

Environmental Audit Report

2021 - 22



YCCE

Institute code : 4167

Yeshwantrao Chavan College of Engineering

(An Autonomous Institution Affiliation to Rashtrasant Tukadoji Maharaj Nagpur University)



Yeshwantrao Chavan College of Engineering, Nagpur

Report By



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Department of Environmental Science

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Certificate

This is to certify that an “**Environmental Audit**” for Yeshwantrao Chavan College of Engineering, Hingna Nagpur has been conducted in 2022 to assess the Environmental Components: **Water, Air, Soil, Weather and Climate, Vegetation and Fauna, Sound Level, Energy, Waste- Institutional Municipal Solid Waste and Wastewater, Fire and Safety, Land use Land Cover** and the Eco-friendly initiatives implemented within the college campus.

Place: Nagpur

Date: 22/12/2022

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ISO 14001:2015 EMS

Acknowledgement

I express my gratitude to **Mother Nature** and her supreme power rainbowed with flourishing services to mankind and for inspiring me always to explore and work with purity.

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Introduction

Yeshwantrao Chavan College of Engineering was established in the year 1984 by Nagar Yuwak Shikshan Sanstha, Nagpur. YCCE is the prominent institution acknowledged for remarkable engineering education and research. Since 38 years the institution has magnificently cherished and encouraged the forthcoming engineering professionals across the country making us one of the most opted engineering colleges in Maharashtra.

The college is guided by the Academic Advisory Board consisting of eminent academicians from the prestigious technical institutes in India. YCCE is one of the top engineering colleges in Nagpur that aspires to create devoted, proficient, capable, and resourceful engineers who would utilize their assimilated knowledge and skills for the advancement of the organization as well as the Nation. It is the first private engineering college in Central India to acquire "Autonomous Status".

The college is becoming a most sought after destination by the students who are aspiring to pursue higher technical education and attain placements in the competitive software and core industries. The institution accentuates on instilling significant professional education for crafting ambitious engineers who would ultimately possess noteworthy qualities to become leaders in their opted profession. The highly educated and well-experienced faculty members focus on inculcating excellent education for creating commendable engineers. The infrastructure and the atmosphere of the institute are completely oriented towards boosting the substantial teaching-learning schema promoting the development of students' attentiveness towards learning. These factors have ultimately made YCCE as the most ideal and preferred engineering college in Nagpur. The institute is recently reaccredited 'A++' Grade with the CGPA of 3.6 by National Assessment and Accreditation Council (NAAC) for a period of five years w.e.f. May 2022 to May 2027. Further, University Grant Commission (UGC), New Delhi has granted Extension of Autonomy status for a period of Ten (10) years from the session 2022-23 to 2031-32.

All the departments are approved research centres of Rashtrasant Tukadoji Maharaj Nagpur University and 87 students have registered for Ph.D. programmes in various disciplines, 146 students are awarded Ph.D. Faculty members have published 75 Patents and 48 Patents are granted.

In 2022, NIRF declared ranking of 300 Institutions in the country, which includes IIT's, NIT's, Govt. Engineering colleges, Autonomous colleges and Self-financed colleges. YCCE is ranked at 185th position.

YCCE established Siemens Centre of Excellence for digital manufacturing robotics, AVEVA Centre of Excellence and Nvidia Centre of Excellence for Artificial Intelligence and Machine Learning. Selected by Ministry of Micro, Small and Medium Enterprises, Govt. of India as Technical Business Incubator under ASPIRE scheme and registered 9 startups.



Image No. 1: Green Campus of YCCE

The infrastructure and the atmosphere of the institute are completely oriented towards boosting the substantial teaching-learning schema promoting the development of students' attentiveness towards learning. These factors have ultimately made YCCE as the most ideal and preferred **engineering college in Central India**. The institute is awarded with 'A' Grade of by **National Assessment and Accreditation Council (NAAC)** for a period of five years 2016-2021.



Image No. 2: Admin Building at YCCE

The Yeshwantrao Chavan College of Engineering, Nagpur is geographically located about at 21.096742 latitude and 78.979402 longitude and is 14.7 Km from Nagpur airport and railway station, on the Nagpur Hingna road. The college campus is located on a lush green hill top area- a barren land 39 years back, and is benefitted with the elevation from adjacent street pollution which leads to reduced air pollution in the college premises.

College Address

Yeshwantrao Chavan College of Engineering	
Hingna Road, Wanadongri, Nagpur- 441110	
State	Maharashtra
Phone	+91-7104-295083, 295085
Phone (Principal office)	+91-7104-295083, 09764996477
Fax	+91-7104-242376
Hostel	+91-7104-242840
Website	www.ycce.edu
Email	principal@ycce.edu , info@ycce.edu

About College

- The college is guided by the Academic Advisory Board consisting of eminent academicians from the prestigious technical institutes in India and USA. The college is having well qualified and experienced senior faculty members.
- Yeshwantrao Chavan College of Engineering (YCCE) is renowned for Engineering Education and Research. For over 36 years, it has successfully nurtured young engineering professionals, becoming a sought-after destination for students aspiring to higher technical education and placement in the competitive software and core industries. It offers a rare combination of respected scholars, international footprint and interdisciplinary studies
- A premier institute, YCCE became one of the few selected well-performing colleges for Government of India's Technical Education Quality Improvement Program (TEQIP Phase I), funded by the World Bank. With the TEQIP financial aid, the Institution has created state-of-the-art infrastructure, laboratories, computational facilities, library etc
- YCCE has become the First private engineering college to acquire 'Autonomous' status in Central India. Under the new status, the first batch of students commenced their B.E. and M.Tech. courses from the academic session 2010-2011. In the year 2016-17, UGC peer team visited YCCE & granted 'Extension of Autonomy' for 6 years (2016-2022).
- Quality assurance through Accreditation and Re-Accreditation of UG & PG programs by National Board of Accreditation (NBA), New Delhi Since 2003.
- B.E. Mechanical Engg., B.E. Civil Engg., B.E. Electrical Engg., B.E. Electronics &

Telecomm. Engg., B.E. Electronics Engg. and B.E. Information Tech. programs are Accredited by National Board of Accreditation (NBA), New Delhi upto June 2023.

- M.Tech. Structural Engg, M.Tech. Integrated Power System and M.Tech. CAD-CAM are also Accredited by National Board of Accreditation (NBA), New Delhi upto June 2019
- Accreditation with ‘A’ Grade by UGC National Assessment and Accreditation Council (NAAC), Bangalore
- Received ISTE National Award 2014 for being the “Best Private Engineering College” in the Country.
- All India 32nd Rank, 23rd Rank amongst Self-Financing & 4th Rank in West Zone by DataQuest-CMR Ranking-2020
- All India 134th Rank amongst IIT’s, NIT’s, Government and Autonomous Engineering Institutions by NIRF, MHRD, Govt. of India, 2019.
- Ranked amongst Top 150 Engineering Institutions all over India including IITs, NITs, Govt. & Autonomous Engineering Institution by NIRF, MHRD, Govt. of India in 2017 and also in 2018. All India 93rd rank amongst IITs, NITs, Govt. & Autonomous Engineering Institution by NIRF, MHRD, Govt. of India, 2016
- Received 2nd prize for YCCE Magazine from RTMNU, Nagpur in 2019-20.
- Awarded 'A' Grade by the Government of Maharashtra in the year 2002-2003
- All technical departments of the Institution are recognized as a center for Higher Learning and Research for pursuing Ph.D. by RTM Nagpur University. At Present about 44 scholars have registered for Ph. D. research programs and about 110 candidates have been awarded Doctoral (Ph.D) degree.
- In last 5 Years, the institute has received financial assistance of Rs. 5.5 Cr. from various funding agencies like AICTE, DST, UGC etc.
- Innovation Gallery for displaying innovative UG/PG project work of students
- MSME technology business incubators under ASPIRE (A scheme for promotion of innovation, rural industries and entrepreneurship) & business incubator under a scheme for development of managerial and entrepreneur skills through incubator.
- Nodal Centre for “Smart India Hackathon”, an initiative of MHRD Govt. of India.
- Accreditation by repeated corporates/industries like TCS, Capgemini, Wipro etc. for enhancing student’s placement and internship.



Visionary

Hon'ble Shri Dattaji Meghe is the architect of **Nagar Yuwak Shikshan Santha, Nagpur**. He has been the guiding star in spreading the light of education. His can-do-more attitude brought about an intellectual revolution that has transformed the social, educational, economic and cultural life of rural Maharashtra.

In pursuit of our Chairman's social commitment, a modest beginning was made by starting a small educational institute 36 years ago, which has grown up into a educational empire covering almost all faculties of education spread all over Maharashtra state.

This educational society has established 27 institutions right from pre-primary to postgraduate levels covering various faculties like Medical Sciences, Pharmacy, Engineering, Social Science, Commerce, Science, Physical Education and Performing Arts. The Society is like a joint family of about 30000 students and about 1500 highly educated and skilled staff. Our founder Chairman Shri Dattaji Meghe insists on good quality education, discipline and welfare of the students and the staff.

YCCE stands by its motto of becoming a leader in imparting quality education and training in engineering. It also contributes to the ever-expanding knowledge and skills in the professional environment through scientific inquiry, applied research and innovation to play a vital role in socio economic progress. The management and faculty are fully committed to generate excellence in academics and to attain the sacred goal of making the students realize their full potential in all dimensions of their personality.



Leadership

Shri Sagar Meghe and Shri Sameer Meghe, who were empowered with knowledge and inspired by a tradition of accomplishment have with their focused expertise, far-reaching vision and strong commitment to humanity have given the new height to YCCE. This in turn is creating students, scholars and technocrats who in turn are contributing meaningfully to the service of mankind and the profession.

Under their great leadership, YCCE students learn not only to navigate and translate the engineering sciences in the classroom and laboratories but also to apply their developing knowledge and understanding in practical engineering applications in innovative ways.



Vision

To become the most preferred institution providing innovative, research and value based, professional education for the society at large.



Mission

YCCE is committed to

- Attract best talent and create best learning ambience.
- Practice-innovative teaching-learning & research.
- Integrate Industry-Institute Collaborations.
- Nurture students towards holistic development and choicest careers.

Objectives of Environmental Audit:

The main aim objective of this Environmental Audit is to assess the environmental quality and the management strategies being implemented and the conformation to the standards prescribed for management of environmental segments by Yeshwantrao Chavan College of Engineering, Nagpur.

The specific objectives of study are:

* To assess the quality of Water Component in the YCCE college campus.

* To assess the quality of Soil Component in the YCCE college campus.

* To track the Weather & Climate parameters around the campus and monitor Ambient Air Quality parameters of YCCE.

* To monitor the Energy Consumption pattern (Electricity & Solar Energy) of the college.

* To explore the flora and fauna species within the surrounding of YCCE College.

* To quantify the Solid Waste Generation and suggest Management Plans in the YCCE campus.

* To assess the Carbon footprint potential drawn from Electricity and Solar Energy Consumption of the college.

To evaluate the Fire and Safety equipments and facility existing at YCCE college.

* To assess whether extracurricular activities of the Institution support the collection, recovery, reuse and recycling of solid wastes.

* To identify the gap areas and suggest recommendations to improve the Green Campus status of the YCCE, Nagpur.

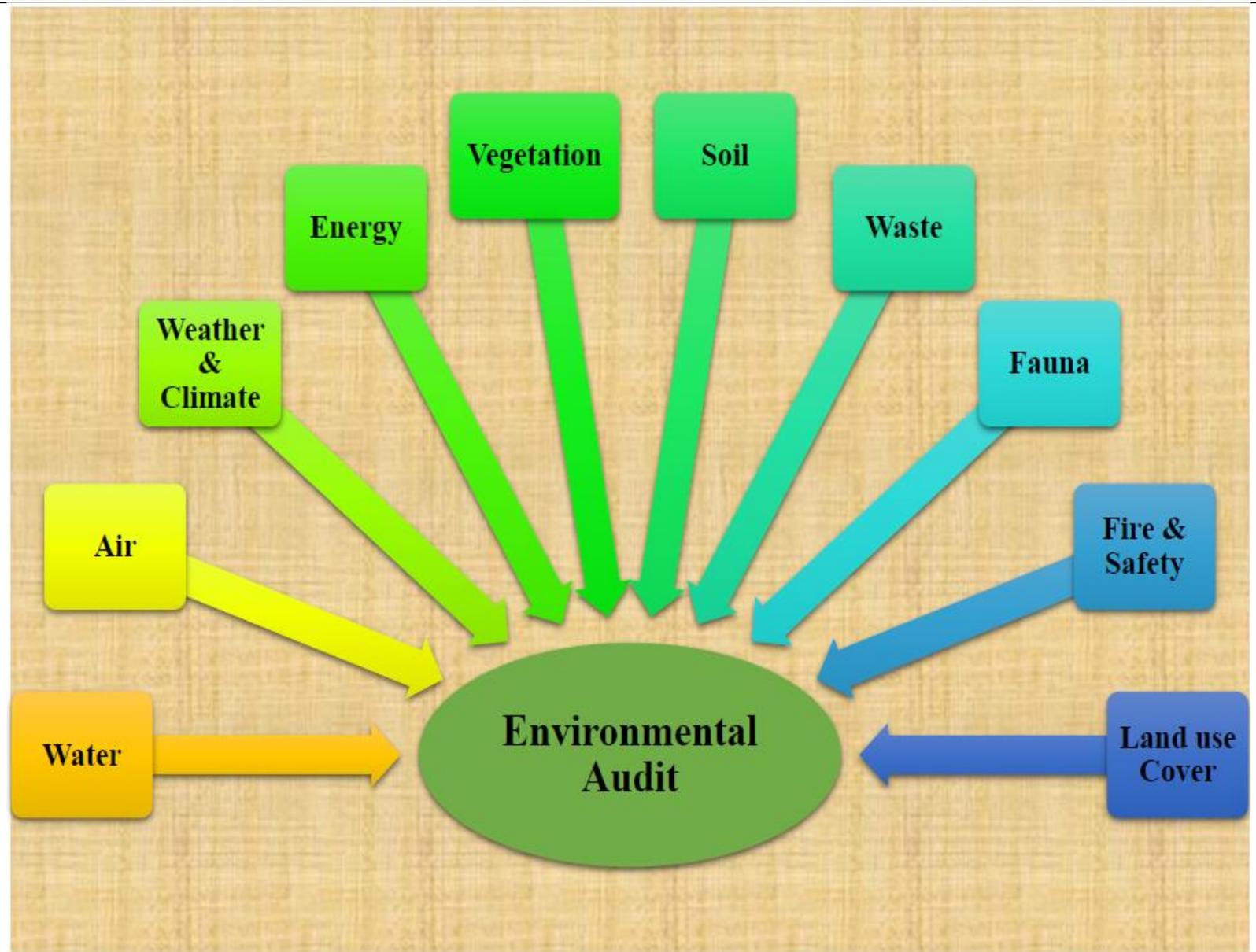


Image No. 3: Segments of Environmental Audit



Image No. 4: YCCE Campus Map

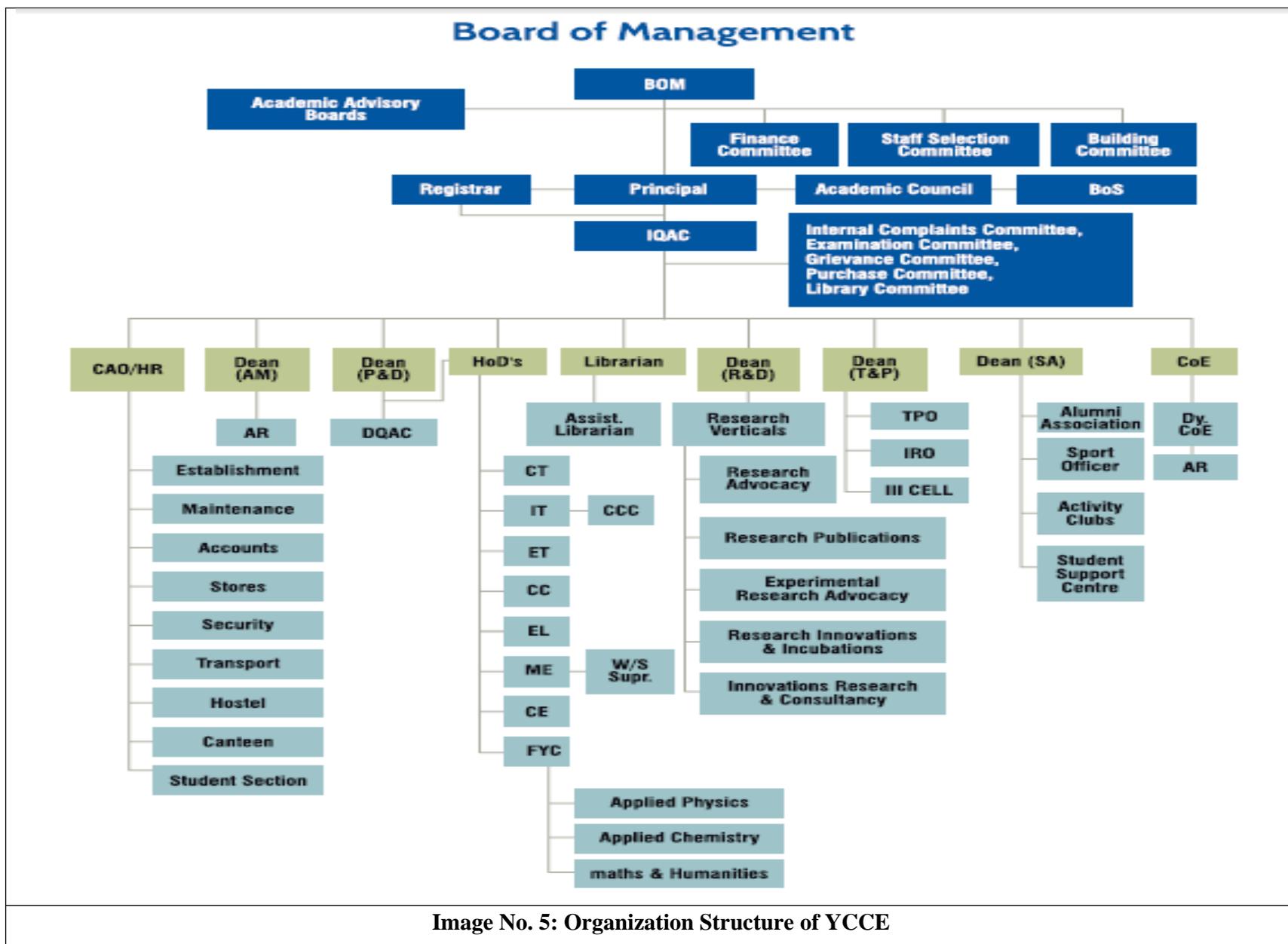
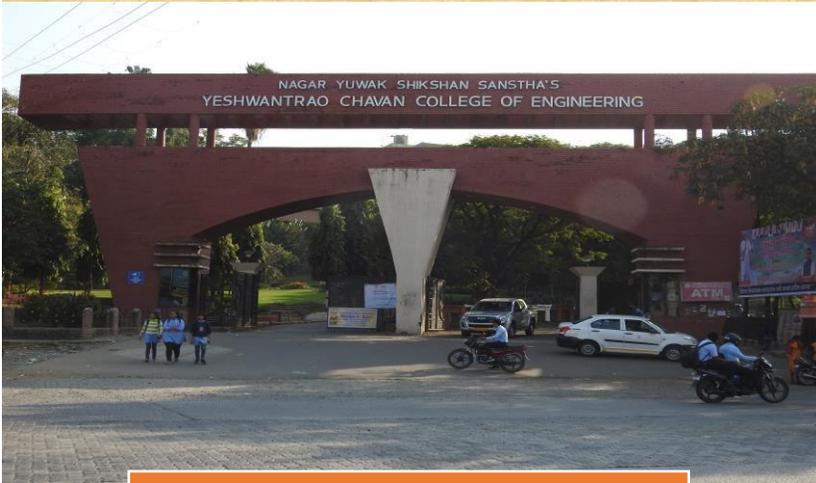


