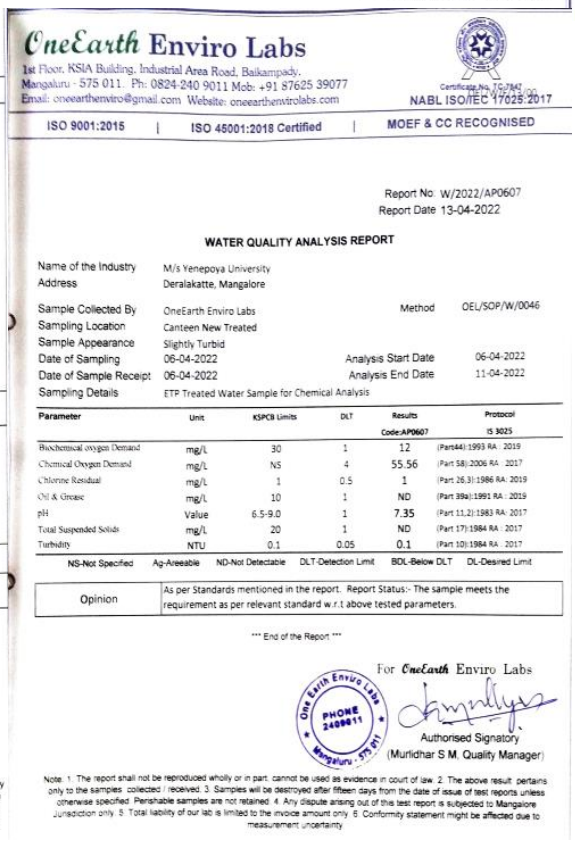

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1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com

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Report No: W/2022/AP0607
Report Date 13-04-2022

WATER QUALITY ANALYSIS REPORT

Name of the Industry: M/s Yenepoya University
Address: Deralakatte, Mangalore

Sample Collected By: OneEarth Enviro Labs — Method: OEL/SOP/W/0046
Sampling Location: Canteen New Treated
Sample Appearance: Slightly Turbid
Date of Sampling: 06-04-2022 — Analysis Start Date: 06-04-2022
Date of Sample Receipt: 06-04-2022 — Analysis End Date: 11-04-2022
Sampling Details: ETP Treated Water Sample for Chemical Analysis

Parameter	Unit	KSPCB Limits	DLT	Results Code:AP0607	Protocol IS 3025
Biochemical oxygen Demand	mg/L	30	1	12	(Part44):1993 RA : 2019
Chemical Oxygen Demand	mg/L	NS	4	55.56	(Part 58):2006 RA : 2017
Chlorine Residual	mg/L	1	0.5	1	(Part 26.3):1986 RA: 2019
Oil & Grease	mg/L	10	1	ND	(Part 39a):1991 RA : 2019
pH	Value	6.5-9.0	1	7.35	(Part 11,2):1983 RA: 2017
Total Suspended Solids	mg/L	20	1	ND	(Part 17):1984 RA : 2017
Turbidity	NTU	0.1	0.05	0.1	(Part 10):1984 RA : 2017

NS-Not Specified Ag-Areeable ND-Not Detectable DLT-Detection Limit BDL-Below DLT DL-Desired Limit

Opinion	As per Standards mentioned in the report. Report Status:- The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs
Authorised Signatory
(Murlidhar S M, Quality Manager)

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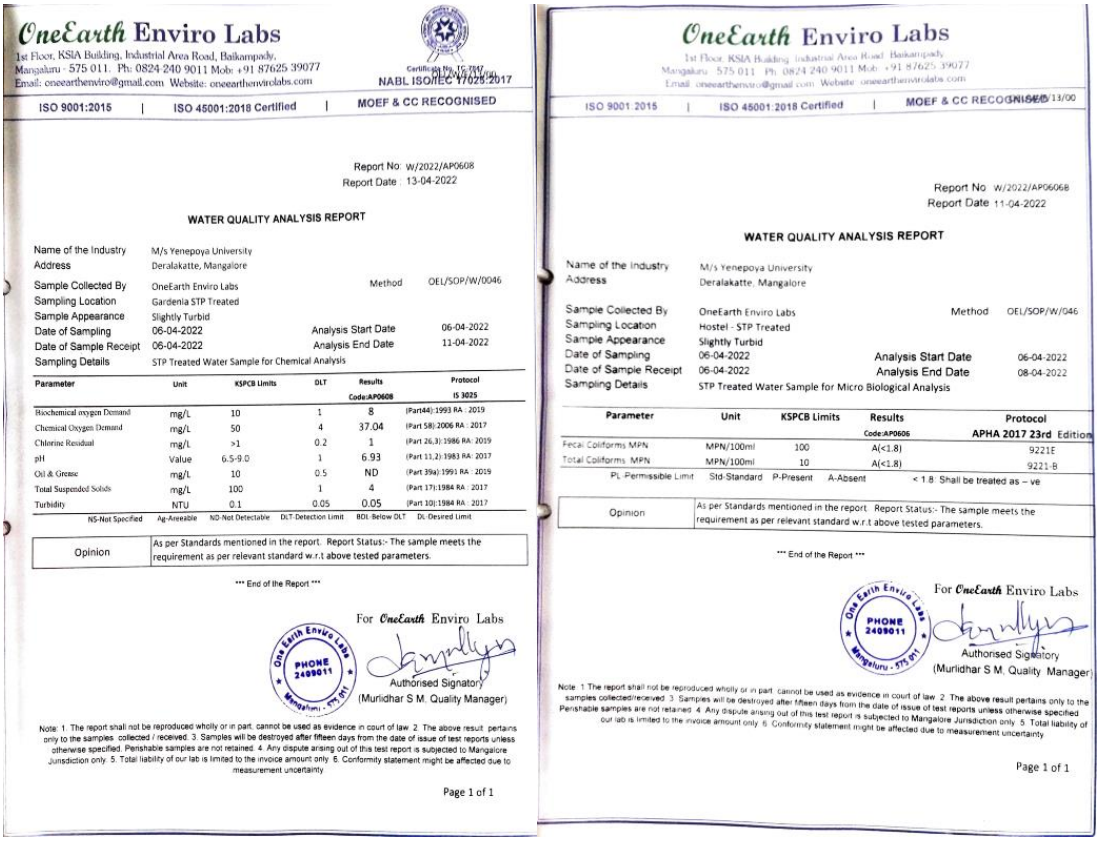

OneEarth Enviro Labs
1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824-240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com
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Report No: W/2022/AP0608
Report Date : 13-04-2022

WATER QUALITY ANALYSIS REPORT

Name of the Industry: M/s Yenepoya University
Address: Deralakatte, Mangalore
Sample Collected By: OneEarth Enviro Labs — Method: OEL/SOP/W/0046
Sampling Location: Gardenia STP Treated
Sample Appearance: Slightly Turbid
Date of Sampling: 06-04-2022 — Analysis Start Date: 06-04-2022
Date of Sample Receipt: 06-04-2022 — Analysis End Date: 11-04-2022
Sampling Details: STP Treated Water Sample for Chemical Analysis

Parameter	Unit	KSPCB Limits	DLT	Results Code:AP0608	Protocol IS 3025
Biochemical oxygen Demand	mg/L	10	1	8	(Part44):1993 RA : 2019
Chemical Oxygen Demand	mg/L	50	4	37.04	(Part 58):2006 RA : 2017
Chlorine Residual	mg/L	>1	0.2	1	(Part 26,3):1986 RA: 2019
pH	Value	6.5-9.0	1	6.93	(Part 11,2):1983 RA: 2017
Oil & Grease	mg/L	10	0.5	ND	(Part 39a):1991 RA : 2019
Total Suspended Solids	mg/L	100	1	4	(Part 17):1984 RA : 2017
Turbidity	NTU	0.1	0.05	0.05	(Part 10):1984 RA : 2017

NS-Not Specified Ag-Areeable ND-Not Detectable DLT-Detection Limit BDL-Below DLT DL-Desired Limit

Opinion: As per Standards mentioned in the report. Report Status:- The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs
Authorised Signatory
(Muralidhar S M. Quality Manager)

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1st Floor, KSIA Building, Industrial Area Road, Baikampady,
Mangaluru - 575 011. Ph: 0824 240 9011 Mob: +91 87625 39077
Email: oneearthenviro@gmail.com Website: oneearthenvirolabs.com
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Report No: W/2022/AP0606
Report Date 11-04-2022

WATER QUALITY ANALYSIS REPORT

Name of the Industry: M/s Yenepoya University
Address: Deralakatte, Mangalore
Sample Collected By: OneEarth Enviro Labs — Method: OEL/SOP/W/046
Sampling Location: Hostel - STP Treated
Sample Appearance: Slightly Turbid
Date of Sampling: 06-04-2022 — Analysis Start Date: 06-04-2022
Date of Sample Receipt: 06-04-2022 — Analysis End Date: 08-04-2022
Sampling Details: STP Treated Water Sample for Micro Biological Analysis

Parameter	Unit	KSPCB Limits	Results Code:AP0605	Protocol APHA 2017 23rd Edition
Fecal Coliforms MPN	MPN/100ml	100	A(<1.8)	9221E
Total Coliforms MPN	MPN/100ml	10	A(<1.8)	9221-B

PL-Permissible Limit Std-Standard P-Present A-Absent < 1.8: Shall be treated as – ve

Opinion: As per Standards mentioned in the report. Report Status:- The sample meets the requirement as per relevant standard w.r.t above tested parameters.

*** End of the Report ***

For OneEarth Enviro Labs
Authorised Signatory
(Muralidhar S M. Quality Manager)

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Page 1 of 1

Fig. 7: Recycled water analysis reports

7) Solid waste management

Solid waste is generated from various activities and broadly classified into hazardous and non-hazardous waste. The domestic waste, usually called Municipal Solid Waste is generated from domestic activities. Hazardous and other wastes like biomedical waste, e-waste, batteries etc are generated from trade activities and utilities. Management of waste essentially includes the 3R concepts of Reduce, Reuse and Recycle. Identification of the source and type of waste helps in the segregation, storage and disposal. The wastes produced in the campus are as given in Table 9.

Table 9: 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/Vermi composting. Sent to piggery/Composting
		Consumer products – Non-biodegradable waste generation	Waste that ends up in landfill – like plastic, office waste etc	Saleable waste soldto recyclers (Scrap metal, paper etc) Non salable wastedisposed

				municipal solid waste agency
		Gardening & Horticulture waste	Waste generated due to pruning, dryleaves etc	Composting/Vermicomposting
2	Biomedical Waste	Hospital activities and Medical college activities	Biomedical waste of different categories like used PPE's, contaminated cotton, expired medicines etc	Disposed through authorized biomedical waste handling 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

7.1 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 (Fig. 8).

Fig. 8: Bins to collect domestic waste in the campus

The biodegradable and non-biodegradable waste is collected separately at different locations in solid PVC bins with labeling. The total number of bins placed in different locations is as shown in Table 10, based on the generation and frequency of clearing.

Table 10: Number of waste collection bins

No. of dustbins for collecting the bio degradable and non-bio degradable waste	**Deralakatte premises**	**Naringana Premises**	**Mudipu premises**	**Balmatta premises**
	2775	376	112	73

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.

7.2 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 area 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:

a. 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.

b. Electronic Waste: The items like compact discs, desk tops, printers, toner cartridges etc form the e-waste. Majority of these wastes are generated by the Department of Information and Technology. It is sold to the authorized vendors for safe disposal.

c. 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.

d. 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 & Handling) Rules 2016. The rules lay out the procedures & methodology for segregation,

collection, treatment & disposal.

- The display boards (Fig. 9) are kept in the hospital to create awareness on the appropriate disposal of biomedical waste in the hospital. The biomedical waste generated from the hospital is segregated separately and collected in a color coded bins and sent for disposal.

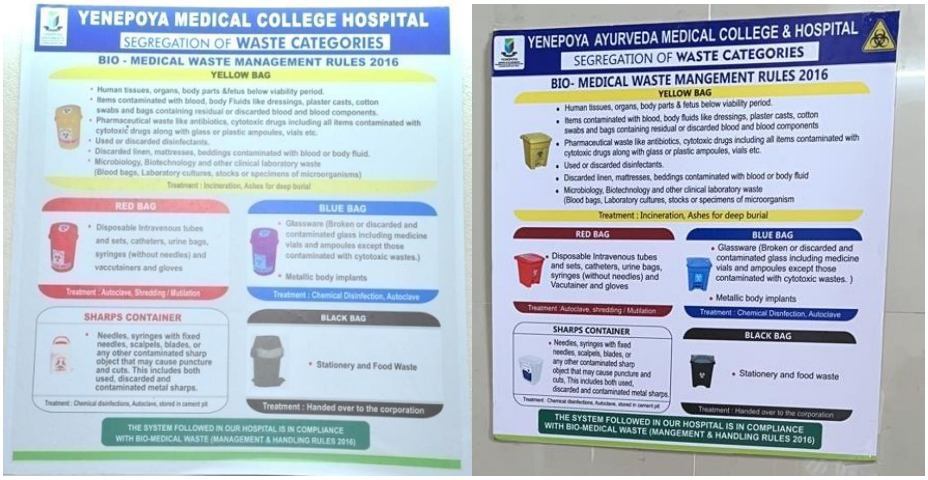


Fig. 9: Display board on biomedical waste management

7.3 Waste collection points

The waste is collected at different locations in colored PVC bins with non-chlorinated color bags provided for each type of waste (fig. 10). Each centre is given bins as per the generation and frequency of shifting Table 11.