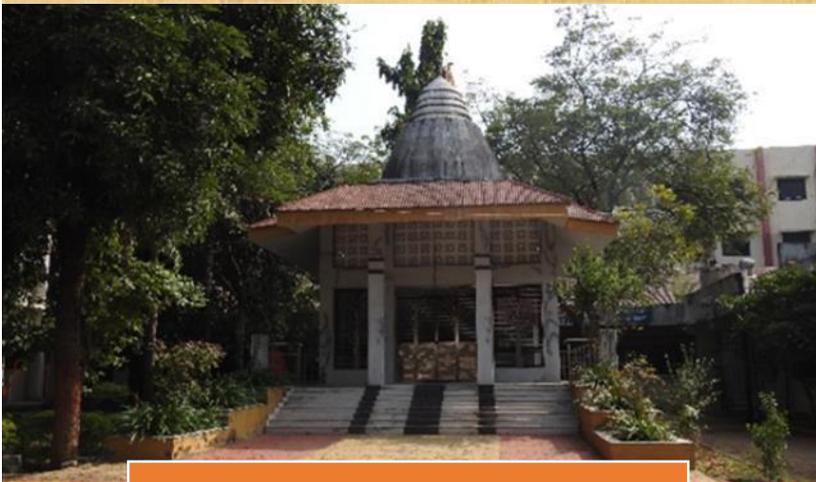
Image No. 5: Organization Structure of YCCE



Main Entrance



Administration Building and Library



Temple



Parking



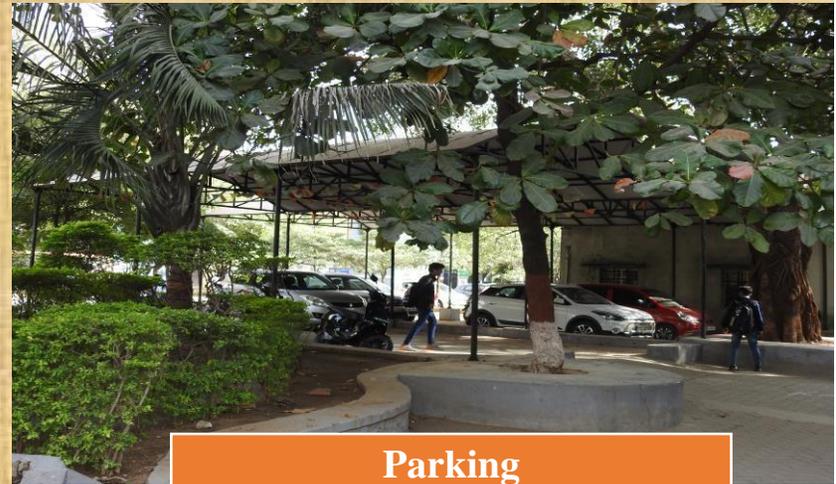
Civil Department



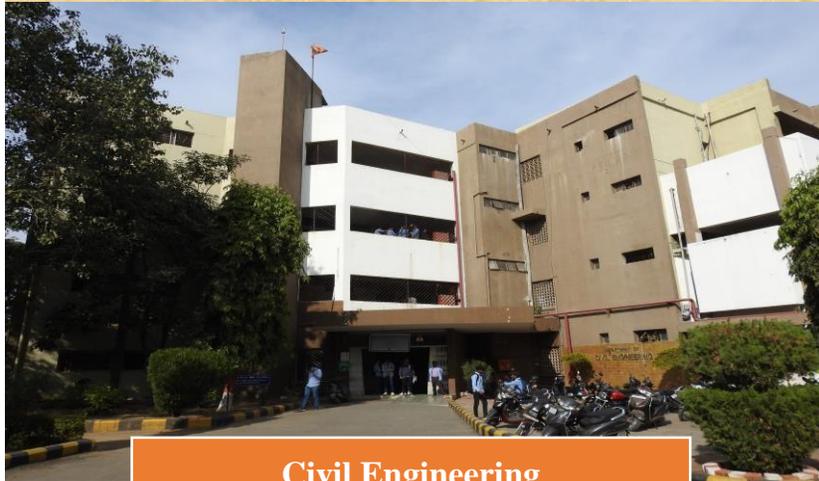
Mechanical Department



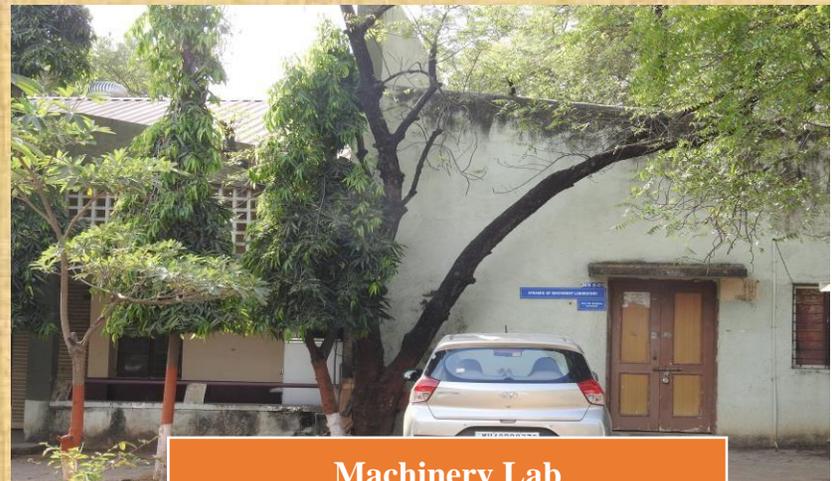
Applied Science & Humanities



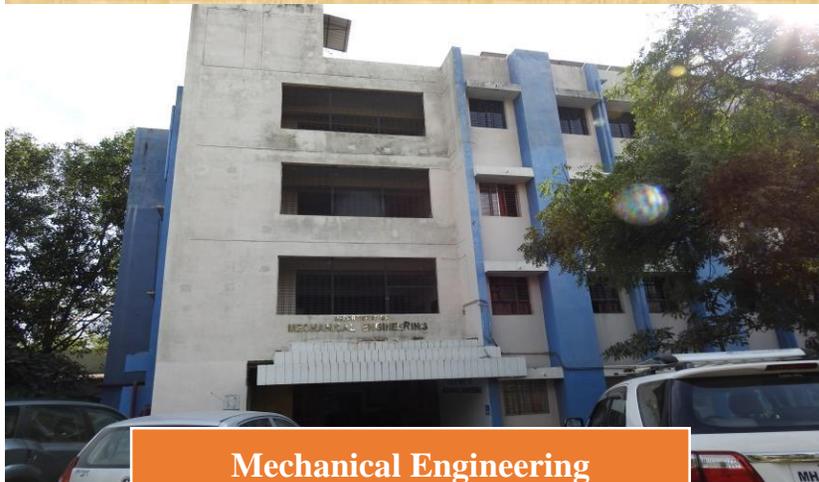
Parking



Civil Engineering



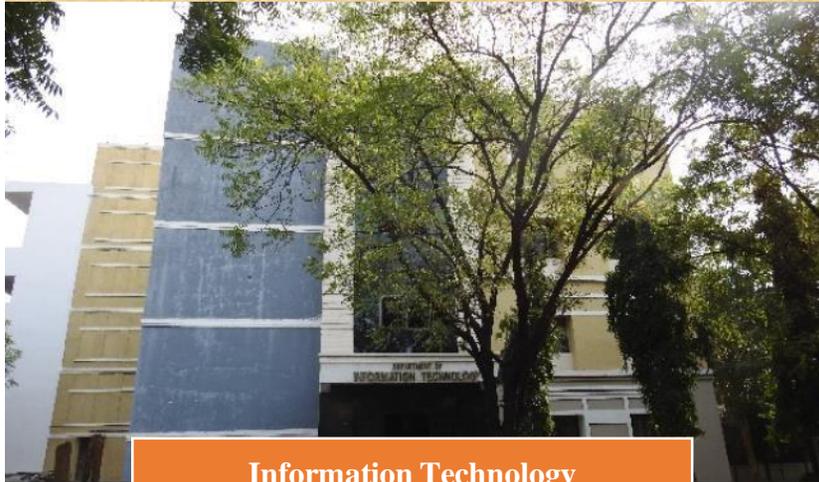
Machinery Lab



Mechanical Engineering



Electronics and Telecommunication



Information Technology



Old CCC+Computer Technology Labs



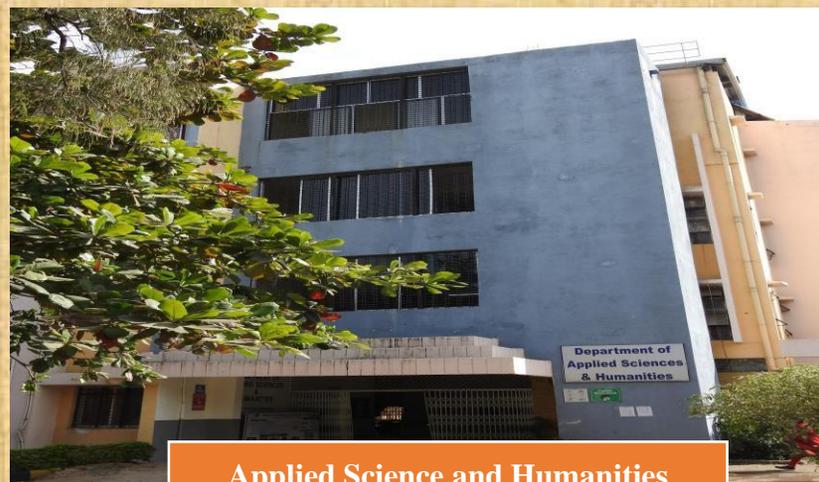
New CCC+Mechanical Engineering Labs



Workshop



Computer Technology and Electrical Engineering



Applied Science and Humanities



Canteen



Mini Auditorium

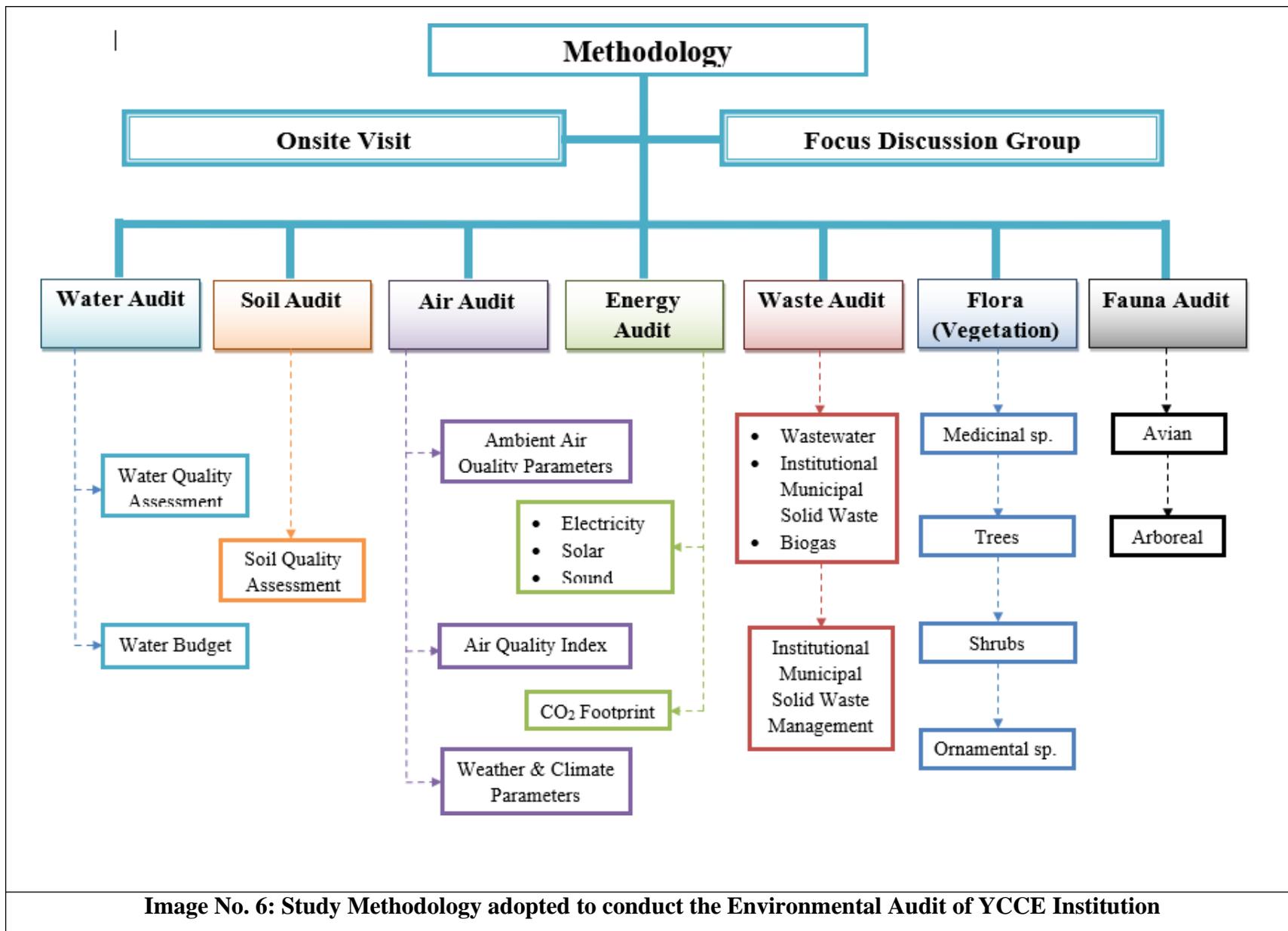


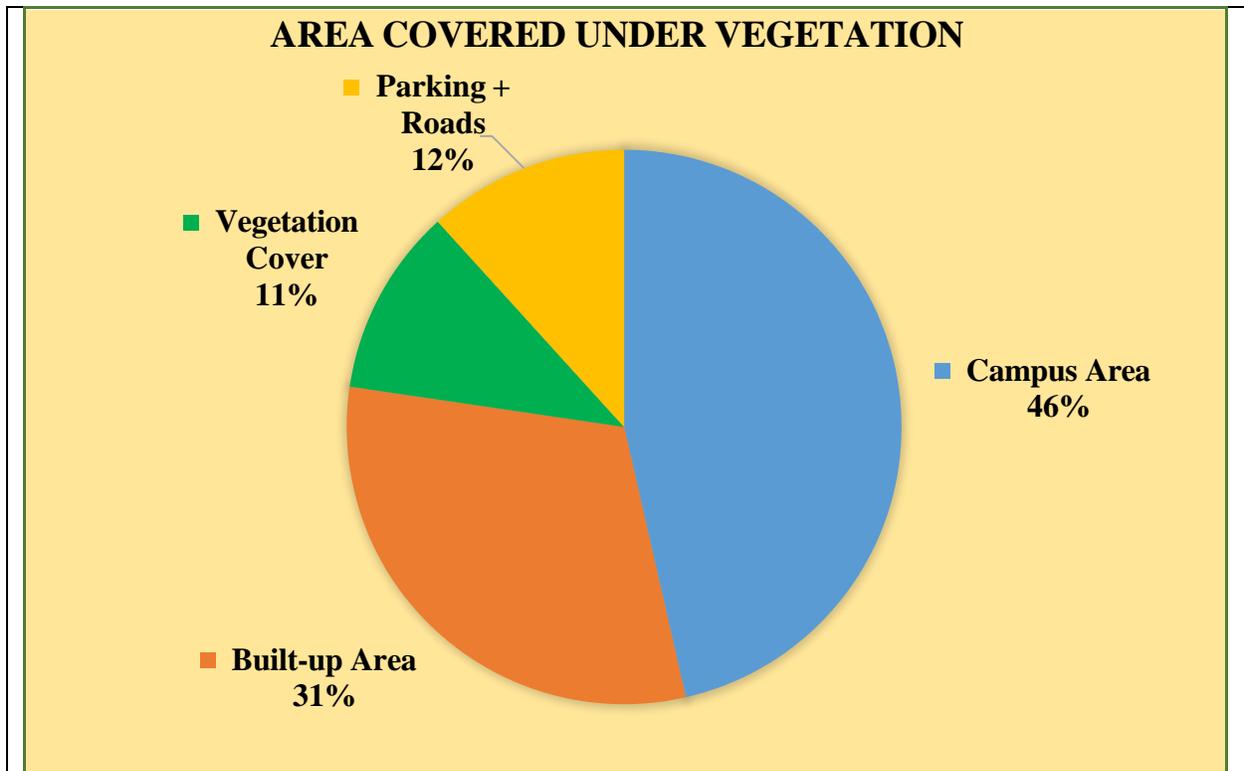
Image No. 6: Study Methodology adopted to conduct the Environmental Audit of YCCE Institution