Table 11: Quantity of color coded bin sets

Sl. No.	Units	Sets of color coded bins (No.)
1	Medical College Hospital	290
2	Medical College	18
3	Dental College	362
4	YAMCH	06
5	YHMCH	03
6	YNYCH	01
Total		**683**

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.

Fig. 10: Color coded bins to collect bio medical waste in hospital

The BMW packed in separate color coded bags is stored in common collection site to be disposed daily through the authorized vendor. Table 12 gives the summary of biomedical waste generated in the hospital.

Table 12: Biomedical waste generated in the hospital

Sl. No.	Month	Yellow bags (kg)	Red bags (kg)	Blue bags (kg)	Sharps (kg)	Total (kg)
1	January	6634.78	5777.64	1270.05	200.45	13882.92
2	February	5903.39	5573.68	1383.63	221.63	13082.23
3	March	5835.5	5880.1	1572.23	266.95	13554.78
4	April	6240.46	5416.28	1660.59	189.88	13507.21
5	May	6158.01	5801.57	1243.13	395.58	13598.29
6	June	6662.98	6399.98	1529.07	196.66	14788.69
7	July	6705.43	5951.28	1633.49	170.41	14460.61
8	August	6877.67	6096.11	1521.56	234.89	14730.23
9	September	7154.69	6069.95	1426.29	283.81	14934.74
10	October	7417.57	6313.44	1530.17	228.29	15489.47
11	November	7512.23	6625.85	1378.55	269.94	15786.57
12	December	7974.43	6834.39	1555.05	213.38	16577.25
Total		**81077.14**	**72740.27**	**17703.81**	**2871.87**	**174393.09**

The Yenepoya Medical College Hospital is a 980 bedded busy hospital, with thousands of patients each day. In addition, YAMCH is a 100 bedded and YHMCH is 26 bedded hospital generation the biomedical waste on the campus.

8) **Noise Pollution and Control**

Noise generated from machines and equipments 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 13.

Table 13: Noise levels recorded

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

9) 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 (Fig. 11).

Fig. 11: Chimney

9.1 Boiler Operation

Central Kitchen prepares meals in bulk and requires steam for cooking. Two Boilers (Fig.12) 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. 12: Boiler

ENERGY AUDIT 2022

10) Energy Management

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.

10.1 Sources of energy

The University is connected to a power grid from Mangalore Electricity Supply Company Limited (MESCOM). Diesel generators (Fig. 13) are installed as alternate or standby power source. Powerconsumption from MESCOM is given in Table 14.

Table 14: 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	822255	6558876	16410	153188	8491	193796	17790	210942
February	835485	7175948	17135	159841	11939	227622	29305	309614
March	1065750	8994389	17885	163929	12800	236068	32530	333197
April	1051050	9318781	14175	145875	10794	216389	22440	274469
May	1026585	8912006	20075	208220	11252	234245	30895	409264
June	961965	7812876	23650	306408	11744	239099	34650	439663
July	895860	7679467	20075	208220	8404	206151	35000	428623
August	925860	7983564	23650	306408	11744	239099	25800	349565
September	942165	9732531	27463	262352	11905	240687	25850	349500
October	985860	9671088	29413	288244	14574	267015	27090	367826
November	1006425	8616019	24475	261809	15114	272342	29415	398902
December	991515	8481055	32863	289958	12968	220456	34215	429030

10.2 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 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 15. Power generated from DG is shown in Table 16.

Fig. 13: Diesel Generator

Table 15: Details of diesel generators installed

Sl. No	DGC capacity	Location	Standard fuel consumption (Liters/Hour)	Recommended chimney height Above Roof Level (ARL)
1	DG 1 750 kVA	Hospital	110	10 m ARL
2	DG 2 625 kVA	Hospital	86	10 m ARL
3	DG 3 625 kVA	Oncology	44	10 m ARL
4	DG 4 380 kVA	Mobile DG	48	10 m ARL
5	DG 5 250 kVA	Boys' Hostel	52	3.5 m ARL
6	DG 6 380 kVA	Medical College	53	4.0 m ARL
7	DG 7 250 kVA	Central Kitchen	39	3.5 m ARL
8	DG 8 125 kVA	Central Kitchen	24	2.5 m ARL
9	DG 9 380 kVA	Gardyenia Hostel	46	4.0 m ARL
10	DG 10 160 kVA	Yendurance zone	13	3.0 m ARL
11	DG 11 320 kVA	Naringana Campus	49	4.0 m ARL
12	DG 12 380 kVA	Mudipu Campus	46	4.0 m ARL
13	DG 13 160 kVA	Balmatta Campus	12	4.0 m ARL
14	DG 14 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 16: Total units generated by various diesel generators

DG	Premise	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DG 1	Deralakatte	9504	4320	8160	8640	2160	2400	11520	4500	2500	2500	2880	4150
DG 2		5232	2464	4728	6168	960	320	1760	1440	2160	2400	0	3600
DG 3		--	940	1296	2640	600	2400	3400	0	0	0	1800	2080
DG 4		1980	656	1200	2400	360	1200	2600	1400	800	1000	400	2200
DG 5		1776	1072	1520	2160	480	1360	3360	0	0	0	1920	0
DG 6		3224	1356	1800	2640	480	840	2040	2080	1440	1040	0	1600
DG 7		2484	480	720	720	120	120	1560	840	720	720	840	0
DG 8		840	160	320	160	360	120	560	2280	600	360	320	720
DG 9		520	0	0	24	0	0	2760	800	240	160	1680	320
DG 10		0	85	600	200	200	450	200	1680	1320	840	400	1440
DG11	Naringana	870	400	660	2110	2680	1890	4080	1310	980	1670	3900	2880
DG 12	Mudipu	684	1572	1727	513	119	1282	1640	863	1646	859	1731	1714
DG 13 & 14	Balmatta	386	387	389	389	389	389	390	390	390	391	395	395
Total units generated		**27500**	**13892**	**23120**	**28764**	**8908**	**12771**	**35870**	**17583**	**12796**	**11940**	**16266**	**21099**

10.3 Fuel Consumption - DG

Bharat stage III (BSIII) compliant high speed diesel is used as fuel for the generators. The diesel is blended with 5% ethanol. Chimneys with suitable heights are provided as per the statutory requirements. Fuel consumption by DG is given in Table 17.