Table No. 1: Area description of Study Region

Sr. No.	Description	Details
1)	Campus Area	14 Acres
2)	Location	On a hill top, lush green environment with aesthetic environment, on Nagpur-Hingna Road
3)	Accessibility	15 Kms from Nagpur Railway Station and 14 Kms from Airport

Table No. 2: Area segments-Total Built-up and Green Area at YCCE

Sr. No.	Description	Area
1)	Campus Area	56,656 sq. m
2)	Built-up Area	37,702.76 sq. m
3)	Vegetation Cover	13,359 sq. m
4)	Parking + Roads	14,307 sq. m



Graph No. 1: Area under Vegetation Cover

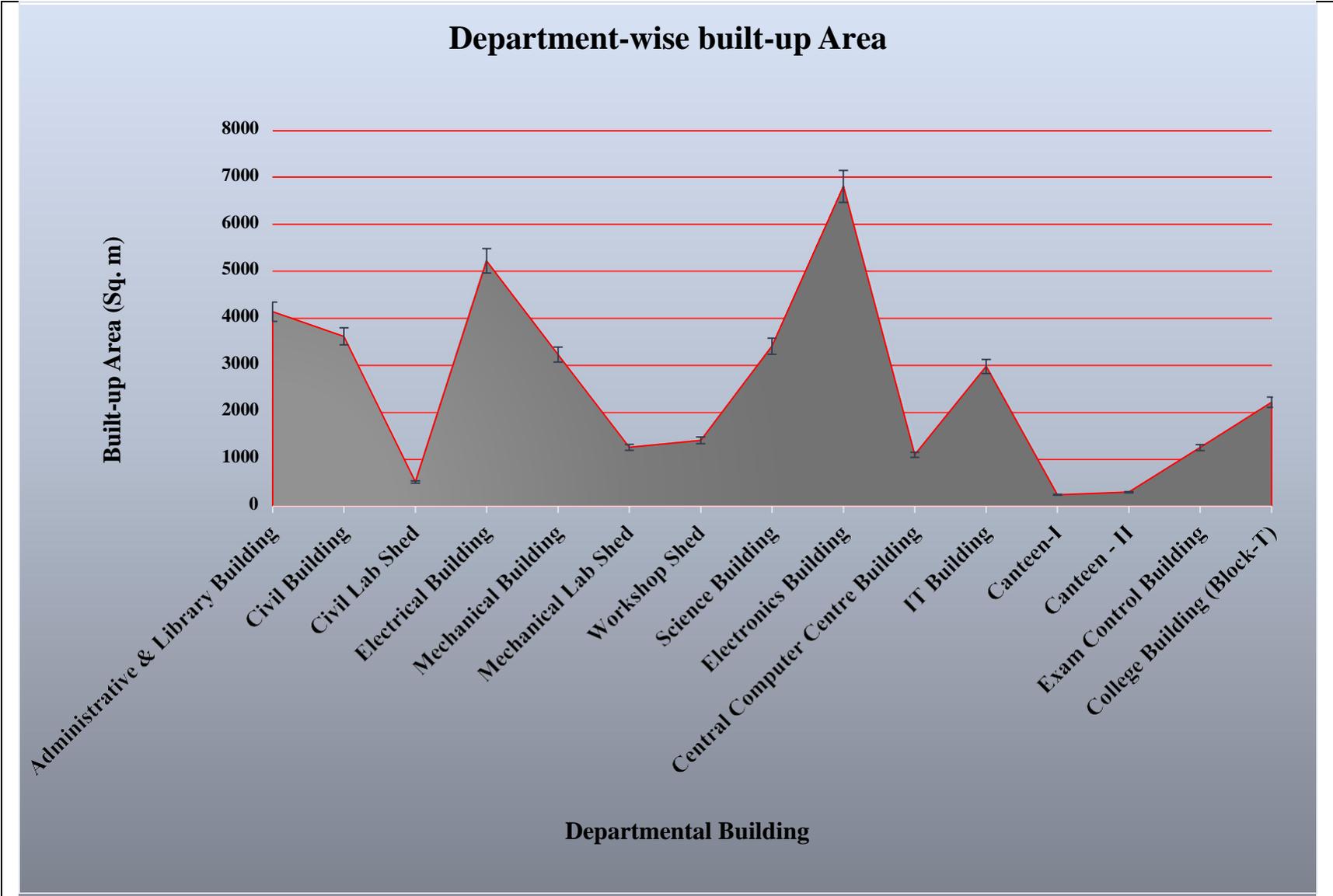
Table No. 3: Department wise built-up Area at YCCE

Sr. No.	Name of Department Building	Floors	Built-up Area (Sq.m)
1)	Administrative & Library Building	G+3	4146.054
2)	Civil Building	G+3	3619.668
3)	Civil Lab Shed	G.F.	513.86
4)	Electrical Building	G+3	5229.631
5)	Mechanical Building	G+3	3229.63
6)	Mechanical Lab Shed	G.F.	1253.736
7)	Workshop Shed	G.F.	1403.56
8)	Science Building	G+3	3410.754
9)	Electronics Building	L. G.F.+ G + 2	6818.75
10)	Central Computer Centre Building	G+1	1094.784
11)	IT Building	G+3	2977.811
12)	Canteen-I	G.F.	241.041
13)	Canteen - II	G.F.	298.084
14)	Exam Control Building	G+1	1250.412
15)	College Building (Block-T)	G+3	2214.985
Total Built- up Area			37702.76

* G - Ground Floor

G.F. - Ground Floor

L.G.F.-Left Ground Floor



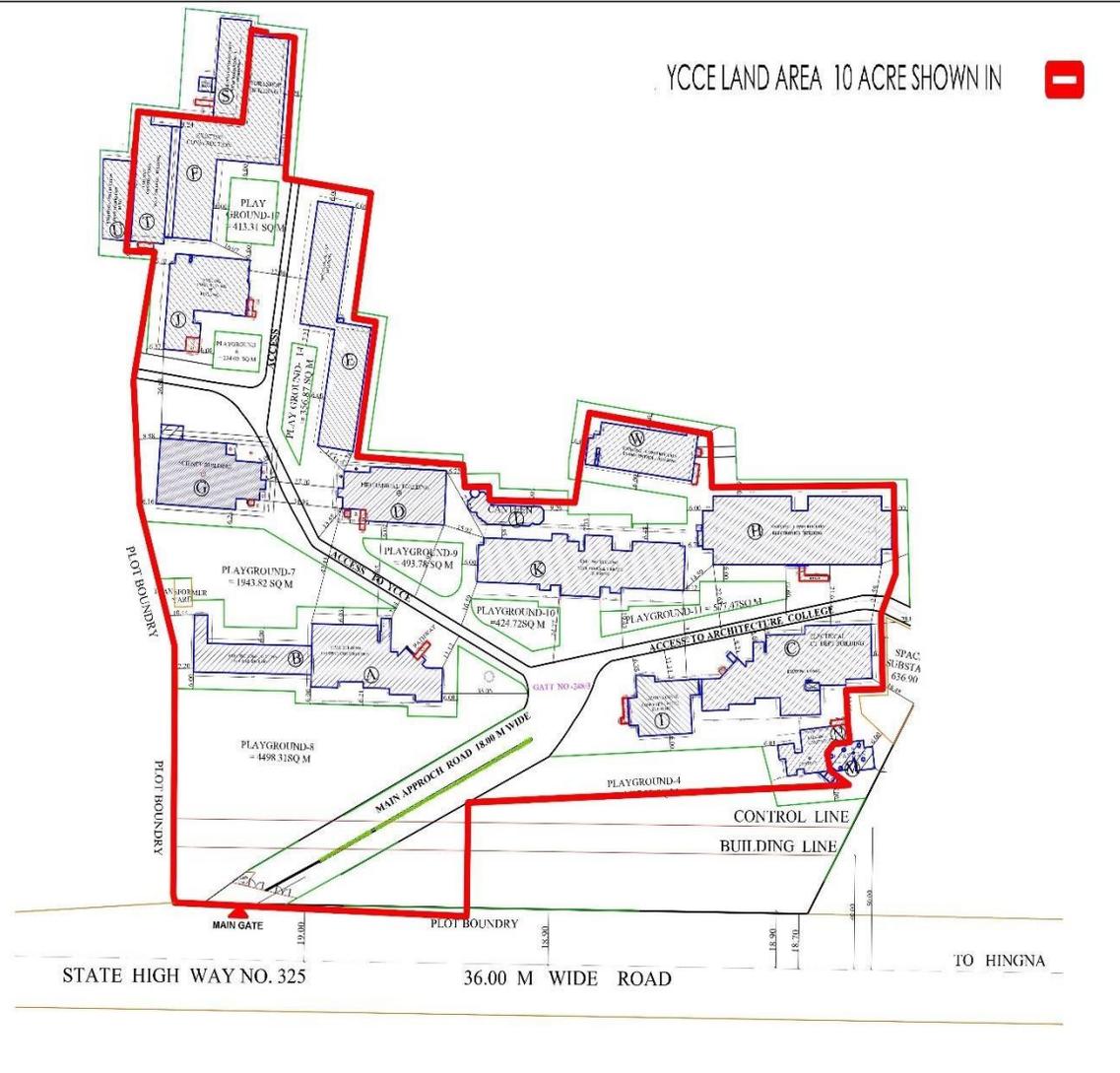
Graph No. 2: Department-wise Built-up Area

Table No. 4: Infrastructure of YCCE

Sr. No.	Description	Nos.
1)	Total Classroom	81
2)	Total Tutorial rooms	
3)	Total Labs	95
4)	Drawing Hall	3
5)	Workshop	5
6)	Seminar Hall	5
7)	Computer Centre	5
8)	Innovation Lab	3

AREA STATEMENT			
1	TOTAL LAND AREA	= 40 ACRE	
A	LAND FOR YCCE CAMPUS	= 10 ACRE	
B	YCCE EXCESS LAND ALLOTTED FOR MEDICAL COURSES	= 4 ACRE	
C	LAND ALLOTTED FOR OTHER EDUCATIONAL INSTITUTIONS	= 26 ACRE	
TOTAL		= 40 ACRE	
A PERMISSIBLE B/UP AREA FOR YCCE WITH FAR RATIO 1:1.10 (40460x1.10)		= 44506 SQ M	
A -BUILT UP AREA STATEMENT (YCCE)			
S NO	YCCE BUILDING	B/UP AREA IN SQ M	FLOORS
1	CIVIL BUILDING	3619.668 SQ M	G+3
2	ELECTRICAL BUILDING	5229.631 SQ M	G+3
3	MECHANICAL BUILDING	3229.63 SQ M	G+3
4	MECHANICAL LAB SHED	1253.736 SQ M	G.F.
5	WORKSHOP SHED	1403.56 SQ M	G.F.
6	SCIENCE BUILDING	3410.754 SQ M	G+3
7	CIVIL LAB SHED	513.86 SQ M	G.F.
8	ELECTRONICS BUILDING	6818.75 SQ M	LG.F.+G+2
9	CENTRAL COMPUTER CENTER BUILDING	1094.784 SQ M	B+G+1
10	IT BUILDING	2977.811 SQ M	G+3
11	ADMIN & LIBRARY BUILDING	4146.054 SQ M	G+3
12	CANTEEN -1	241.041 SQ M	G.F.
13	CANTEEN - 3	298.084 SQ M	G.F.
14	EXAM CONTROL BUILDING	1250.412 SQ M	G+1
15	COLLEGE BUILDING (BLOCK-T)	2214.985 SQ M	G+3
TOTAL B/UP AREA		37,702.76 SQ M	

KH. BOUNDARY SHOWN IN	
EXISTING BUILDING SHOWN IN	
PROPOSED CONSTRUCTION SHOWN IN	
PLAYGROUND AREA SHOWN IN	
ACCESS SHOWN IN	
TRANSFORMER SHOWN IN	



Map No. 1 : Marked Boundary Area of YCCE



Satellite Imagery No. 1: Study Area YCCE Boundary



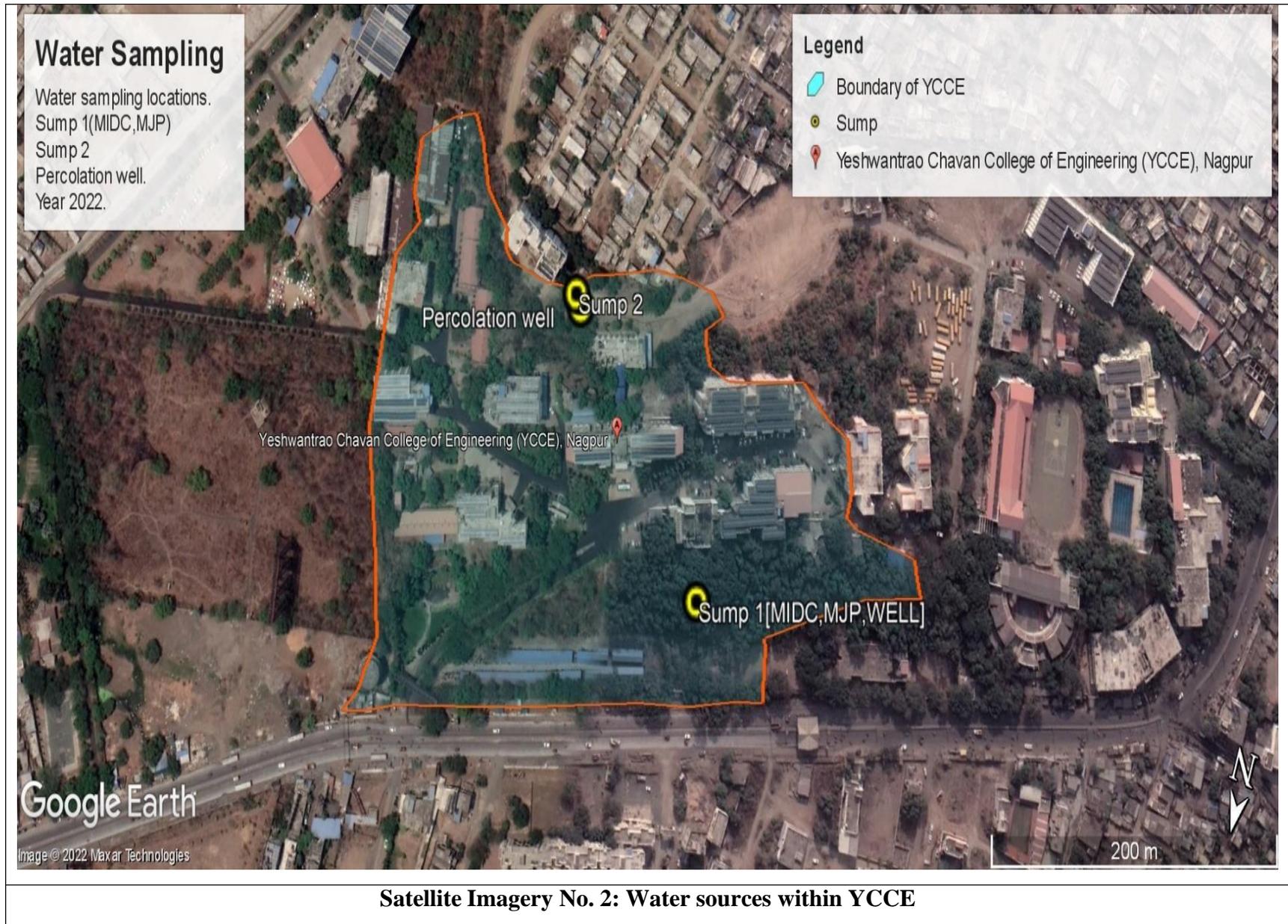
D) WATER AUDIT

Water plays a significant role in maintaining the human health and welfare. Clean drinking water is now recognized as a fundamental right of human beings. Around 780 million people do not have access to clean and safe water and around 2.5 billion people do not have proper sanitation. As a result, around 6–8 million people die each year due to water related diseases and disasters. In the today world, the water use in household supplies, public supplies is commonly defined as domestic water. This water is processed to be safely consumed as drinking water and other purposes. Water quality and suitability for use are determined by its taste, odor, colour, and concentration of organic and inorganic matters. Contaminants in the water can affect the water quality and consequently the human health. Therefore, the investigation of the drinking water quality by researchers and governmental departments/ private organization has been performed regularly throughout the world.