Table 17: Consumption of diesel (L) by Diesel Generators

Month	Deralakatte						Naringana	Balmatta		Total (L)
	DG 1	DG 2, 3, 4	DG 5, 6	DG 7	DG 8, 9	DG 10	DG 11	DG 13	DG 14	
January	800	3800	1000	200	1400	800	545	60	60	**8665**
February	600	3400	400	400	1600	400	300	20	60	**7180**
March	800	3600	600	0	600	600	500	20	20	**6740**
April	600	2200	400	200	400	600	1420	0	140	**5960**
May	400	2700	800	200	400	600	1420	40	40	**6600**
June	400	1600	600	200	300	400	1200	0	0	**4700**
July	1200	5600	1000	600	1200	400	2230	0	40	**12270**
August	0	2000	400	0	1800	600	770	0	40	**5610**
September	400	2300	600	0	800	400	455	40	60	**5055**
October	600	1600	400	200	400	400	795	0	40	**4435**
November	600	2400	400	200	600	800	1745	0	220	**6965**
December	600	2000	600	200	600	400	1250	0	80	**5730**

10.4 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. Consumption of briquettes is given in the following Table 18.

Table 18: Summary of agro-fuel used

Month	Weight of the fuel	Cost of the fuel
January	112955	790685
February	100846	705922
March	103788	726516
April	104856	733992
May	108823	761761
June	97338	681366
July	102770	719390
August	104496	731472
September	103892	727244
October	102324	716268
November	106384	744688
December	116432	815024
Total	**1264904**	**8854328**

10.5 Liquefied Petroleum Gas (LPG)

Commercial LPG cylinders are utilized for cooking purpose in the central kitchen. The no. of cylinders used in 2022 is about 4800 of 19.5kg capacity. Approximately 25,000 meals per day are cooked at the central kitchen.

11) Transport

The transport department operates all transit services to and within the university campus. However various components such as parking, transit and fleet operations function as per the travel strategy of the university. The university provides transportation facility for the campus community through a network of routes to reach the university. The transport services work hard to make travel both efficient and effective while ensuring safety of passengers. The university owns 28 small vehicles, 46 buses, 5 tankers and 8 ambulances which provide service for travel within the campus, field visits, patient care and other services (Fig. 14). The transport department has utilized approximately 39000 liters of petrol and 48000 liters of diesel during 2022. The department is developing sustainable strategy to reduce greenhouse gas emissions and strive towards sustainable transport.

Fig. 14: Campus vehicles

GREEN AUDIT 2022

12) Biodiversity audit

The biodiversity audit conducted by the expert team involving students of the university identified about 350 species of flora and 178 species of fauna in the campus. The audit team included Prof. Gopalakrishna Bhat and Dr. Bhagya B. Sharma for flora survey, Dr. Aravind N. A., Mr. Deepak Naik, Dr. Uma Kulkarni, Dr. Prasad Kini and Mr. Vivek Hasyagar for fauna audit. A survey of the macrofungi of the campus was conducted by Prof. K. R. Sridhar, Dr. Karun C and Dr. Bhagya B. Sharma who documented about 40 species of mushrooms in 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 total area of 26.92 acres land was surveyed every year since 2015 for both the flora and fauna of the campus. This report documents the list of plants, animals and macrofungi recorded so far over seven years and new species identified are added to the list on continuous basis.

- A book on 'Medicinal plants of the university campus' was published in 2017 (Second edition) which 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.
- 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.
- 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.

Fig. 15: Books published

12.1 Release of the book titled 'Flora and Fauna of Yenepoya (Deemed to be University)'

A book on "Flora & Fauna of the Yenepoya (Deemed to be University) campus was released on 23.05.2022 by Hon'ble Vice Chancellor Dr. M. Vijayakumar. Editor of the book Dr. Bhagya B. Sharma introduced the book to the audience. Dr. M. Vijayakumar in his speech stressed the importance of protecting biodiversity. He also mentioned how the ranking bodies give importance to green initiatives. YDU has taken various initiatives and projects to foster an eco-friendly sustainable campus. The publication is a document of the flora and fauna of the campus which was systematically recorded over a period of 7 years. Prof. Gopalakrishna Bhat a renowned taxonomist carried out the audit of the plant diversity of the campus. He was an encyclopedia in plant taxonomy. This book is dedicated to him. To document the animal species, we have Dr. Deepak, Mr. Vivek and Dr. Aravind Madhyastha zoologists who have recorded a range of worms, spiders, snakes, butterflies and mammals of the campus. Dr. Prasad Kini, Practitioner at Karkala and Dr. Uma Kulkarni, an Ophthalmologist, both birders by passion who have contributed the photographs of birds to this book. The foreword has been written by Sri Anant Hegde Ashisara, Environmentalist, and former Director of Karnataka Biodiversity Board, who has appreciated the book and also congratulated the University for supporting the project. The book documents photos and descriptions of 135 plant species and 173 animal species.

Fig. 16: Release of Flora and Fauna book by Dr. M. Vijayakumar, Vice Chancellor

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. *Aerva lanata* (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. [*Premnaobtusifolia* 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. *Clitoriaternatea* 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. *Ptychosperma macarthurii* (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. *Saraca asoca* (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 pallid* 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 17: Arecanut arboretum

Fig. 18: Flowering plants on the campus

Fig. 19: Fruiting plants on the campus

List of Animals

ANNELIDA

1. *Eudrilus eugeniae* (African night crawler)
2. *Pontoscolex corethrurus* (Earthworm)

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. *Suastus gremius* (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 corallinus* (Rusty millipede)

MOLLUSCA

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

AMPHIBIA

1. *Duttaphrynus melanostictus* (Common Indian toad)
2. *Euphlyctis cyanophlyctis* (Skittering frog)
3. *Hoplobatrachus tigerinus* (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-rumped flameback woodpecker)
25. *Psilopogon viridis* (White cheeked barbet)
26. *Meropsorientalis* (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. *Cinnyris lotenius* (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)