The major Drinking water sources at YCCE are:

- 1) Maharashtra Jeevan Pradhikaran (MJP)
- 2) Maharashtra Industrial Development Corporation (MIDC)
- 3) Groundwater Well
- 4) Borewell-2 Nos.

The water sample was collected by purposive sampling method from common sump and subjected for the physico-chemical and biological characterization for qualitative and quantitative estimation of water within the campus.



Indian Standard DRINKING WATER — SPECIFICATION

Table No. 5: Organoleptic and Physical Parameters
(Foreword and Clause 4)

Sr. No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Remarks
i)	Colour, Hazen units, Max	5	15	Extended to 15 only, if toxic substances are not suspected in absence of alternate sources a) Test cold and when heated
ii)	Odour	Agreeable	Agreeable	—
iii)	pH value	6.5-8.5	No relaxation	b) Test at several dilutions
iv)	Taste	Agreeable	Agreeable	Test to be conducted only after safety has been established
v)	Turbidity, NTU, Max	1	5	—
vi)	Total dissolved solids, mg/l,	500	2,000	—

NOTE — It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under ‘acceptable’ render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under ‘permissible limit in the absence of alternate source’ in col 4, above which the sources will have to be rejected.

**Table No. 6: General Parameters Concerning Substances Undesirable in Excessive Amounts
(Foreword and Clause 4)**

Sr. No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Remarks
1)	Aluminium (as Al), mg/l, <i>Max</i>	0.03	0.2	—
2)	Ammonia (as total ammonia-N), mg/l, <i>Max</i>	0.5	No relaxation	—
3)	Anionic detergents (as MBAS) mg/l, <i>Max</i>	0.2	1.0	—
4)	Barium (as Ba), mg/l, <i>Max</i>	0.7	No relaxation	—
5)	Boron (as B), mg/l, <i>Max</i>	0.5	1.0	—
6)	Calcium (as Ca), mg/l, <i>Max</i>	75	200	—
7)	Chloramines (as Cl ₂), mg/l, <i>Max</i>	4.0	No relaxation	—
8)	Chloride (as Cl), mg/l, <i>Max</i>	250	1,000	—
9)	Copper (as Cu), mg/l, <i>Max</i>	0.05	1.5	—
10)	Fluoride (as F) mg/l, <i>Max</i>	1.0	1.5	—

11)	Free residual chlorine, mg/l, Min	0.2	1	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be minimum 0.5 mg/l
12)	Iron (as Fe), mg/l, Max	0.3	No relaxation	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
13)	Magnesium (as Mg), mg/l, Max	30	100	—
14)	Manganese (as Mn), mg/l, Max	0.1	0.3	Total concentration of manganese (as Mn) and iron (as Fe) shall not exceed 0.3 mg/l
15)	Mineral oil, mg/l, Max	0.5	No relaxation	—
16)	Nitrate (as NO₃), mg/l, Max	45	No relaxation	—
17)	Phenolic compounds (as C₆H₅OH), mg/l, Max	0.001	0.002	—
18)	Selenium (as Se), mg/l, Max	0.01	No relaxation	—
19)	Silver (as Ag), mg/l, Max	0.1	No relaxation	—

20)	Sulphate (as SO₄) mg/l, Max	200	400	May be extended to 400 provided that Magnesium does not exceed 30
21)	Sulphide (as H₂S), mg/l, Max	0.05	No relaxation	—
22)	Total alkalinity as calcium carbonate, mg/l, Max	200	600	—
23)	Total hardness (as CaCO₃), mg/l, Max	200	600	—
24)	Zinc (as Zn), mg/l, Max	5	15	—

NOTES:

- 1) In case of dispute, the method indicated by '*' shall be the referee method.
- 2) It is recommended that the acceptable limit is to be implemented. Values in excess of those mentioned under 'acceptable' render the water not suitable, but still may be tolerated in the absence of an alternative source but up to the limits indicated under 'permissible limit in the absence of alternate source' in col 4, above which the sources will have to be rejected.

Table No. 7: Parameters Concerning Toxic Substances*(Foreword and Clause 4)*

Sr. No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Remarks
i)	Cadmium (as Cd), mg/l, Max	0.003	No relaxation	—
ii)	Cyanide (as CN), mg/l, Max	0.05	No relaxation	—
iii)	Lead (as Pb), mg/l, Max	0.01	No relaxation	—
iv)	Mercury (as Hg), mg/l, Max	0.001	No relaxation	—
v)	Molybdenum (as Mo), mg/l, Max	0.07	No relaxation	—
vi)	Nickel (as Ni), mg/l, Max	0.02	No relaxation	—
vii)	Pesticides, µg/l, Max	—	No relaxation	—
viii)	Polychlorinated biphenyls, mg/l, Max	0.000 5	No relaxation	or APHA 6630
ix)	Polynuclear aromatic hydrocarbons (as PAH), mg/l, Max	0.000 1	No relaxation	—
x)	Total arsenic (as As), mg/l, Max	0.01	0.05	—
xi)	Total chromium (as Cr), mg/l, Max	0.05	No relaxation	—

Table No. 8 : Bacteriological Quality of Drinking Water¹⁾ (Clause 4.1.1)		
Sr. No.	Organisms	Requirements
1)	All water intended for drinking: a) E. coli or thermo-tolerant coliform bacteria	Shall not be detectable in any 100 ml sample
2)	Treated water entering the distribution system: a) E. coli or thermo-tolerant coliform bacteria b) Total coliform bacteria	Shall not be detectable in any 100 ml sample
3)	Treated water in the distribution system: a) E. coli or thermo-tolerant coliform bacteria b) Total coliform bacteria	Shall not be detectable in any 100 ml sample

Table No. 9: Qualitative & Quantitative Parameters of Drinking Water Source at YCCE

Sr. No	Characteristics Parameters	Values
1)	Odour	Agreeable
2)	Colour	<1 Hazen
3)	Taste	Agreeable
4)	pH	7.7
5)	Electrical Conductivity mS/cm	0.67
6)	Water Temperature	20
7)	Turbidity (NTU)	0.2
8)	Total Solids (mg/L)	240
9)	Dissolve Solids (mg/L)	226
10)	Suspended solids (mg/L)	<4
11)	Relative Density	1
12)	Dissolve Oxygen (mg/L)	6.8
13)	Alkalinity (as CaCO₃, mg/L)	181
14)	Total Hardness (as CaCO₃, mg/L)	194
15)	Carbonate	Absent
16)	Bicarbonate (HCO₃)	7.60

17)	Sodium (meq/L)	3.58
18)	Calcium (meq/L)	2.8
19)	Magnesium (meq/L)	5.20
20)	Potassium (meq/L)	0.04
21)	Chloride (meq/L)	52
22)	Sulphate (mg/L)	4
23)	Ortho Phosphate (mg/L)	<0.04
24)	Fluorides (mg/L)	0.298
25)	Iron (mg/L)	0.147
26)	Nitrates (mg/L)	1.286
27)	Aluminium (mg/L)	<0.032
28)	Copper (mg/L)	0.012
29)	Zinc (mg/L)	0.039
30)	Sodium Absorption Ratio (SAR)	1.79
31)	Residual Sodium Carbonate (RSC)	Absent
32)	Fecal coliform (CFU)	Absent
33)	E. Coli (CFU)	Absent

Table No. 10: Water Source at YCCE: I] Maharashtra Industrial Development Corporation (MIDC)

Sr. No.	Month	Year	Meter Readings	Total water quantity (litres)	Total Amount
1)	April	2021	2751	0	11320
2)	May	2021	2751	0	0
3)	June	2021	2751	0	0
4)	July	2021	2751	0	0
5)	August	2021	2751	0	0
6)	September	2021	2751	0	45930
7)	October	2021	2751	0	11470
8)	November	2021	2751	0	0
9)	December	2021	2805	0	11100
10)	January	2022	2805	0	11100
11)	February	2022	2873	68	10730
12)	March	2022	2873	88	10730
13)	April	2022	2873	0	11840

Table No. 11: Water Source at YCCE: II] Maharashtra Jeevan Pradhikaran (MJP)

Sr. No.	Month	Year	Amount charged/1000 litres	Total water quantity (litres)	Total Units Used	Total Amount
1)	April-May	2021	250	1790000	179	44750
2)	June-July	2020	250	3820000	382	95500
3)	August-September	2020-21	250	3070000	307	76750
4)	October-November	2021	250	3170000	317	79250
5)	December-January	2021-22	250	3130000	313	78250
6)	February-March	2022	250	2530000	253	63250
7)	April-May	2022	250	2910000	291	72750
8)	Total				2042	

* 1 Unit-1000 Lit. of water

Table No. 12: Availability of Drinking Water Systems

Sr. No	Location	Capacity of RO	Centralised / Domestic	Centralized RO working mode	Flow of water centralised RO	TDS of Inflow Water	TDS of outflow water
1)	Maintenance	50	Domestic			675	101
2)	Admin	50	Domestic			650	102
3)	New Ele (EE)	500	Centralised	Manual	475	650	94
4)	New Ele (ETC)	500	Domestic	Manual	480	650	108
5)	CCC (Conf.)	50	Centralised			650	85
6)	Old Ele	500	Domestic	Manual	450	625	78
7)	Civil	500	Centralised	Manual	500	625	97
8)	Old Sci.	500	Centralised	Manual	500	625	107
9)	Automobile	Uv kent	Domestic			625	625
10)	IT	500	Domestic	Manual	450	625	87
11)	Mechanical	500	Domestic	Manual	500	625	105
12)	Workshop	Uv kent +R.O 20 Lph	Domestic			625	198
13)	CCC	Uv kent	Domestic			625	625
14)	COE	Uv kent	Domestic			625	625
15)	Canteen Vihan	Uv kent	Domestic			625	625
16)	Canteen Swaragi	Uv kent	Domestic			625	625
17)	Old Sci.(CHE)	20	Domestic			625	15

Table No. 13: Department-wise Water Tank Provision

Sr. No.	Department	Type of tank	Capacity in .Ltrs	Quantity
1)	Mechanical Engineering Building	Syntex Tank	5000	2
		Syntex Tank	3000	1
2)	Civil Engineering Building	Overhead RCC Tank	14256	1
		Syntex Tank	3000	1
3)	Old Science Building	Overhead RCC Tank	25920	1
		Syntex Tank	3000	1
4)	Swaragi Canteen	Syntex Tank	5000	1
5)	B. P. Ed. Hall (auditorium)	Underground Sump	150000	1
6)	Workshop Building	Underground Sump (Panchkon)	64800	1
		Underground Sump	1728	1
		Syntex Tank	3000	1
7)	CCC Building (computer department)	Overhead RCC Tank	8640	1
		Syntex Tank	2000	1
8)	Old Electrical Building	Underground Sump	27540	1
		Overhead RCC Tank	27540	1

		Syntex Tank	3000	1
9)	New Electronics Building	Overhead RCC Tank	18144	1
		Overhead RCC Tank	7560	1
		Overhead RCC Tank	5000	1
10)	Admin Building	Overhead RCC Tank	8640	2
11)	Tiled Sump in front of admin building	Underground Sump (Fountain)	26412	1
		Overhead RCC Tank	7290	2
12)	Maintenance Building	Underground Sump	100000	1
13)	STP filter Plant	Underground Sump	8282	1
14)	Fluid Power lab Building	Underground Sump	30184	1
15)	SOS Gate	Underground Sump	30184	1
16)	Mahada Colony pump house	Underground Sump	129600	1
17)	COE Building	Syntex Tank	3000	2
18)	IT Building	Overhead RCC Tank	20000	1

Table No. 14: Water Dispensing Connectivity

Sr. No.	Department		Tap		Water Coolers
			Regular water	Drinking water	
1)	CSE Building	Ground Floor	8	2	1
		1st Floor	6	2	1
		2nd Floor	9	2	1
		3rd Floor	2	2	1
2)	IT Building	Ground Floor	10	2	0
		1st Floor	9	2	0
		2nd Floor	12	2	0
		3rd Floor	10	2	0
3)	Old Science Building	Ground Floor	13	2	1
		1st Floor	8	2	1
		2nd Floor	12	2	1
		3rd Floor	9	0	0
4)	Civil Building	Ground Floor	12	2	0
		1st Floor	9	2	0
		2nd Floor	14	2	0
		3rd Floor	12	2	0
5)	Mechanical Building	Ground Floor	12	2	0
		1st Floor	10	2	1
		2nd Floor	10	2	0
		3rd Floor	9	2	0
6)	Administration Building	Ground Floor	8	0	0
		1st Floor	11	2	1
		2nd Floor	7	0	0
		3rd Floor	13	0	0
7)	COE Building	Ground Floor	11	0	0
		1st Floor	11	2	1

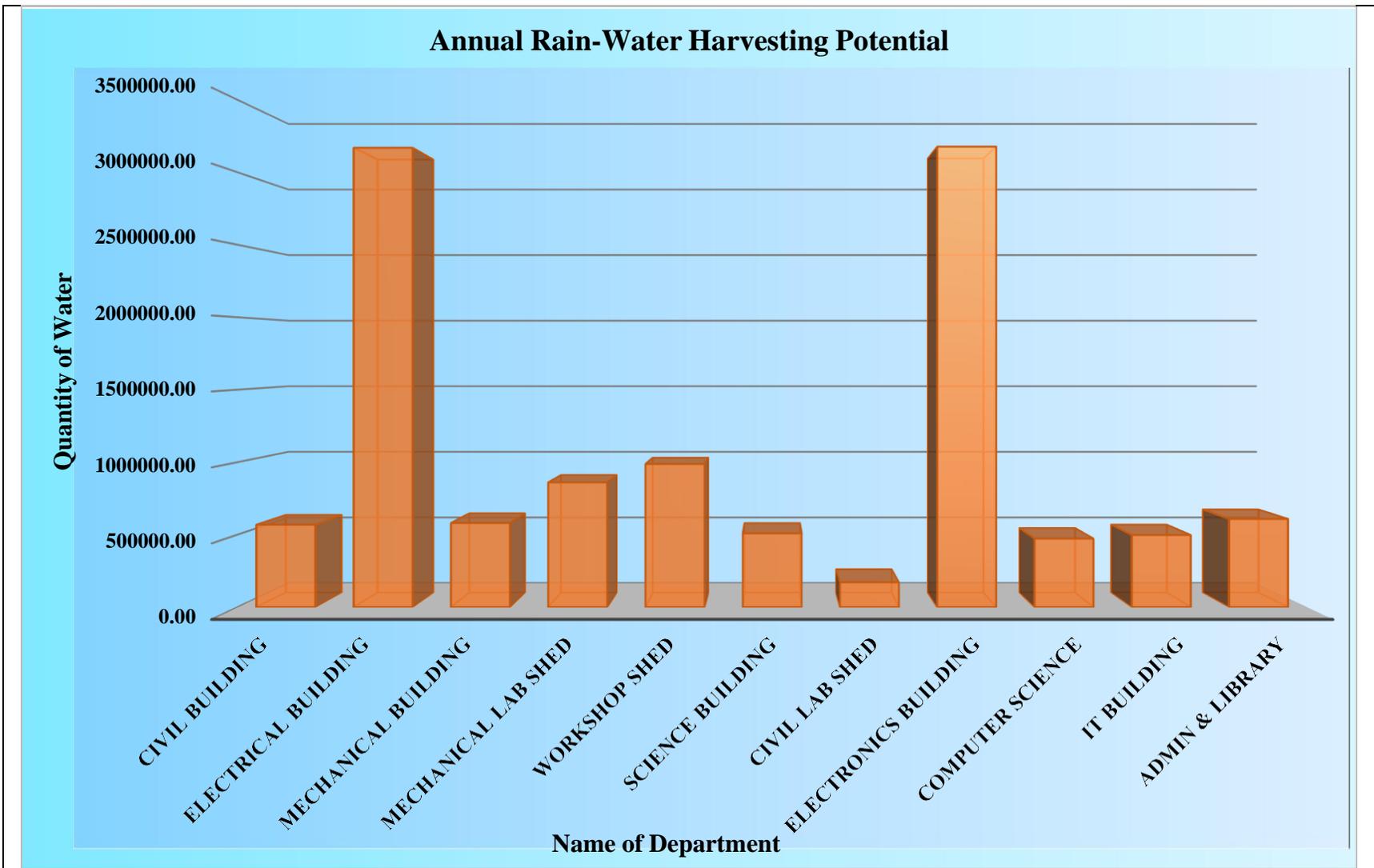
8)	Electronics Building	Ground Floor	21	2	2
		1st Floor	16	2	2
		2nd Floor	23	2	2
		3rd Floor	25	2	2
9)	Electrical Building	Ground Floor	11	3	0
		1st Floor	8	3	0
		2nd Floor	12	2	0
		3rd Floor	8	3	0
10)	CCC Building	Ground Floor	11	2	1
		1st Floor	8	2	1
11)	Workshop 1	Ground Floor	2	2	1
12)	Workshop 2	Ground Floor	6	2	1
13)	Swaragi Canteen	Ground Floor	8	2	1
14)	Total		416	71	23

Table No. 15: Annual Rooftop Rainwater Harvesting Potential at YCCE

Sr. No	Name of the Department	Terrace (Area)	RWH Potential (Litres)
1)	Civil Building	650.42	569247.58
2)	Electrical Building	3620.14	3168346.53
3)	Mechanical Building	663.75	580914.00
4)	Mechanical Lab Shed	983.705	860938.62
5)	Workshop Shed	1128.81	987934.51
6)	Science Building	581.59	509007.57
7)	Civil Lab Shed	196.113	171638.10
8)	Electronics Building	3628.919	3176029.91
9)	Computer science	540.439	472992.21
10)	IT Building	568.955	497949.42
11)	Admin & Library	695.683	608861.76

*Annual Rainfall (mm) = 1094 mm (January 2021 to December 2021)

Runoff factor = 0.8



Graph No. 3: Department-wise Rainwater Harvesting Potential

Table No. 16: Annual Water Budget of YCCE

Sr. No.	YCCE Water Source	Total Volume of Water (in Units)	Purpose of Water Use			Waste water Generated at STP (Lit.)	Treated Water & Disposed
			Domestic	Laboratory	Sanitation		
1	MJP	2042 (1 Unit = 10,00 Litres)	Drinking, Irrigating Lawns	Distillation, Washing Glassware, Others	Flushing, Washing, Cleaning Toilets, etc	2,99,85,100	2,99,18,480
2	MIDC	156	Drinking, Irrigating Lawns	Distillation, Washing Glassware, Others	Flushing, Washing, Cleaning Toilets, etc		



II) AIR AUDIT

In addition to land and water, air is the prime resource for sustenance of life. In recent years, medium and small towns and cities have also witnessed an increase in pollution, thus getting fast reflected in the non-attainment cities of India. Air pollution has increasingly become a serious concern, predominantly because of its health impacts. Thus, regular track of Air Quality is important for human health.

One way to describe air quality is to report the concentrations of all pollutants with acceptable levels. An air quality index is defined as an overall scheme that transforms the weighed values of individual air pollution related parameters (for example, pollutant concentrations) into a single number or set of numbers.

The air sampling was done by purposive random sampling method at different locations within the campus to compute the qualitative and quantitative air pollutant data. The Air pollution index is generated with this data for the college campus.



Satellite Imagery No. 3: Sampling Locations of Air Component & Weather Component

Table No. 17: National Ambient Air Quality Standards

Sr. No.	Pollutants	Time weighted Average	Concentration of Ambient Air	
			Industrial, Residential, Rural Areas	Ecologically Sensitive Area
1)	Sulphur Dioxide (SO₂), µg/m³	Annual	50	20
		24 hrs	80	80
2)	Nitrogen Dioxide (NO₂), µg/m³	Annual	40	30
		24 hrs	80	80
3)	Particulate matter (PM₁₀), µg/m³	Annual	60	60
		24 hrs	100	100
4)	Particulate matter (PM_{2.5}), µg/m³	Annual	40	40
		24 hrs	60	60
5)	Ozone (O₃), µg/m³	8 hours	100	100
		1 hours	180	180
6)	Carbon monoxide (CO) mg/m³	8 hours	02	02
		1 hours	04	04

Source: National Ambient Air Quality Standards, CPCB, New Delhi, 18th November, 2009

Table No. 18: Qualitative and Quantitative Characteristics of Air at different locations at YCCE

Sr. No.	Months	Locations	CO	NO ₂	SO ₂	RSPM	SPM	O ₃	NH ₃
1)	April	L1	1798	22.33	9.1	72.11	175.6	122	21
2)	May	L2	532	14.22	8.1	32.44	172	112	22
3)	July	L3	1798	24.57	11.14	83.28	303.14	49	21
4)	August	L4	538	18	8.7	101	344.33	89	22
5)	September	L5	502	28.88	11.88	124.33	365.66	132	22
6)	October	L6	510	28.9	9.72	105	234.09	110	23

7)	November	L7	508	34.26	9	165.26	308.73	129	21
8)	December	L8	502	25.44	6.4	114.55	255	112	21
9)	January	L9	503	19.11	6.1	87.22	157.11	30	21
10)	February	L10	502	18.42	5.8	94.14	209	39	21
11)	March	L11	503	15.44	5.3	96.44	184.4	121	22

*CO - Carbon monoxide

NO₂ - Nitrogen dioxide

SO₂ - Sulphur dioxide

RSPM - Respirable Suspended Particulate matter

SPM - Suspended Particulate matter

O₃ - Ozone

NH₃ - Ammonia

Table No. 19: Assessment of Air Quality Index (AQI) of YCCE

Sr. No.	Months	Locations	AQI
1)	April	L1	71.3
2)	May	L2	33.66
3)	July	L3	81.28
4)	August	L4	99
5)	September	L5	114.88
6)	October	L6	100.36
7)	November	L7	143.53
8)	December	L8	109
9)	January	L9	87
10)	February	L10	92.57
11)	March	L11	95.33



III) WEATHER & CLIMATE AUDIT

Weather is the mix of events that happen each day in our atmosphere. Even though there's only one atmosphere on Earth, the weather isn't the same all around the world. Weather is different in different parts of the world and changes over minutes, hours, days, and weeks. Most weather happens in the part of Earth's atmosphere that is closest to the ground—called the troposphere. Whereas weather refers to short-term changes in the atmosphere, climate describes what the weather is like over a long period of time in a specific area. Different regions can have different climates.

Weather is made up of multiple parameters, including air temperature, atmospheric (barometric) pressure, humidity, precipitation, solar radiation and wind. Each of these factors can be measured to define typical weather patterns and to determine the quality of local atmospheric conditions. The environmental conditions produced by different weather parameters have an impact on the quality of the surrounding ecosystem. Weather elements form a chain reaction, as the impacts do not remain solely in the atmosphere. Temperature, pressure and humidity (moisture) can interact to form clouds. These clouds, in turn can reduce solar radiation for plants, or increase precipitation, which can runoff into a body of water. Consistently high temperatures can increase the heat transfer to local bodies of water in addition to heating the air. Likewise, a lack of precipitation affects not only weather conditions, but soil moisture and water levels due to evaporation. Wind speed and direction can be indicative of a front moving into the area, or it can create waves and encourage a stratified water column to mix.

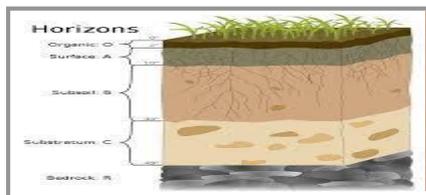
Weather monitoring can establish a database of typical conditions. When one or more weather elements deviate from this standard, the information can be used to explain or predict weather events. Monitoring weather conditions is important not only as an environmental baseline, but to maintain quality working conditions, marine studies and recreational safety.



Satellite Imagery No. 4: Sampling Locations of Weather & Climate Component

Table No. 20: Qualitative and Quantitative Characteristics of Weather and Climate at YCCE

Sr. No.	Location	Air Temp (°C) Min.-Max.	Relative Humidity (%)	UV Index	Pressure KPa	Wind Speed Km/hr	Wind Chill (%)	Dew Point (°C)	Cloud Cover (%)
1)	L1	22-28	70	4	1018	1.11	25	13	28
2)	L2	24-29	72	6.5	1017	0.96	24	15	32
3)	L3	18-26	65	6	1018	0.96	25	14	36
4)	L4	17-22	46	5.8	1019	1.1	25	15	30
5)	L5	21-29	57	5.8	1016	1.11	26	14	29
6)	L6	23-30	45	6.7	1017	0.58	26	12	34
7)	L7	19-27	40	5.7	1019	1.11	27	12	35
8)	L8	28-29	47	7.1	1016	0.76	26	13	36
9)	L9	18-26	39	5.9	1018	0.83	25	15	38
10)	L10	15-24	45	8	1016	0.81	26	14	32
12)	Mean	20.50-28.63	52.60	6.15	75.14	0.93	25.50	13.70	33.00
13)	Std. Dev.	3.87-5.96	12.41	1.05	0.011	0.18	0.85	1.16	3.33



IV) SOIL AUDIT

Soil is important as a medium for plant growth and for the support of much animal and human activity. The Soil acts as the reservoir for the nutrients and water providing the plant's needs for these requirements throughout their growth. Indeed soil (and the soil constituents), together with the plant life it supports, the rock on which it lies, and the climate it experiences, forms a finely balanced system.

The soil performs many functions. These include functions related to natural ecosystems, agricultural productivity, and environmental quality, soil as source of raw materials and as base for buildings. Of these the agricultural productivity function is probably the most widely recognized and understood. This function of soil is to support plant and animal productivity whilst maintaining or enhancing water and air quality and also supporting human health and habitation. To perform this production function, the soil must be able to provide the following: a physical, chemical and biological context suitable for the survival and development of living organisms; the conditions for the regulation and partitioning of water flow, storage and recycling of nutrients and other elements; conditions to support biological activity and diversity for plant growth and animal productivity; an environment to filter, buffer, degrade, immobilize, and detoxify organic and inorganic substances; and provide mechanical support for living organisms and their structures.

The soil samples were collected from different locations within the YCCE campus by random sampling method and then further these samples were equilibrated by quartering and coning method. Further the big stones and mudballs were removed and the soil was sieved through the fine sieve and then was subjected for further qualitative and quantitative physico-chemical analysis.



Satellite Imagery No. 5: Sampling Locations of Soil Component

Table No. 21: Standard Soil Classification

Sr. No.	Soil Tests	Range	Classification
1)	pH	<4.5	Extremely acidic
		4.51-5.50	Very strongly acidic
		5.51-6.00	Moderately acidic
		6.01-6.50	Slightly acidic
		6.51-7.30	Neutral
		7.31-7.80	Slightly alkaline
		7.81-8.50	Moderately alkaline
		8.51-9.00	Strongly alkaline
		9.01	Very strongly alkaline
2)	Salinity (mmhos/cm), (1ppm=640 mmhos/cm)	Upto 1.00	Average
		1.01-2.00	Harmful to germination
		2.01-3.00	Harmful to crops
3)	Organic carbon (%)	Upto 0.2	Very Less (for crops)
		0.21-0.4	Less
		0.41-0.6	Medium
		0.61-0.8	On an average sufficient
		0.81-1.0	Sufficient
		>1.0	More than sufficient

4)	Nitrogen (Kg/ha)	Upto 50	Very Less (for crops)
		51-100	Less
		101-105	Good
		151-300	Better
		>300	Sufficient
5)	Phosphorus (Kg/ha)	Upto 15	Very Less (for crops)
		16-30	Less
		31-50	Medium
		51-65	On an average sufficient
		66-85	Sufficient
		>80	More than sufficient
6)	Potash (Kg/ha)	0-120	Very Less (for crops)
		121-180	Less
		181-240	Medium
		241-300	Average
		301-360	Better
		>360	More than sufficient

Source: Hand Book of Agriculture, ICAR, New Delhi

Table No. 22: Qualitative and Quantitative Characteristics of Soil at YCCE

Sr. No.	Parameters	Units	Results	Method Reference
1)	pH		8.60	Manual of Soil Testing, Department of Agriculture & Co- operation, Ministry of Agriculture, Govt. India, Sec.4-17, Page No 89.
2)	Electrical Conductivity	mS/cm	0.16	
3)	Organic Carbon	(%)	1.08	
4)	Nitrogen	Kg/ha	213.25	
5)	Phosphorus	Kg/ha (P)	34.87	FAO Sec. III, 12-1; Page No. 157
6)	Potassium	Kg/ha (K)	716.08	
7)	Calcium Carbonate	(%)	4.12	Manual of Soil Testing, Department of Agriculture & Co- operation, Ministry of Agriculture, Govt. India, Sec.4-17, Page No 89.
8)	Calcium	(meq %)	33.12	
9)	Magnesium	(meq %)	19.27	
10)	Sodium	(meq %)	24.16	
11)	Coarse Sand	(%)	30.75	
12)	Clay	(%)	43.40	
13)	Silt	(%)	25.85	
14)	Fine sand	(%)	69.25	
15)	Moisture	(%)	5.36	

Sr. No.	Parameters	Units	Results	Method Reference
16)	Water holding Capacity	(%)	38.32	
17)	Apparent Density	(gm/cc)	1.56	
18)	Specific Density	(gm/cc)	2.67	FAO Sec. III, 1; Page No. 33
19)	Pore Space	(%)	59.11	Manual of Soil Testing, Department of Agriculture & Co-operation, Ministry of Agriculture, Govt. India, Sec.4-17, Page No 89.
20)	Volume Expansion Percent	(%)	27.50	
21)	Texture		1.00	



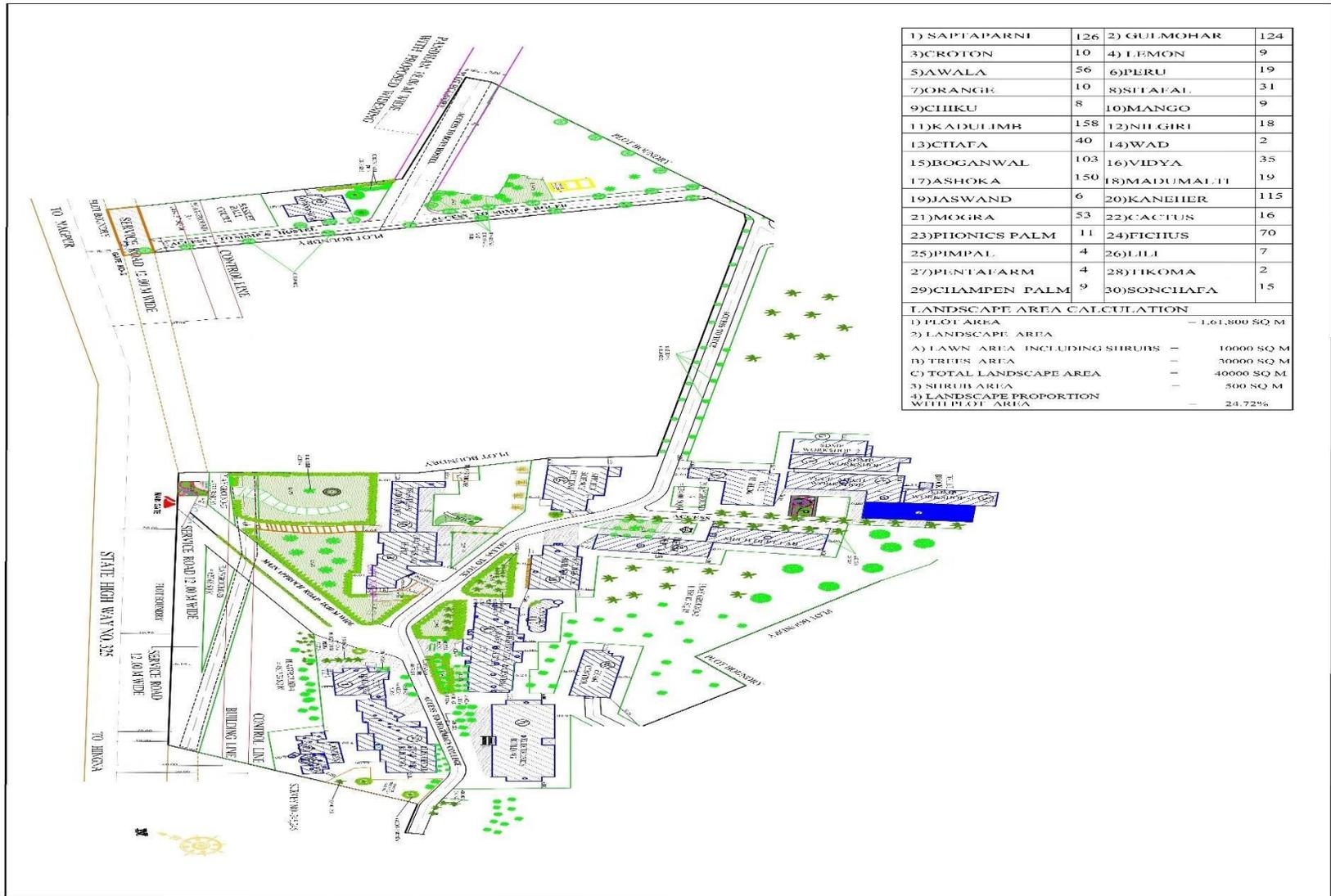
V) VEGETATION AUDIT: Flora Diversity

Trees play a critical role for people and the planet. Numerous studies have demonstrated that the presence of trees and urban nature can improve people's mental and physical health, children's attention and test scores, the property values in a neighborhood, and beyond. Trees cool our urban centers. Trees are essential for healthy communities and people. The benefits that trees provide can help cities and countries meet 15 of the 17 internationally supported United Nations Sustainable Development Goals.