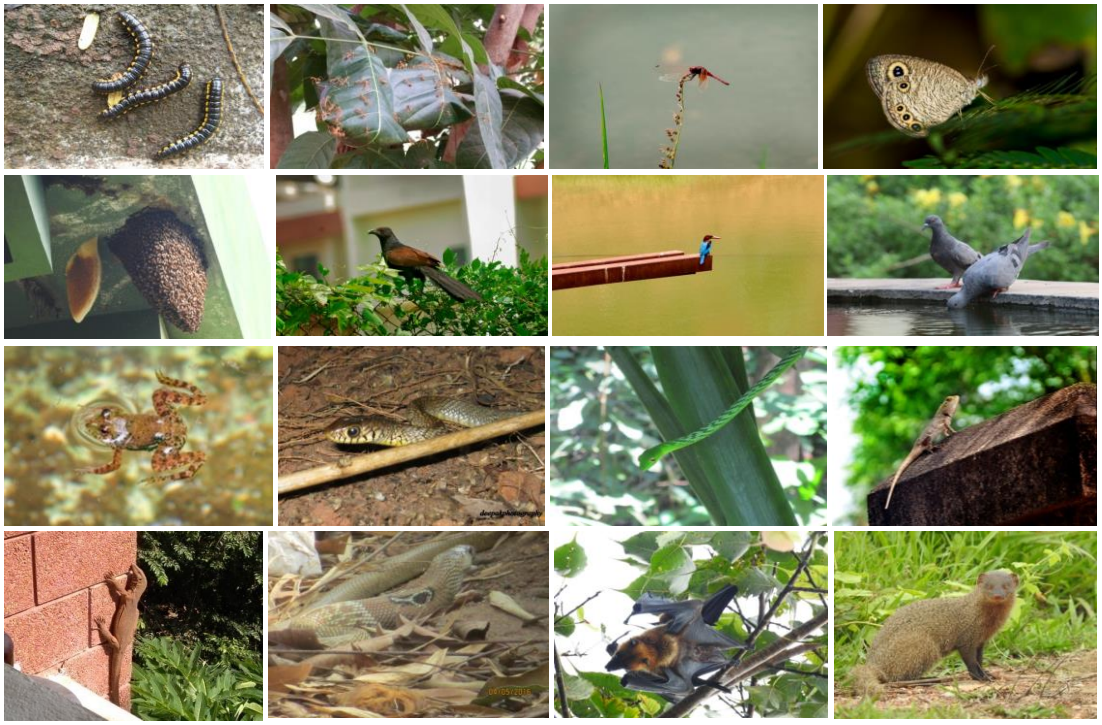


Fig. 20: Fauna on the campus

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. 21: Macrofungi of the campus

Green Yenepoya

13) Sustainable Practices

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. Assistant Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 23.06.2022

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. Assistant Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 22.06.2022

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.	Assistant Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 22.06.2022

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.	Assistant Director, Centre for Environmental Studies	: Member Secretary

Meeting held on 27.09.2022

13.1 Water Conservation

Rainwater harvesting is being carried out in the premises to conserve water for internal use. There are three rainwater collection ponds (Fig. 22) having a combined water storage capacity of 5.3 crore litres. 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. The University has a daily water requirement of 1100KL.

Fig. 22: Rain water harvesting pond

Roof rainwater harvesting units (Fig. 23) are installed in eleven buildings and the water is channeled to recharge bore wells (Table 19).

Table 19: Location of Roof rainwater 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 Vermicopost 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. 23: Roof rainwater harvesting units

Water conservation measures in the university include aerators, foam taps, sensor taps and water sprinklers (Table 20) (Fig. 24). 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 organised for the students through the eco club.

Table 20: 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. 24: Water conservation devices

13.2 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.

13.2.1 Vermicomposting

Garden waste along with vegetable waste from central kitchen are subjected to vermicomposting using earthworms (Fig. 25). 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 2022 is 4590 kg (Table 21).

Fig. 25: Vermicompost Unit and composting process

Table 21: Summary of vermicompost generated

Date of harvesting	Unit no.	Harvest (Kg)
08.02.2022	2	328
17.02.2022	4	350
23.02.2022	6	257
18.04.2022	1	318
25.04.2022	3	245
02.05.2022	5	274
01.07.2022	2	358
06.07.2022	4	370
11.07.2022	6	340
07.10.2022	2	290
09.10.2022	4	320
10.10.2022	6	265
11.12.2022	6	875
Total		**4590**

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 tilth 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. 26).

Fig. 26: Mesh composting

13.2.2 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. 27: Food waste composting unit and process

The food waste of the campus is collected at a common collection point and transferred to food recycling unit (Fig. 27). The waste is first treated in a shredder 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. Approximately 800kg of vegetable and food waste is composted in the food recycling unit daily.

13.3 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. 28) 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. 28: Harnessing solar energy

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. 29) (Table 22)

Fig. 29: Sensor for Lighting and LED bulbs

Table 22: Summary of LED lights used

Particulars	Qty installed	
25 W street light	100	**44% Energy saved**
70 W street light	8	
100 W LED floodlight	35	
36 w 2"x 2" LED ceiling light	1112	
18 w LED Tube light set	2235	
30 w LED light	60	
4" 20 watt LED tube light	5727	
2" 20 watt LED tube light	1314	
5 w LED light	973	
9 w LED light	3039	
15 w LED light	687	
8 w LED light	93	
1'x1' LED light	105	

13.4 Sustainable transport

Fig. 30: E- Vehicles

The university has introduced a fleet of electric vehicles (Fig. 30) 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.

13.5 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. 31: Patients and their attendants are encouraged to use cloth bags and steel containers for carrying food

Fig. 32: Display boards to discourage the use of plastic

13.6 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 analyse 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, film processing chemicals.

14) Eco club

The institution has an Eco Club of students under Centre for Environmental Studies.The goals of the club are as follows:

- Environmental education awareness by conducting lectures and training
- Improving environmental standards
- Promote community a forestation projects

World Water Day

Bird Bath placed in the campus.
Date: 22.03.2022

On the occasion of World Water Day water filled bird bath was placed in different locations in the campus to support birds for during, bath and cool them. A birdbath is an attraction for many different spices of birds to visit gardens, especially during the summer and drought periods. Birdbaths that provide a reliable source of water year- round add to the popularity and microhabitat support. A total of five bird baths were placed in the campus.

Fig. 33: Placing of bird bath in the campus

World Earth Day

Vermicompost training
Date: 22.04.2022

On the occasion of World Earth Day, the Centre for Environmental Studies in collaboration with Yenepoya Ayurveda Medical College and Hospital, Yenepoya (Deemed to be University) organized a lecture on the theme “Invest in our Planet”. Mrs. Shreya called attention to the importance of soil and its conservation through quiz and video demonstrations. Dr. Bhagya B. Sharma spoke on Vermicomposting technology and trained 100 students of II BAMS for vermicomposting. The university has maintained a vermicomposting unit functioning since 2014. The programme stressed on the importance of soil in protecting the environment and how vermicompost goes a long way in conserving soil and adopting a sustainable living. Dr. Asha Maradka, Professor and Dr. Arun, Assistant Professor from Dept. of Dravyaguna, Yenepoya Ayurveda Medical College and Hospital coordinated and organized the event.

Fig. 34: Demonstration of vermicomposting process at the Vermicompost unit

World Environment Day
Plantation of saplings
Date: 05.06.2022

World Environment Day observed by plantation of saplings. Ten saplings of *Ficus benjamina* were planted in the campus near the Central Library by the staff and students of Yenepoya Research Centre.

Fig. 35: Plantation of *Ficus benjamina* saplings

Pocket Forest
Date: 19.07.2022
III Public Health students planted saplings of *Mangifera indica, Saraca asoka, Syzygium cumini* as a part of building a Pocket Forest.

Fig. 36: Students making pits and planting saplings for a pocket forest

Vanamahotsava

Date: 09.07.2022

Vanamahotsava was celebrated by distributing 200 saplings of *Tectona grandis, Syzygium cumini, Dalbergia latifolia, Syzygium samarangense, Mangifera indica, Artocarpus heterophyllus, Lagerstroemia speciosa, Mimusops elengi,* along with vegetable seeds and cuttings of plants from the campus to the staff of the university on 09.07.2022.