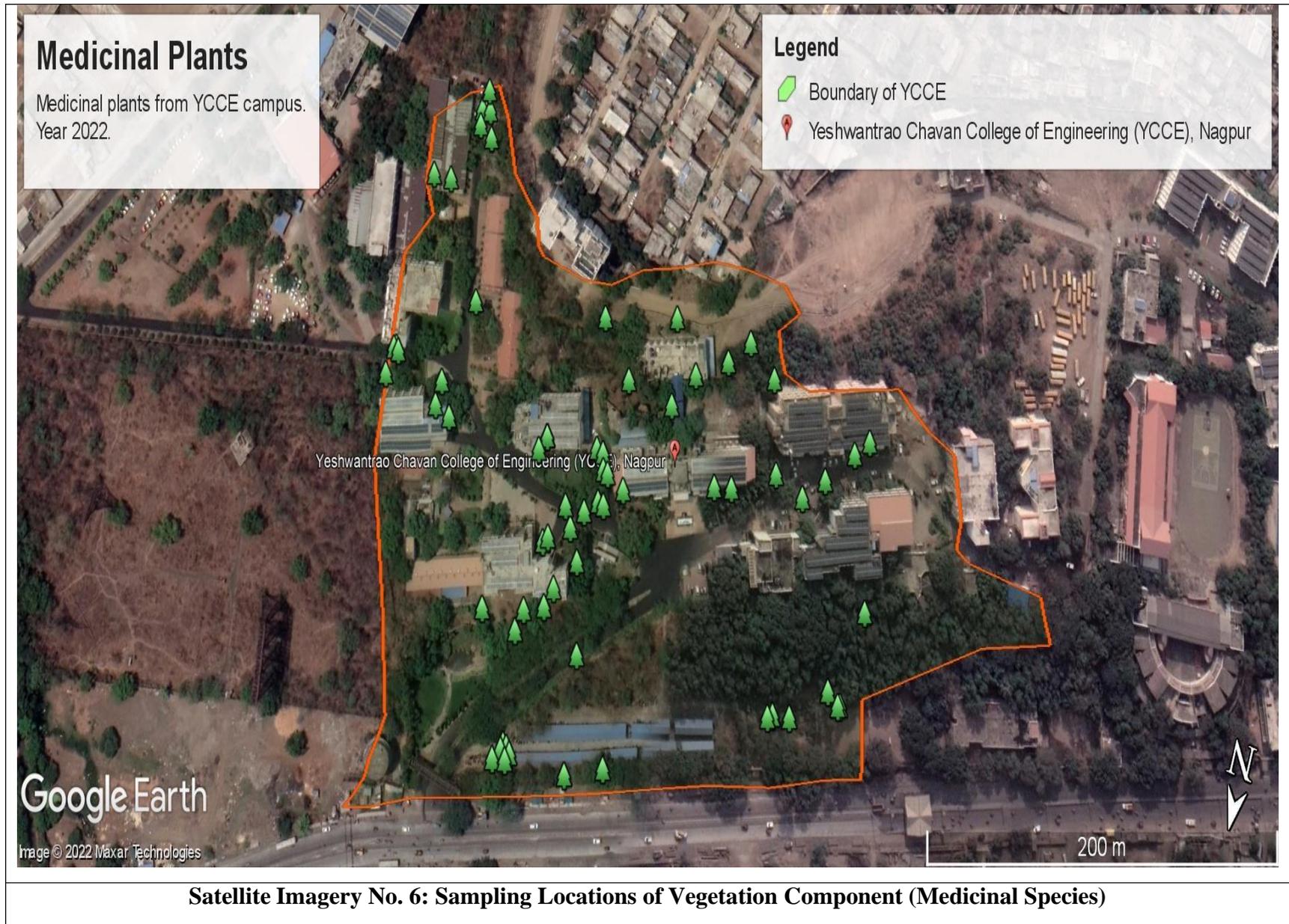
Trees provide many ecosystem services that can benefit a city environment, ranging from reducing energy use and removing pollution (Nowak & Greenfield, 2018) to increasing property values, developing the local economy, and supporting tourism (Nesbitt, Hotte, Barron, Cowan, & Sheppard, 2017).

One of the most important benefits for human health that urban forests can provide is the interception and reduction of air pollution. Tree cover is strongly linked to student academic performance (Kuo, Browning, Sachdeva, et al., 2018; Kweon, Ellis, Lee, & Jacobs, 2017; Matsuoka, 2010). In a study, views of trees and shrubs at schools, as opposed to grass, were strongly related to future education plans and graduation rates (Matsuoka, 2010). Li and Sullivan (2016) found that students who had views of trees and green environment from their classrooms, as compared to being in a room without windows or a room with a view of a brick wall, scored substantially higher on tests measuring attention, and they had a faster recovery from a stressful event. Students who learn in the presence of trees and nature have improved classroom engagement (Kuo, Browning, & Penner, 2018). Trees can promote a quality education, which has innumerable advantages for society.

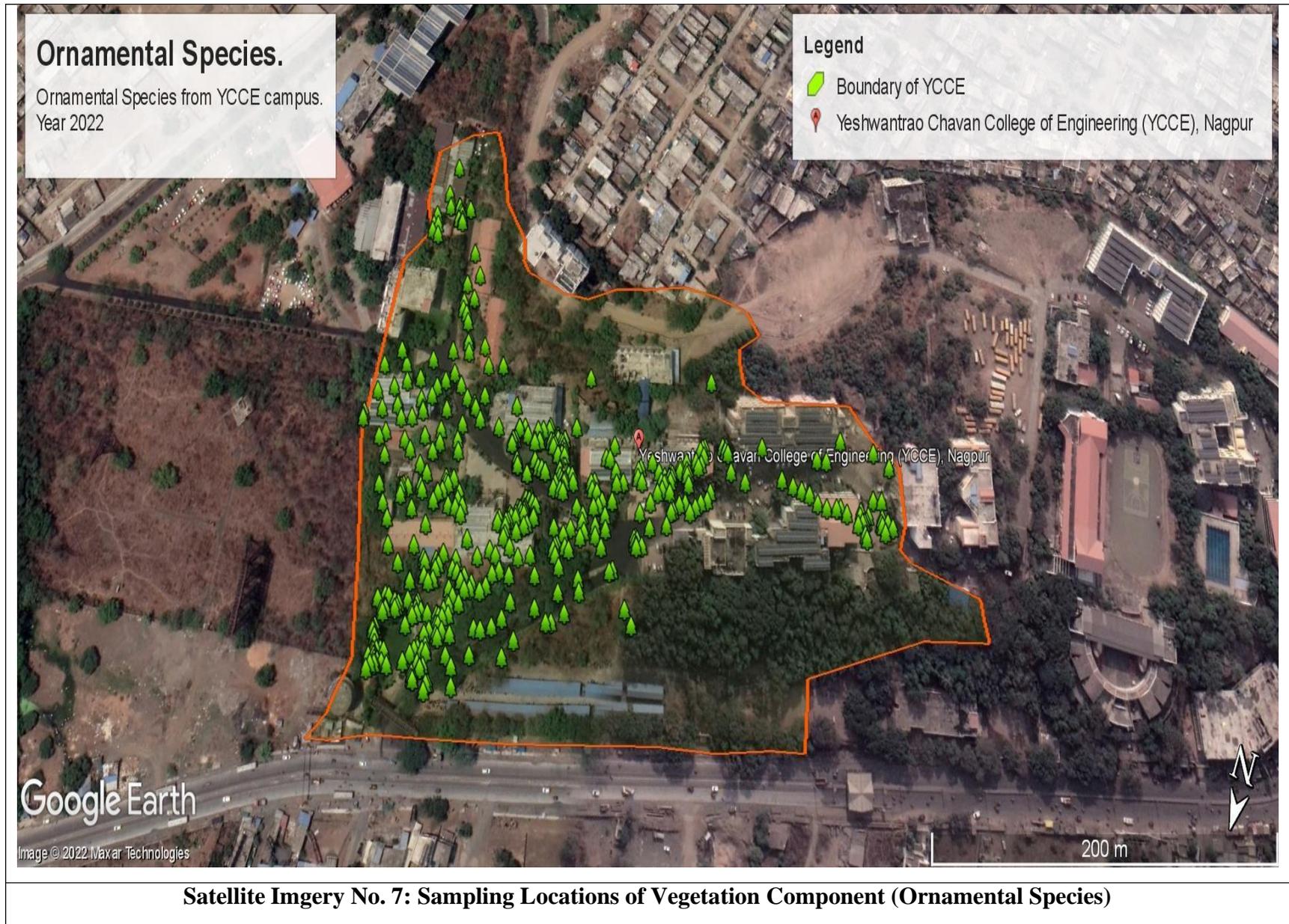
The Flora component was studied by observation and identification method. The vegetation was further categorized as: Shrubs, Ornamental Species, Medicinal Species and Tree Species. The tree species are marked with their geospatial data in map to generate the no. of individual per species present in the YCCE campus. This shall help to generate the highly dominant species.



Map No. 2: Vegetation Map of YCCE Campus

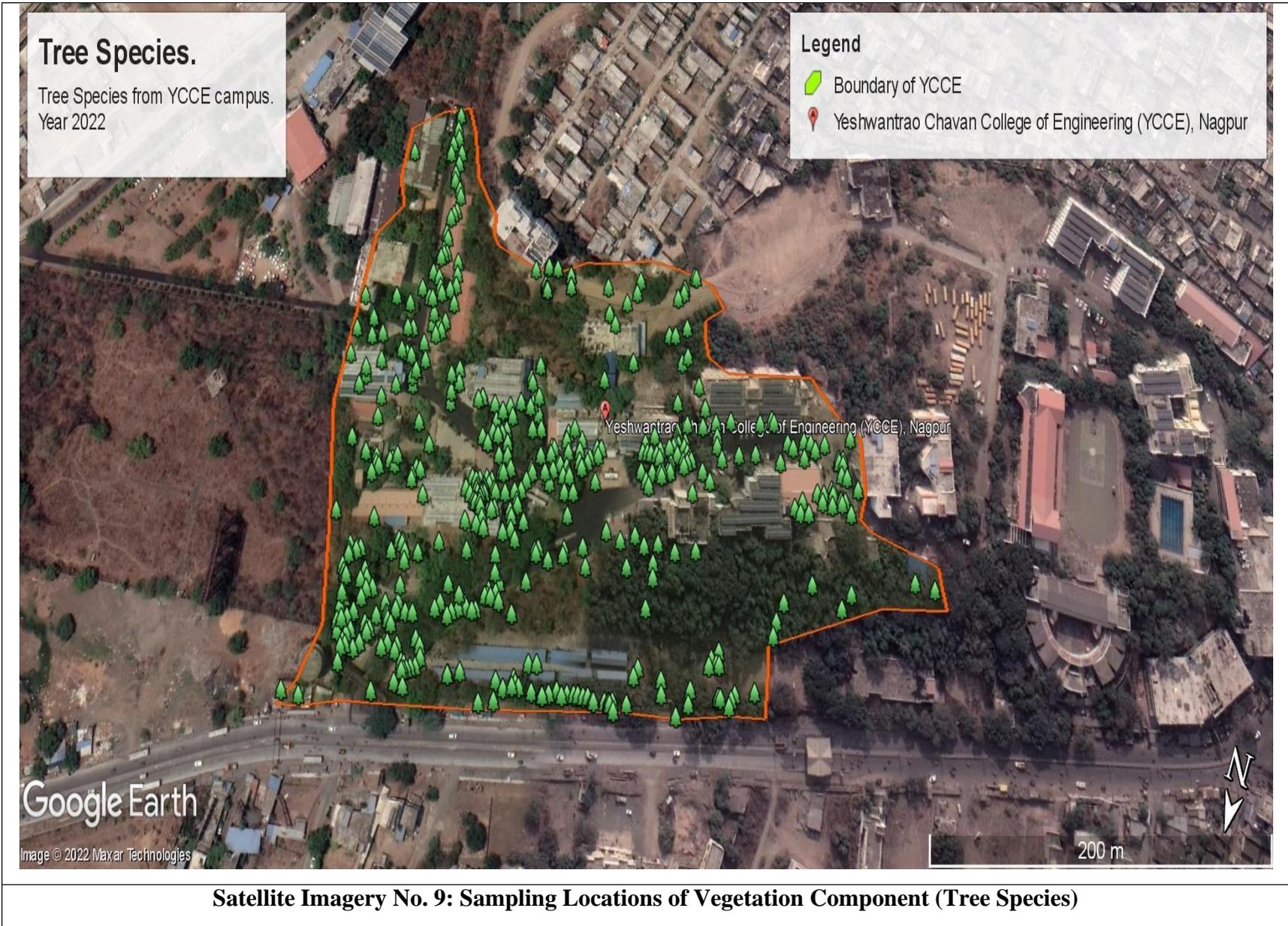


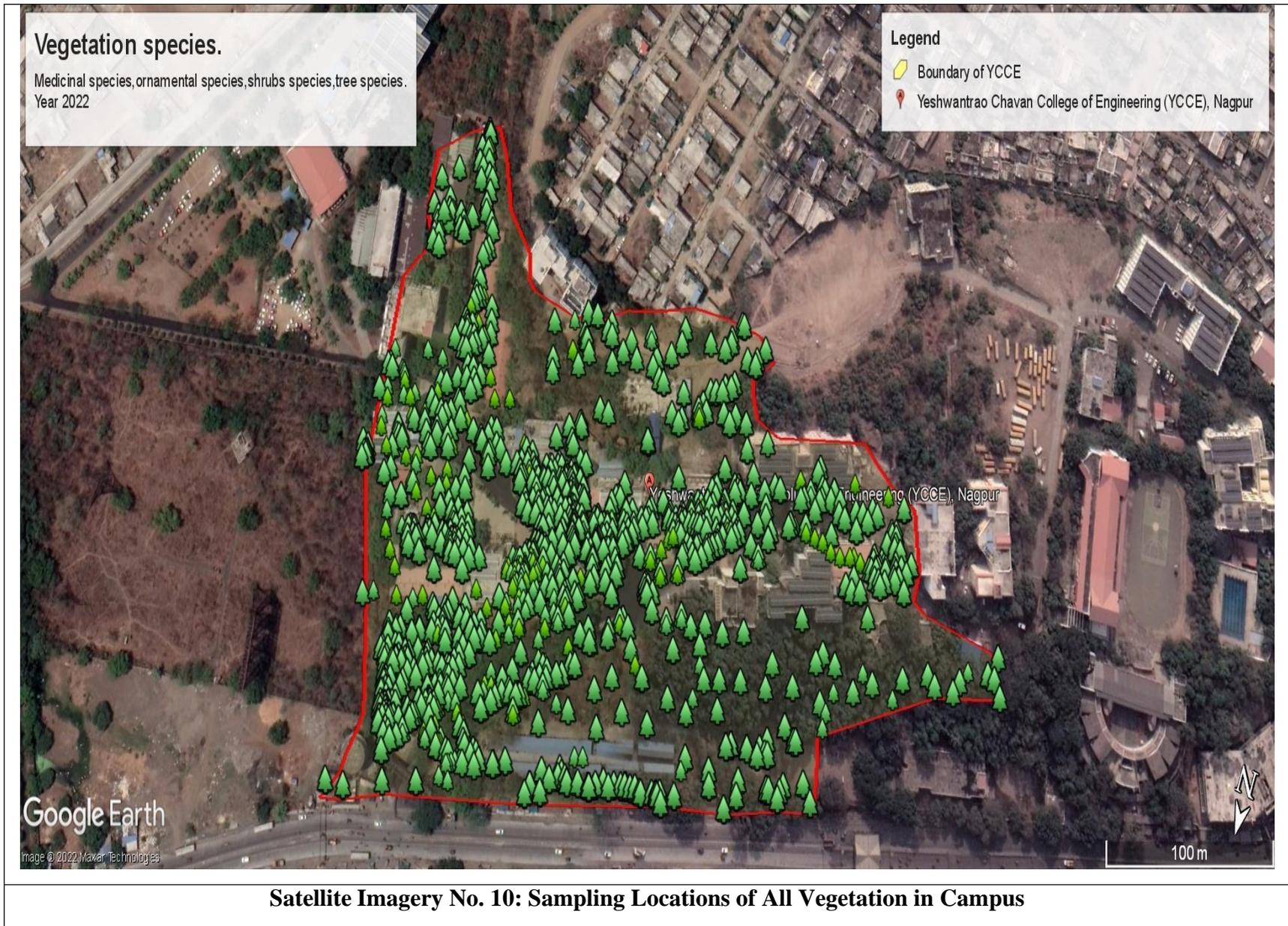
Satellite Imagery No. 6: Sampling Locations of Vegetation Component (Medicinal Species)





Satellite Imagery No. 8: Sampling Locations of Vegetation Component (Shrub Species)







At Entrance



Within Campus

Table No. 23: Vegetation at YCCE: I] Medicinal Species

Sr. No.	Scientific Name	Common Name	Total Species
1)	<i>Celastrus orbiculatus Thunb</i>	Oriental bittersweet	7
2)	<i>Azadirachta indica</i>	Neem	58
3)	<i>Phyllanthus amarus</i>	Carry me seed	1
4)	Total		66

Table No. 24: Relative Density of Medicinal Species

Sr. No.	Scientific Name	Common Name	No. of Individual	Relative Density
1)	<i>Celastrus orbiculatus Thunb</i>	Oriental bittersweet	7	10.60
2)	<i>Azadirachta indica</i>	Neem	58	87.87
3)	<i>Phyllanthus amarus</i>	Carry me seed	1	1.51

Scientific Classification:**[1] Name of Species: Celastrus orbiculatus Thunb**

Kingdom	Plantae
<i>Clade</i>	Tracheophytes
<i>Clade</i>	Angiosperms
<i>Clade</i>	Rosids
Order	Celastrales
Family	Celastraceae
Genus	<i>Celastrus</i>
Species	<i>C. orbiculatus</i>

[2] Name of Species: Azadirachta indica

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Rosids
Order	Sapindales
Family	Meliaceae
Genus	<i>Azadirachta</i>
Species	<i>A. indica</i>

[3] Name of Species: Phyllanthus amarus

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Rosids
Order	Malpighiales
Family	Phyllanthaceae
Genus	<i>Phyllanthus</i>
Species	<i>P. amarus</i>