Fig. 37: Distribution of vegetable seeds packet and saplings

World Soil Day

An E–Quiz on "Sustainable management of soil resources" was organized for III BPT students on 05.12.2022. 85 students participated in the quiz competition. Prizes were distributed for the winners.

Plantation of saplings

Plantation of saplings promotes home for birds, insects and animals, helping to keep the ecosystem rolling. The university gifts a sapling to the guests in all programmes and conferences. The university community is engaged in sapling plantation drive throughout the year and especially during Vanamahotsava. The horticulture department functions in association with the forest department for supply of indigenous plants and medicinal plants. The flora and fauna audit of the campus is conducted every year. The details of the saplings planted in 2022 are given in Table 23.

Fig. 38: Plantation of saplings

Table 23: Details of saplings planted

Date	Name of the plant	Number planted
05.06.2022	*Ficus benjamina*	10
24.06.2022	*Lagerstroemia speciosa*	5
	Mangifera indica	5
09.07.2022	*Tectona grandis*	100
	Syzygium cumini	10
	Dalbergia latifolia	15
	Mangifera indica	30
	Syzygium samarangense	5
	Artocarpus heterophyllus	20
	Lagerstroemia speciosa	5
	Mimusops elengi	15
Total number of saplings planted		**220**

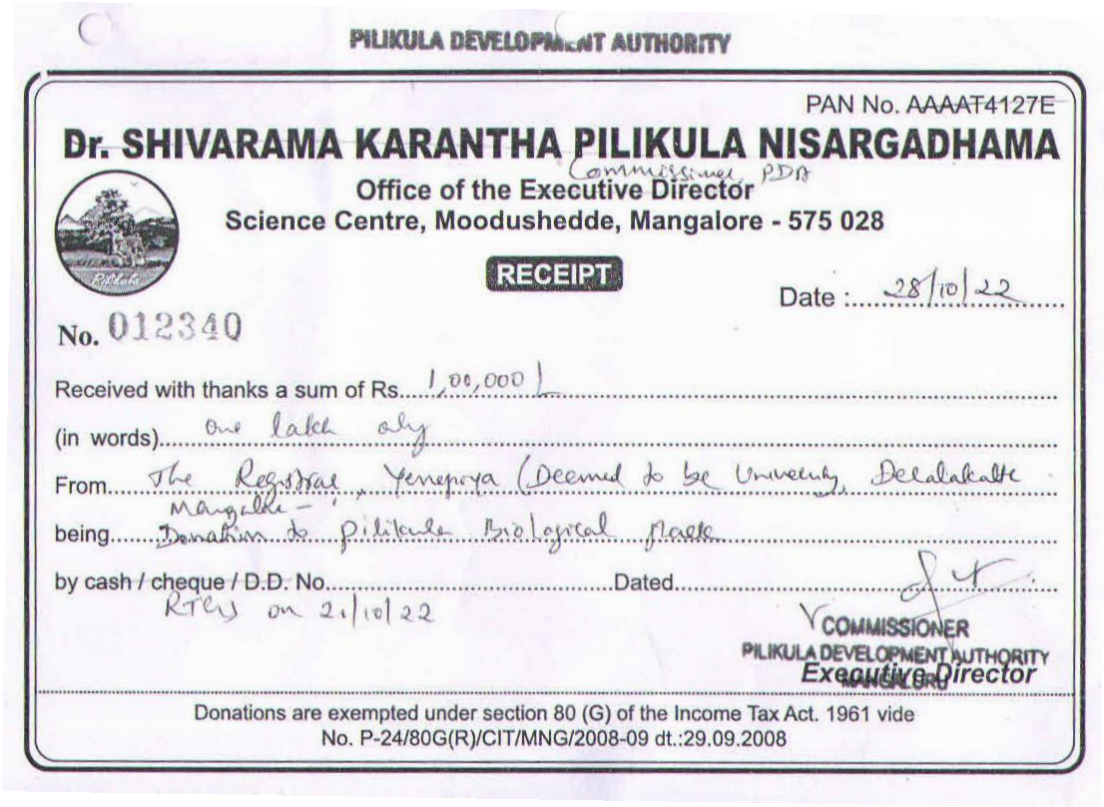
The **Green Community Project** activities were organized in collaboration with the Department of Community Medicine, Yenepoya Medical College through their Family Adoption Programme. Students were trained on the vermicomposting process. A total of 150 students were trained, who in turn educated the public on vermicomposting during their family adoption visits in Kumpala village. During the field visits the students distributed vegetable seeds to the families and also planted saplings in the community.

Talk on waste management | Vermicompost training | Plantation of saplings

Fig. 39: Green Community Project

15) Institutional Social Responsibility

The University donated Rs. 1, 00, 000/- to Dr. Shivarama Karantha Pilikula Nisargadhama, Moodushedde, Mangalore for the development of animal welfare facilities in the Biological Park.



PILIKULA DEVELOPMENT AUTHORITY

PAN No. AAAAT4127E

Dr. SHIVARAMA KARANTHA PILIKULA NISARGADHAMA

Office of the Executive Director

Science Centre, Moodushedde, Mangalore - 575 028

RECEIPT

Date : 28/10/22

No. 012340

Received with thanks a sum of Rs. 1,00,000/-

(in words) one lakh only

From The Registrar, Yenepoya (Deemed to be University), Deralakatte Mangalore

being Donation to pilikula Biological park

by cash / cheque / D.D. No. RTGS on 21/10/22 Dated

COMMISSIONER
PILIKULA DEVELOPMENT AUTHORITY
Executive Director

Donations are exempted under section 80 (G) of the Income Tax Act. 1961 vide No. P-24/80G(R)/CIT/MNG/2008-09 dt.:29.09.2008

16) **Partnerships and Collaborations**

The Yenepoya (Deemed to be University) 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 24.

Table 24: Partnerships and Collaborations

Sl. No.	Partnership/Collaboration	Organization
1.	Resustainability Healthcare Solutions Ltd. Bio- medical waste management	RAMKY GROUP Towards sustainable growth
2.	4PEL Solar Energy private limited for Roof topsolar Clean energy	FOURTH PARTNER ENERGY
3.	Indus trust, Bangalore Clean energy	IN OMNIA PARATUS INDUS INTERNATIONAL SCHOOL
4.	Brinadavan hydro power, Bangalore Energy wheeling	Brindavan Hydropower Pvt Ltd
5.	Moogambigai Metal Refineriese-waste	MMR RECYCLING
6.	Maniranjan Pvt. Ltd., Mangalore	Cummins
7.	Hubert Enviro, Mangalore Water purification	HECS®
8.	Aqua blue water system, Bangalore Water management services	Aqua Blue Water Systems #1533, 13th Cross, Kalyana Nagar T Dasarahalli, Bangalore 560 057.
	Karrecycle ,	

9.	BangaloreHazardous waste	KarRecycle
10.	Nature Science Foundation, Coimbatore Eco Club	Nature Science Foundation NSF PROTECT NATURE Regd. No. 114 / 2017

INDIA NON JUDICIAL

Government of Karnataka

e-Stamp

Certificate No.	:	IN-KA39394811429174S
Certificate Issued Date	:	07-Oct-2020 12:41 PM
Account Reference	:	NONACC (FI)/ kaksfc08/ 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

3/12/22, 11:13 AM eWaste 2022.jpg

Certificate of E-Waste Disposal

Certificate No....019..... Date 08-03-2022

This is to certify that the e-waste received from..YENEPOYA (DEEMED TO BE UNIVERSITY), DERLAKATT

Dated..28-02-2022.... has been disposed off in scientific and eco friendly manner.