Table No. 25: Vegetation at YCCE: II] Ornamental Species

Sr. No.	Scientific Name	Common Name	Total Species
1)	<i>Amelanchier laevis</i>	Juneberry	20
2)	<i>Bougainvillea spectabilis</i>	Great bougainvillea	11
3)	<i>Thevetia neriifolia</i>	Yellow oleander	5
4)	<i>Bougainvillea spectabilis</i>	Great Bougainvillea	1
5)	<i>Duranta erecta</i>	Golden dewdrop	12
6)	<i>Ixora coccinea</i>	Ixora	2
7)	<i>Murraya paniculata</i>	Orange jasmin	1
8)	<i>Agave desmettiana Jacobi</i>	Dwarf century plant	11
9)	<i>Agave sisalana Perrine</i>	Mescal	3
10)	<i>Bougainvillea spectabilis Wild</i>	Great bougainvillea	32
11)	<i>Duranta erecta L.</i>	Golden dewdrops	25
12)	<i>Euphorbia characias L.</i>	Mediterranean spurge	13
13)	<i>Hibiscus rosa-sinensis L.</i>	Hawaiian hibiscus	5
14)	<i>Phymosia umbellata</i>	Mexican Bush Mallow	3
15)	<i>Tecoma stans (L.) juss. Ex Kunth</i>	Yellow-bells	2
16)	<i>Acalypha wilkesiana</i>	Copperleaf	11
17)	<i>Agave sisalana perrine</i>	Mescal	5
18)	<i>Agave vivipara</i>	Garden sisal	6
19)	<i>Alternanthera brasiliana</i>	Ruby leaf	2
20)	<i>Bougainvillea glabra</i>	Bougainvillea	11
21)	<i>Bougainvillea spectabilis</i>	Great baugainvillea	26
22)	<i>Breniya disticha</i>	Foliage flower	1
23)	<i>Callistemon citrinus</i>	Crimson bottlebrush	3
24)	<i>Canna indica</i>	Canna lily	5
25)	<i>Carex morrowii Booty</i>	Japanese sedge	1
26)	<i>Cascabela thevetia</i>	Yellow oleander	25
27)	<i>Catharanthus roseus</i>	Periwinkle	16

28)	<u>Cestrum nocturnum</u>	Night jasmine	1
29)	<u>Chlorophytum comosum</u>	Spider plant	3
30)	<u>Codiaeum variegatum</u>	Croton	4
31)	<u>Cordyline fruticosa</u>	Broadleaf palm lily	1
32)	<u>Cycas revoluta</u>	Sago palm	2
33)	<u>Duranta erecta</u>	Golden dewdrop	147
34)	<u>Furcraea foetida</u>	Mauritius hemp	17
35)	<u>Heliconia rostrata</u>	Lobster claw	3
36)	<u>Hibiscus rosa sinensis</u>	Hawaiian hibiscus	19
37)	<u>Ixora coccinea</u>	Ixora	14
38)	<u>Jacaranda mimosifolia</u>	Blue jacaranda	1
39)	<u>Lagerstroemia indica</u>	Crapemyrtle	1
40)	<u>Lantana .montevidensis</u>	Purple lantana	2
41)	<u>Lantana camara</u>	Lantana	2
42)	<u>Murraya paniculata</u>	Orange jasmine	9
43)	<u>Neomarica gracilis</u>	Brazilian walking iris	9
44)	<u>Peltophorum pterocarpum</u>	Copper Rod	1
45)	<u>Pereskia grandifolia</u>	Rose Cactus	2
46)	<u>Rosa chinensis</u>	Bengal rose	2
47)	<u>Rosa gallica</u>	Hungarian rose	3
48)	<u>Rosmarinus officinalis</u>	Rosemary	1
49)	<u>Sphagneticola trilobata</u>	Wedelia	6
50)	<u>Tecoma stans</u>	Yellow bells	18
51)	<u>Thunbergia grandiflora</u>	Blue skyflower	1
52)	<u>Yucca filamentosa</u>	Adams needle	1
53)	<u>Yucca gloriosa</u>	Spanish dagger	1
54)	Total		617

Table No. 26: Relative Density of Ornamental Species

Sr. No.	Scientific Name	Common Name	No. of Individual	Relative Density
1)	<u><i>Amelanchier laevis</i></u>	Juneberry	20	3.241
2)	<u><i>Bougainvillea spectabilis</i></u>	Great bougainvillea	11	1.783
3)	<u><i>Thevetia neriifolia</i></u>	Yellow oleander	5	0.810
4)	<u><i>Bougainvillea spectabilis</i></u>	Great Bougainvillea	1	0.162
5)	<u><i>Duranta erecta</i></u>	Golden dewdrop	12	1.945
6)	<u><i>Ixora coccinea</i></u>	Ixora	2	0.324
7)	<u><i>Murrava paniculata</i></u>	Orange jasmin	1	0.162
8)	<u><i>Agave desmettiana Jacobi</i></u>	Dwarf century plant	11	1.783
9)	<u><i>Agave sisalana Perrine</i></u>	Mescal	3	0.486
10)	<u><i>Bougainvillea spectabilis Wild</i></u>	Great bougainvillea	32	5.186
11)	<u><i>Duranta erecta L.</i></u>	Golden dewdrops	25	4.052
12)	<u><i>Euphorbia characias L.</i></u>	Mediterranean spurge	13	2.107
13)	<u><i>Hibiscus rosa-sinensis L.</i></u>	Hawaiian hibiscus	5	0.810
14)	<u><i>Phymosia umbellata</i></u>	Mexican Bush Mallow	3	0.486
15)	<u><i>Tecoma stans (L.) juss. Ex Kunth</i></u>	Yellow-bells	2	0.324
16)	<u><i>Acalypha wilkesiana</i></u>	Copperleaf	11	1.783
17)	<u><i>Agave sisalana perrine</i></u>	Mescal	5	0.810
18)	<u><i>Agave vivipara</i></u>	Garden sisal	6	0.972
19)	<u><i>Alternanthera brasiliana</i></u>	Ruby leaf	2	0.324
20)	<u><i>Bougainvillea glabra</i></u>	Bougainvillea	11	1.783
21)	<u><i>Bougainvillea spectabilis</i></u>	Great baugainvillea	26	4.214
22)	<u><i>Breniya disticha</i></u>	Foliage flower	1	0.162
23)	<u><i>Callistemon citrinus</i></u>	Crimson bottlebrush	3	0.486

24)	<u><i>Canna indica</i></u>	Canna lily	5	0.810
25)	<u><i>Carex morrowii</i></u> <i>Booty</i>	Japanese sedge	1	0.162
26)	<u><i>Cascabela thevetia</i></u>	Yellow oleander	25	4.052
27)	<u><i>Catharanthus roseus</i></u>	Periwinkle	16	2.593
28)	<u><i>Cestrum nocturnum</i></u>	Night jasmine	1	0.162
29)	<u><i>Chlorophytum comosum</i></u>	Spider plant	3	0.486
30)	<u><i>Codiaeum variegatum</i></u>	Croton	4	0.648
31)	<u><i>Cordyline fruticosa</i></u>	Broadleaf palm lily	1	0.162
32)	<u><i>Cycas revoluta</i></u>	Sago palm	2	0.324
33)	<u><i>Duranta erecta</i></u>	Golden dewdrop	147	23.825
34)	<u><i>Furcraea foetida</i></u>	Mauritius hemp	17	2.755
35)	<u><i>Heliconia rostrata</i></u>	Lobster claw	3	0.486
36)	<u><i>Hibiscus rosa sinensis</i></u>	Hawaiian hibiscus	19	3.079
37)	<u><i>Ixora coccinea</i></u>	Ixora	14	2.269
38)	<u><i>Jacaranda mimosifolia</i></u>	Blue jacaranda	1	0.162
39)	<u><i>Lagerstroemia indica</i></u>	Crapemyrtle	1	0.162
40)	<u><i>Lantana .montevidensis</i></u>	Purple lantana	2	0.324
41)	<u><i>Lantana camara</i></u>	Lantana	2	0.324
42)	<u><i>Murraya paniculata</i></u>	Orange jasmine	9	1.459
43)	<u><i>Neomarica gracilis</i></u>	Brazilian walking iris	9	1.459
44)	<u><i>Peltophorum pterocarpum</i></u>	Copper Rod	1	0.162
45)	<u><i>Pereskia grandifolia</i></u>	Rose Cactus	2	0.324
46)	<u><i>Rosa chinensis</i></u>	Bengal rose	2	0.324
47)	<u><i>Rosa gallica</i></u>	Hungarian rose	3	0.486
48)	<u><i>Rosmarinus officinalis</i></u>	Rosemary	1	0.162
49)	<u><i>Sphagneticola trilobata</i></u>	Wedelia	6	0.972
50)	<u><i>Tecoma stans</i></u>	Yellow bells	18	2.917
51)	<u><i>Thunbergia grandiflora</i></u>	Blue skyflower	1	0.162
52)	<u><i>Yucca filamentosa</i></u>	Adams needle	1	0.162
53)	<u><i>Yucca gloriosa</i></u>	Spanish dagger	1	0.162

Scientific Classification:**[1] Name of Species: Amelanchier laevis**

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Rosids
Order	Rosales
Family	Rosaceae
Genus	<i>Amelanchier</i>
Species	<i>A. laevis</i>

[2] Name of Species: Bougainvillea spectabilis

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Nyctaginaceae
Genus	<i>Bougainvillea</i>
Species	<i>B. spectabilis</i>

[3] Name of Species: Thevetia neriifolia

Kingdom	Plantae
(unranked)	Angiosperms
(unranked)	Eudicots
(unranked)	Asterids
Order	Gentianales
Family	Apocynaceae
Genus	<i>Cascabela</i>
Species	<i>C. thevetia</i>

[4] Name of Species: Duranta erecta

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Verbenaceae
Genus	<i>Duranta</i>
Species	<i>D. erecta</i>

[5] Name of Species: Ixora coccinea

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Gentianales
Family	Rubiaceae
Genus	<i>Ixora</i>
Species	<i>I. coccinea</i>

[6] Name of Species: Murraya paniculata

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Rosids
Order	Sapindales
Family	Rutaceae
Genus	Murraya
Species	<i>M. paniculata</i>

[7] Name of Species: Agave desmettiana Jacobi

Kingdom	Plantae
Division	Magnoliophyta - Flowering plants
Class	Liliopsida - Monocotyledons
Subclass	Liliidae
Order	Liliales
Family	Agavaceae Dumort. - Century-plant
Genus	Agave L. - agave
Species	<i>Agave desmettiana Jacobi dwarf</i>

[8] Name of Species: Agave sisalana Perrine

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Monocots
Order	Asparagales
Family	Asparagaceae
Genus	<i>Agave</i>
Species	A. sisalana

[9] Name of Species: Bougainvillea spectabilis Wild

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Nyctaginaceae
Genus	<i>Bougainvillea</i>
Species	<i>B. spectabilis</i>

[10] Name of Species: *Duranta erecta L.*

Kingdom	Plantae
<i>Clade</i>	Tracheophytes
<i>Clade</i>	Angiosperms
<i>Clade</i>	Asterids
Order	Lamiales
Family	Verbenaceae
Genus	<i>Duranta</i>
Species	<i>D. erecta</i>

[11] Name of Species: *Euphorbia characias L.*

Kingdom	Plantae
<i>Clade</i>	Tracheophytes
<i>Clade</i>	Angiosperms
<i>Clade</i>	Rosids
Order	Malpighiales
Family	Euphorbiaceae
Genus	<i>Euphorbia</i>
Species	<i>E. characias</i>

[12] Name of Species: *Hibiscus rosa-sinensis L.*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Malvales
Family	Malvaceae
Subfamily	Malvoideae
Genus	<i>Hibiscus</i>
Species	<i>H. rosa-sinensis</i>

[13] Name of Species: *Phymosia umbellata*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Malvales
Family	Malvaceae
Genus	<i>Phymosia</i>
Species	<i>P. umbellata</i>

[14] Name of Species: *Tecoma stans (L.) juss. Ex*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Lamiales
Family	Bignoniaceae
Genus	<i>Tecoma</i>
Species	<i>T. stans</i>

[15] Name of Species: *Acalypha wilkesiana*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Rosids
Order	Malpighiales
Family	Euphorbiaceae
Genus	<i>Acalypha</i>
Species	<i>A. wilkesiana</i>

[16] Name of Species: **Agave sisalana perrine**

Kingdom	Plantae
Phylum	Tracheophyta
Class	Liliopsida
Order	Asparagales
Family	Asparagaceae
Genus	<i>Agave</i>
Species	<i>Agave sisalana Perrine</i>

20) Name of Species: **Agave vivipara**

Kingdom	Plantae
Phylum	Spermatophyta
Subphylum	Angiospermae
Class	Monocotyledonae
Order	Liliales
Family	Agavaceae
Genus	<i>Agave</i>
Species	<i>Agave vivipara</i>

[17] Name of Species: **Alternanthera brasiliana**

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Amaranthaceae
Genus	<i>Alternanthera</i>
Species	<i>A. brasiliana</i>

[18] Name of Species: *Bougainvillea glabra*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Nyctaginaceae
Genus	<i>Bougainvillea</i>
Species	<i>B. glabra</i>

[19] Name of Species: *Bougainvillea spectabilis*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Nyctaginaceae
Genus	<i>Bougainvillea</i>
Species	<i>B. spectabilis</i>

[20] Name of Species: *Breniya disticha*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Rosids
Order	Malpighiales
Family	Phyllanthaceae
Genus	<i>Breniya</i>
Species	<i>B. disticha</i>

[21] Name of Species: *Callistemon citrinus*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Myrtales
Family	Myrtaceae
Subfamily	Myrtoideae
Genus	<i>Melaleuca</i>
Species	M. citrina

[22] Name of Species: *Canna indica*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Monocots
Clade	Commelinids
Order	Zingiberales
Family	Cannaceae
Genus	<i>Canna</i>
Species	C. indica

[23] Name of Species: *Cascabela thevetia*

Kingdom	Plantae
(unranked)	Angiosperms
(unranked)	Eudicots
(unranked)	Asterids
Order	Gentianales
Family	Apocynaceae
Genus	<i>Cascabela</i>
Species	C. thevetia

[24] Name of Species: *Catharanthus roseus*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Gentianales
Family	Apocynaceae
Genus	<i>Catharanthus</i>
Species	<i>C. roseus</i>

[25] Name of Species: *Cestrum nocturnum*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Solanales
Family	Solanaceae
Genus	<i>Cestrum</i>
Species	<i>C. nocturnum</i>

[26] Name of Species: *Chlorophytum comosum*

Kingdom	Plantae
Clade	Angiosperms
Clade	Monocots
Order	Asparagales
Family	Asparagaceae
Subfamily	Agavoideae
Genus	<i>Chlorophytum</i>
Species	<i>C. comosum</i>

[27] Name of Species: *Codiaeum variegatum*

Kingdom	Plantae
Clade	Angiosperms
Clade	Eudicots
Clade	Rosids
Order	Malpighiales
Family	Euphorbiaceae
Genus	<i>Codiaeum</i>
Species	<i>C. variegatum</i>

[28] Name of Species: *Cordyline fruticosa*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Monocots
Order	Asparagales
Family	Asparagaceae
Subfamily	Lomandroideae
Genus	<i>Cordyline</i>
Species	<i>C. fruticosa</i>

[29] Name of Species: *Cycas revoluta*

Kingdom	Plantae
Clade	Gymnosperms
Division	Cycadophyta
Class	Cycadopsida
Order	Cycadales
Family	Cycadaceae
Genus	<u><i>Cycas</i></u>
Species	<u><i>C. revoluta</i></u>

[30] Name of Species: *Duranta erecta*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Lamiales
Family	<i>Verbenaceae</i>
Genus	<i>Duranta</i>

[31] Name of Species: *Heliconia rostrata*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Monocots
Order	Zingiberales
Family	<i>Heliconiaceae</i>
Genus	<i>Heliconia</i>

[32] Name of Species: *Hibiscus rosa sinensis*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Malvales
Family	<i>Malvaceae</i>
Subfamily	<i>Malvoideae</i>

[33] Name of Species: *Jacaranda mimosifolia*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Lamiales
Family	<i>Bignoniaceae</i>
Genus	<i>Jacaranda</i>

[34] Name of Species: *Lagerstroemia indica*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Myrtales
Family	<i>Lythraceae</i>
Genus	<i>Lagerstroemia</i>

[35] Name of Species: *Lantana .montevidensis*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	<i>Lamiales</i>
Family	<i>Verbenaceae</i>
Genus	<i>Lantana</i>

[36] Name of Species: *Lantana camara*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Lamiales
Family	<i>Verbenaceae</i>
Genus	<i>Lantana</i>

[37] Name of Species: *Murraya paniculata*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Sapindales
Family	<i>Rutaceae</i>
Genus	<i>Murraya</i>

[38] Name of Species: *Peltophorum pterocarpum*

Kingdom	Plantae
(unranked)	Angiosperms
(unranked)	Eudicots
(unranked)	Rosids
Order	Fabales
Family	Fabaceae
Genus	<i>Peltophorum</i>
Species	<i>P. pterocarpum</i>

[39] Name of Species: *Pereskia grandifolia*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Cactaceae
Genus	<i>Rhodocactus</i>
Species	<i>R. grandifolius</i>

[40] Name of Species: *Rosa chinensis*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Rosales
Family	<i>Rosaceae</i>
Genus	<i>Rosa</i>

[41] Name of Species: *Rosa gallica*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Rosales
Family	<i>Rosaceae</i>
Genus	<i>Rosa</i>