Invoice No...YO/ES/2020-21..... Date...09/02/2022.... Quantity...607.30Kg..

Description..E-WASTE.....

We appreciate your efforts in green and healthy environment.

Your MMR Membership No..MMR/2017-..... Valid upto..31-05-2023.....

MMR MOOGAMBIGAI METAL REFINERIES

For Moogambigai Metal Refineries

Authorised Signatory

Plot No. 132, Industrial Area, Baikampady, Mangalore - 575011 www.mmrrecyling.in

https://mail.google.com/mail/u/0/#inbox/FMfcgzGmvTpQPbHkfffCLRwFhXrmHpMQ?projector=1&messagePartId=0.4 1/2

HECS

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

QUOTE

PSTP53602
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:

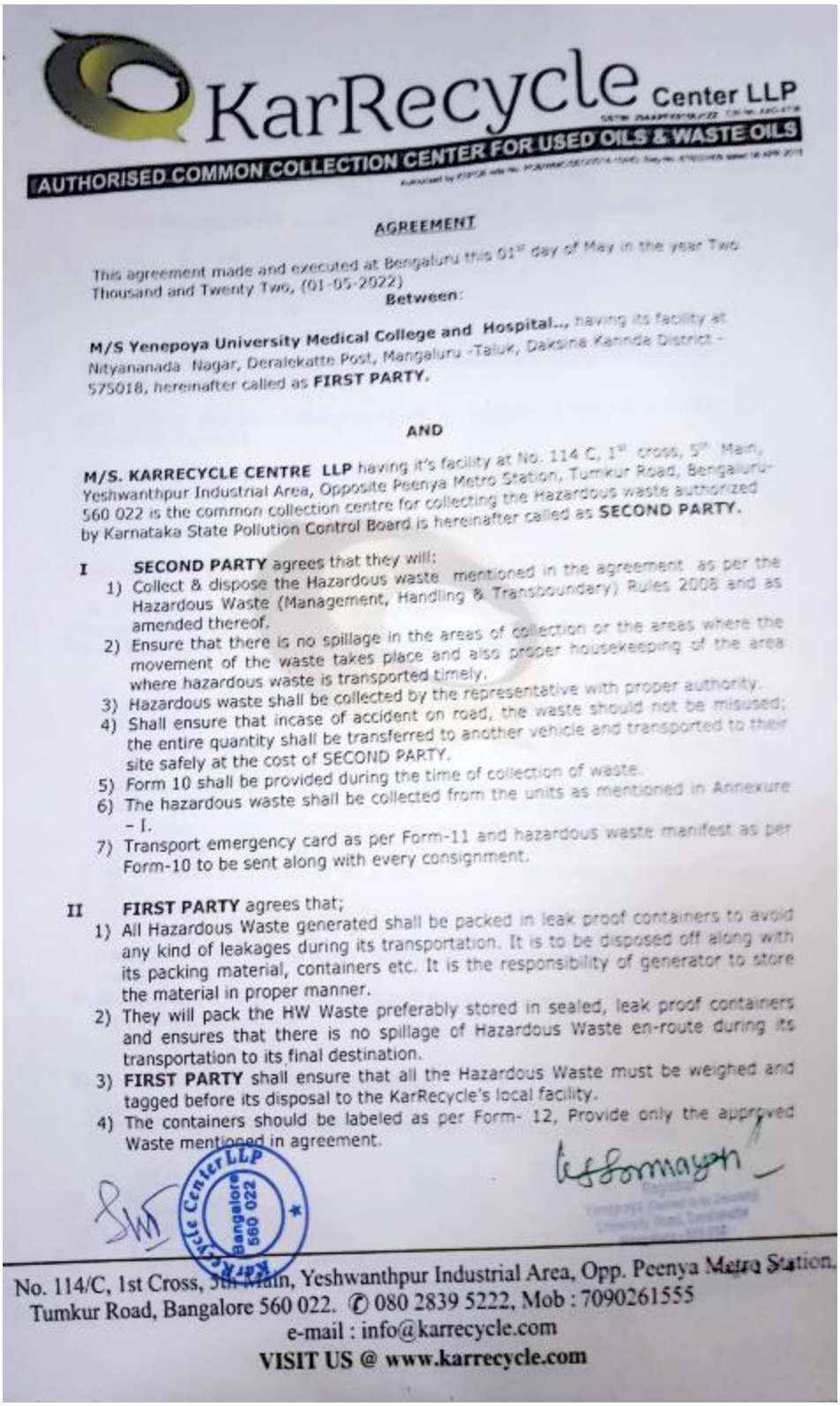
Scope of Work:

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, Deralekatte Post, Mangaluru -Taluk, Daksina Kannda 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:

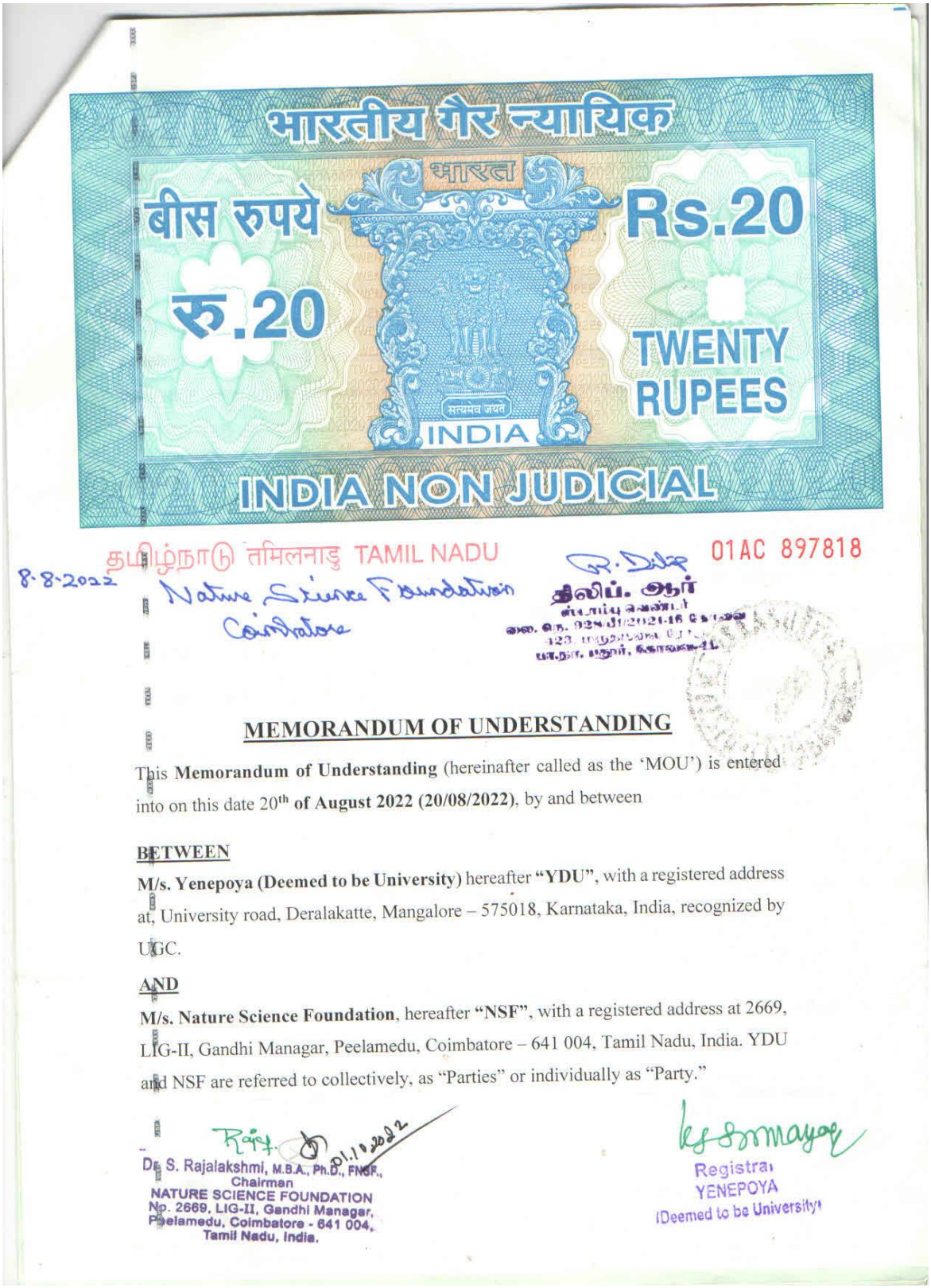
1) Collect & dispose the Hazardous waste mentioned in the agreement as per the Hazardous Waste (Management, Handling & Transboundary) Rules 2008 and as amended thereof.
2) Ensure that there is no spillage in the areas of collection or the areas where the movement of the waste takes place and also proper 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



MEMORANDUM OF UNDERSTANDING

This **Memorandum of Understanding** (hereinafter called as the 'MOU') is entered into on this date 20th **of August 2022 (20/08/2022)**, by and between

BETWEEN

M/s. Yenepoya (Deemed to be University) hereafter **"YDU"**, with a registered address at, University road, Deralakatte, Mangalore – 575018, Karnataka, India, recognized by UGC.

AND

M/s. Nature Science Foundation, hereafter **"NSF"**, with a registered address at 2669, LIG-II, Gandhi Managar, Peelamedu, Coimbatore – 641 004, Tamil Nadu, India. YDU and NSF are referred to collectively, as "Parties" or individually as "Party."

Dr. S. Rajalakshmi, M.B.A., Ph.D., FNSF.,
Chairman
NATURE SCIENCE FOUNDATION
No. 2669, LIG-II, Gandhi Managar,
Peelamedu, Coimbatore - 641 004,
Tamil Nadu, India.

Registrar
YENEPOYA
(Deemed to be University)

17) 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 (MOEF), 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 25: Environmental Compliances of the university

Sl. No	Compliance	Agency	Obtained date	End date	Status
1	Environmental Compliance -Main campus	Ministry of Environment and Forests (MOEF)	05/10/2019	05/10/2022	SEAC meeting to be held
2	Environmental Compliance -Ayush campus		19/11/2019	19/11/2029	EC has 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 to be submitted
7	Consent for operation for Ayush Campus				CFO Needs to be applied
8	Bio medical waste Authorization	Karnataka state Pollution control board (KSPCB)	01/07/2021	30/06/2026	Renewal has been done
9	Hazardous Waste Authorization	Karnataka state Pollution control board (KSPCB)	28/12/2018	30/06/2022	Application is on discussion

18) Rankings

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 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 16th rank in the country.

19) Environmental audit of the University

The Yenepoya (Deemed to be University) carried out an external environment, green, energy and hygiene audit of the campus through Nature Science Foundation. A total of six auditors performed the physical audit of the campus on 22.12.2022 (Fig. 40).

Audit team

Opening meeting with Dr. M. Vijayakumar, Vice Chancellor, YDU

Handing over the Audit manual to
Dr. Gangadhara Somayaji, Registrar, YDU

Visit to Research Centre

Visit to Vermicompost unit

Visit to Central Kitchen

Visit to food waste composting unit

Exit meeting

Fig. 40: External audit team performing Environmental audit of the university

The external auditors after verification of the internal reports, including their observations and recommendations submitted all the environmental audit reports (Fig. 41).

Fig. 41: Certificates of external environmental audit

20) Future commitments towards maintaining sustainable environment

a. Water Conservation

- Replacing old tap fittings with new control taps
- Awareness programs on water conservation
- Reusing STP Treated water for floor use, cooler and other possible uses

b. Energy Conservation

- Awareness programs on energy conservation
- Using LED bulbs to save electricity
- Awareness programs on energy conservation

c. Solid Waste management

- Expand existing vermicomposting process with more units
- Awareness programmes and training on solid waste segregation and management
- Training in vermicomposting

d. Eco Club

- Environmental awareness among students
- Training program on Carbon foot print
- Awareness program on protecting flora and fauna

21) Conclusion

Through the Centre for Environmental Studies, the University has conducted campaigns and programs to educate students and staff for the preservation of natural resources, better resource utilization, recycling and reuse. Environmental education, training and projects like vermicomposting are the highlights of the University. The solid waste management inside the campus is comprehensive and the clean campus reflects the management's response to the cause. The audit has covered most of the activities being carried out in the campus. The management, staff and students collaborated in all activities to preserve nature and create awareness in the community. Such initiatives will encourage in creating a healthy society today and for a better future tomorrow. The university is in the right direction and has shown intent to take forward the same in future too. The university has proposed several Environment Management Plans with emphasis on conservation, resource utilization and supporting biodiversity in the campus. These initiatives show that the university is committed to establish itself as a sustainable campus.

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