[42] Name of Species: *Rosmarinus officinalis*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Lamiales
Family	<i>Lamiaceae</i>
Genus	<i>Salvia</i>

[43] Name of Species: *Sphagneticola trilobata*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Asterales
Family	<i>Asteraceae</i>
Genus	<i>Sphagneticola</i>

[44] Name of Species: *Tecoma stans*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Lamiales
Family	<i>Bignoniaceae</i>
Genus	<i>Tecoma</i>

[45] Name of Species: *Thunbergia grandiflora*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Lamiales
Family	<i>Acanthaceae</i>
Genus	<i>Thunbergia</i>

[46] Name of Species: *Yucca filamentosa*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Asparagales
Family	Asparagaceae
Subfamily	<i>Agavoideae</i>
Genus	<i>Yucca</i>

[47] Name of Species: *Yucca gloriosa*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Asparagales
Family	Asparagaceae
Subfamily	<i>Agavoideae</i>
Genus	<i>Yucca</i>

Table No. 27: Vegetation at YCCE: III] Shrubs Species

Sr. No.	Scientific Name	Common Name	Total Species
1)	<u>Coffea arabica L.</u>	Arabian coffee	11
2)	<u>Comoclinium coelestinum</u>	Blue mist flower	29
3)	<u>Jasminium sambac</u>	Arabian jasmin	49
4)	<u>Leucaena leucocephala</u>	Coffeebush	6
5)	<u>Pseuderanthemum carruthersii</u>	Purple false erranthemum	5
6)	<u>Acalypha indica</u>	Indian Copperleaf	6
7)	<u>Buglossoides purpuro caerulea</u>	Purple gromwell	8
8)	<u>Cardiospermum halicacabum</u>	Ballon vine	11
9)	<u>Carissa carandas</u>	Karandang	4
10)	<u>Cordia myxa</u>	Sebesten plum	2
11)	<u>Cyanthillium cinereum</u>	Little ironweed	5
12)	<u>Desmodium paniculatum</u>	Panicked tick clover	9
13)	<u>Galphimia glauca</u>	Gold shower	13
14)	<u>Hamelia patens</u>	Redhead	8
15)	<u>Iris foetidissima</u>	Stinking Iris	5
16)	<u>Lactuca virosa</u>	Bitter lettuce	6
17)	<u>Leucaena leucocephala</u>	Coffee bush	14
18)	<u>Ligustrum vulgare</u>	Common privet	25
19)	<u>Mirabilis jalapa</u>	Four o' clock flower	2
20)	<u>Myoporum tenuifolium</u>	Manatoka	4
21)	<u>Nerium oleander</u>	Oleander	1
22)	<u>Nerium oleander</u>	Oleander	8
23)	<u>Plumbago auriculata</u>	Plumbago	5
24)	<u>Podranea ricasoliana</u>	Queen of sheba vine	3
25)	<u>Pseuderanthemum carruthersii</u>	Purple False Eranthemum	2
26)	<u>Ruscus aculeatus</u>	Box holly	5
27)	<u>Senna occidentalis</u>	Antbush	3
28)	<u>Syringa vulgaris</u>	Lilac	4

29)	<u>Tabernaemontana 92orficate92</u>	Crape jasmine	9
30)	<u>Tridax procumbens</u>	Coatbuttons	12
31)	Total		274

Table No. 28: Relative Density of Shrub Species

Sr. No.	Scientific Name	Common Name	No. of Individual	Relative Density
1)	<u>Coffea arabica L.</u>	Arabian coffee	11	4.015
2)	<u>Comoclinium coelestinum</u>	Blue mist flower	29	10.584
3)	<u>Jasminium sambac</u>	Arabian jasmin	49	17.883
4)	<u>Leucaena leucocephala</u>	Coffeebush	6	2.190
5)	<u>Pseuderanthemum carruthersii</u>	Purple false erranthemum	5	1.825
6)	<u>Acalypha indica</u>	Indian Copperleaf	6	2.190
7)	<u>Buglossoides purpureo caerulea</u>	Purple gromwell	8	2.920
8)	<u>Cardiospermum halicacabum</u>	Ballon vine	11	4.015
9)	<u>Carissa carandas</u>	Karandang	4	1.460
10)	<u>Cordia myxa</u>	Sebesten plum	2	0.730
11)	<u>Cyanthillium cinereum</u>	Little ironweed	5	1.825
12)	<u>Desmodium paniculatum</u>	Panicled tick clover	9	3.285
13)	<u>Galphimia glauca</u>	Gold shower	13	4.745
14)	<u>Hamelia patens</u>	Redhead	8	2.920
15)	<u>Iris foetidissima</u>	Stinking Iris	5	1.825
16)	<u>Lactuca virosa</u>	Bitter lettuce	6	2.190
17)	<u>Leucaena leucocephala</u>	Coffee bush	14	5.109
18)	<u>Ligustrum vulgare</u>	Common privet	25	9.124
19)	<u>Mirabilis jalapa</u>	Four o' clock flower	2	0.730
20)	<u>Myoporum tenuifolium</u>	Manatoka	4	1.460

21)	<u><i>Nerium oleander</i></u>	Oleander	1	0.365
22)	<u><i>Nerium oleander</i></u>	Oleander	8	2.920
23)	<u><i>Plumbago auriculata</i></u>	Plumbago	5	1.825
24)	<u><i>Podranea ricasoliana</i></u>	Queen of sheba vine	3	1.095
25)	<u><i>Pseuderanthemum carruthersii</i></u>	Purple False Eranthemum	2	0.730
26)	<u><i>Ruscus aculeatus</i></u>	Box holly	5	1.825
27)	<u><i>Senna occidentalis</i></u>	Antbush	3	1.095
28)	<u><i>Syringa vulgaris</i></u>	Lilac	4	1.460
29)	<u><i>Tabernaemontana orficata</i></u>	Crape jasmine	9	3.285
30)	<u><i>Tridax procumbens</i></u>	Coatbuttons	12	4.380

Scientific Classification:**[1] Name of Species: Coffea arabica L.**

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Gentianales
Family	<i>Rubiaceae</i>
Tribe	<i>Coffeae</i>

[2] Name of Species: Comoclinium coelestinum

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Asterales
Family	<i>Asteraceae</i>
Genus	<i>Conoclinium</i>

[3] Name of Species: Jasminium sambac

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Lamiales
Family	Oleaceae
Genus	<i>Jasminum</i>

[4] Name of Species: *Leucaena leucocephala*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Fabales
Family	Fabaceae
Subfamily	Caesalpinioideae

[5] Name of Species: *Pseuderanthemum carruthersii*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Lamiales
Family	Acanthaceae
Genus	<i>Pseuderanthemum</i>

[6] Name of Species: *Acalypha indica*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Malpighiales
Family	Euphorbiaceae
Subtribe	Acalyphinae

[7] Name of Species: *Buglossoides purpuro caerulea*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Boraginales
Family	Boraginaceae
Genus	<i>Lithospermum</i>

[8] Name of Species: *Cardiospermum halicacabum*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Rosids
Order	Sapindales
Family	Sapindaceae
Genus	Cardiospermum

[9] Name of Species: *Carissa carandas*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Gentianales
Family	Apocynaceae
Genus	<i>Carissa</i>

[10] Name of Species: *Cordia myxa*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Asterids
Order	Boraginales
Family	Boraginaceae
Genus	<i>Cordia</i>

[11] Name of Species: *Cyanthillium cinereum*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Asterales
Family	Asteraceae
Genus	<i>Cyanthillium</i>

[12] Name of Species: *Desmodium paniculatum*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Rosids
Order	Fabales
Family	Fabaceae
Subfamily	Faboideae

[13] Name of Species: Galphimia glauca

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Malpighiales
Family	Malpighiaceae
Genus	<i>Galphimia</i>

[14] Name of Species: *Hamelia patens*

Kingdom	Plantae
(unranked)	Angiosperms
(unranked)	Eudicots
(unranked)	Asterids
Order	Gentianales
Family	Rubiaceae
Genus	Hamelia
Species	<i>H. patens</i>

[15] Name of Species: *Iris foetidissima*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Order	Asparagales
Family	Iridaceae
Genus	Iris
Subgenus	<i>Iris subg. Limniris</i>

[16] Name of Species: *Lactuca virosa*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Asterales
Family	Asteraceae
Genus	<i>Lactuca</i>

[17] Name of Species: *Leucaena leucocephala*

Kingdom	Plantae
Clade	Tracheophytes
Order	Fabales
Family	Fabaceae
Subfamily	Caesalpinioideae
Clade	Mimosoid clade
Genus	Leucaena
Species	<i>L. leucocephala</i>

[18] Name of Species: *Ligustrum vulgare*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Oleaceae
Genus	Ligustrum
Species	<i>L. vulgare</i>

[19] Name of Species: *Mirabilis jalapa*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Nyctaginaceae
Genus	Mirabilis
Species	<i>M. jalapa</i>

[20] Name of Species: *Myoporum tenuifolium*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Scrophulariaceae
Genus	Myoporum
Species	<i>M. tenuifolium</i>

[21] Name of Species: *Nerium oleander*

Kingdom	Plantae
Clade	Tracheophytes
Order	Gentianales
Family	Apocynaceae
Subfamily	Apocynoideae
Tribe	Nerieae
Genus	Nerium L.
Species	<i>N. oleander</i>

[22] Name of Species: Plumbago auriculata

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Order	Caryophyllales
Family	Plumbaginaceae
Genus	Plumbago
Species	<i>P. auriculata</i>

[23] Name of Species: Podranea ricasoliana

Kingdom	Plantae
Clade	Tracheophyte
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Bignoniaceae
Genus	Podranea
Species	<i>P. ricasoliana</i>

[24] Name of Species: Pseuderanthemum

Kingdom	Plantae
Clade	Asterids
Order	Lamiales
Family	Acanthaceae
Subfamily	Acanthoideae
Tribe	Justicieae
Genus	<i>Pseuderanthemum</i>

[25] Name of Species: carruthersii

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Acanthaceae
Genus	Pseuderanthemum
Species	<i>P. carruthersii</i>

[26] Name of Species: Ruscus aculeatus

Kingdom	Plantae
Clade	Tracheophytes
Clade	Monocots
Order	Asparagales
Family	Asparagaceae
Subfamily	Nolinoideae
Genus	Ruscus
Species	<i>R. aculeatus</i>

[27] Name of Species: *Senna occidentalis*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Rosids
Order	Fabales
Family	Fabaceae
Subfamily	Caesalpinioideae
Genus	Senna
Species	<i>S. occidentalis</i>

[28] Name of Species: *Syringa vulgaris*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Oleaceae
Genus	<i>Syringa</i>
Species	<i>S. vulgaris</i>

[29] Name of Species: *Tabernaemontana*

Kingdom	Plantae
Clade	Tracheophytes
Order	Gentianales
Family	Apocynaceae
Subfamily	Rauvolfioideae
Tribe	Tabernaemontaneae
Subtribe	Tabernaemontaninae
Genus	<i>Tabernaemontana</i>

[30] Name of Species: *Tridax procumbens*

Kingdom	Plantae
Clade	Tracheophytes
Clade	Eudicots
Clade	Asterids
Order	Asterales
Family	Asteraceae
Genus	<i>Tridax</i>
Species	<i>T. procumbens</i>

Table No. 29: Vegetation at YCCE: IV] Tree Species

Sr. No.	Scientific Name	Common Name	Total Species
1)	<i>Saraca asoca</i>	Ashoka	112
2)	<i>Ficus religiosa</i>	Peepul	1
3)	<i>Roystonea regia</i>	Cuban royal palm	5
4)	<i>Casuarina cunninghamiana</i>	Beefwood	9
5)	<i>Ficus cyanthistipula</i>	African fig tree	2
6)	<i>Syngonium podophyllum</i>	Arrowhead vine	6
7)	<i>Hymenocallis littoralis</i>	Beach spider lily	1
8)	<i>Ligustrum lucidum</i>	Chinese privet	2
9)	<i>Psidium guajava</i>	Common guava	3
10)	<i>Roystonea regia</i>	Cuban royal palm	5
11)	<i>Murraya koenigii</i>	Curry leaf	8
12)	<i>Alstonia scholaris</i>	Dita bark	41
13)	<i>Hyphene coriaceae</i>	Doum palm	4
14)	<i>Plumeria rubra</i>	Frangipani	4
15)	<i>Plumeria pudica</i>	Golden arrow	4
16)	<i>Lonicera japonica</i>	Honeysuckle	4
17)	<i>Washingtonia robusta</i>	Mexican fan palm	4
18)	<i>Bauhinia orficata</i>	Orchid tree	4
19)	<i>Ficus religiosa</i>	Sacred fig	4
20)	<i>Cycus revoluta</i>	Sago palm	4
21)	<i>Phoenix reclinata</i>	Senegal date palm	4
22)	<i>Annona squamosa</i>	Sugar apple	4
23)	<i>Citrus sinensis</i>	Sweet orange	4
24)	<i>Terminalia catappa</i>	Tropical almond	4
25)	<i>Schotia brachypetale</i>	Weeping boer bean	4
26)	<i>Platyclusus orientalis</i>	Chinese arborvitae	4
27)	<i>Juniperus chinensis</i>	Chinese juniper	4
28)	<i>Thuja occidentalis</i>	Northern white cedar	4

29)	<i>Cupressus sempervirens</i>	Mediterranean cypress	4
30)	<i>Carica papaya</i>	Papaya	4
31)	<i>Alstonia scholaris</i>	Ditabark	4
32)	<i>Roystonea regia</i>	Cuban royal palm	4
33)	<i>Senna siamea</i>	Siamese cassia	6
34)	<i>Caesalpinia echinata</i>	Brazil wood	15
35)	<i>Albizia lebbek</i>	Frywood	2
36)	<i>Alstonia scholaris</i>	Devil tree	3
37)	<i>Plumeria obtusa</i>	Singapore graveyard	10
38)	<i>Ficus benjamina</i>	weeping fig	3
39)	<i>Citrus aurantifolia</i>	Sweet orange	4
40)	<i>Campsis radican</i>	Trumpet vine	7
41)	<i>Terminalia catappa</i>	Indian almond	5
42)	<i>Bambusa vulgaris</i>	Common bamboo	59
43)	<i>Alstonia scholaris</i>	Devil tree	6
44)	<i>Caesalpinia pulcherrima</i>	Peacock flower	19
45)	<i>Caryota urens</i>	Jaggery palm	11
46)	<i>Platyclusus orientalis</i>	Chinese arborvitae	9
47)	<i>Platyclusus orientalis</i>	Chinese arborvitae	26
48)	<i>Ficus cyanthistipula</i>	African fig tree	29
49)	<i>Bismarckia nobilis</i>	Silver Bismarck Palm	6
50)	<i>Duranta erecta</i>	golden dewdrop	19
51)	<i>Bombax ceiba</i>	Cotton tree	5
52)	<i>Ficus sycomorus</i>	Sycamore fig	9
53)	<i>Pongamia pinnata</i>	Indian beech	2
54)	<i>Ficus religiosa</i>	Sacred fig	9
55)	<i>Alstonia scholaris</i>	Ditabark	8
56)	<i>Magnolia grandiflora L.</i>	Southern magnolia	19
57)	<i>Juniperus thurifera L.</i>	Incense Juniper	7
58)	<i>Citrus sinensis (L.)</i>	Valencia orange	3

59)	<i>Ravenala madagascariensis</i>	Traveler's palm	13
60)	<i>Ficus benjamina</i>	Weeping fig	10
61)	<i>Terminalia catappa</i>	Tropical almond	5
62)	<i>Gleditsia triacanthos</i>	Honey locust	3
63)	<i>Senna siamea</i>	Ironwood Cassia	4
64)	<i>Rauvolfia caffra Sond.</i>	Quininetree	15
65)	<i>Psidium guajava L.</i>	Common guava	6
66)	<i>Roystonea regia (Kunth)</i> <i>O.F.Cook</i>	Cuban royal palm	18
67)	<i>Tipuana tipu (benth.) Kuntze</i>	Tiputree	35
68)	<i>Theobroma cacao L.</i>	cocoa	39
69)	<i>Caesalpinia pulcherrima (L.)Sw.</i>	Pride-of-Barbados	14
70)	<i>Prosopis pallida (wild.) Kunth</i>	Kiawe	6
71)	<i>Ficus hispida L.f.</i>	Hairy fig	2
72)	<i>Dalbergia latifolia Roxb.</i>	East Indian rosewood	1
73)	Total		718

Table No. 30: Relative Density of Tree Species

Sr. No.	Scientific Name	Common Name	No. of Individual	Relative Density
1)	<i>Saraca asoca</i>	Ashoka	112	15.599
2)	<i>Ficus religiosa</i>	Peepul	1	0.139
3)	<i>Roystonea regia</i>	Cuban royal palm	5	0.696
4)	<i>Casuarina cunninghamiana</i>	Beefwood	9	1.253
5)	<i>Ficus cyanthistipula</i>	African fig tree	2	0.279
6)	<i>Syngonium podophyllum</i>	Arrowhead vine	6	0.836
7)	<i>Hymenocallis littoralis</i>	Beach spider lily	1	0.139
8)	<i>Ligustrum lucidum</i>	Chinese privet	2	0.279
9)	<i>Psidium guajava</i>	Common guava	3	0.418

10)	<u><i>Rovstonea regia</i></u>	Cuban royal palm	5	0.696
11)	<u><i>Murraya koenigii</i></u>	Curry leaf	8	1.114
12)	<u><i>Alstonia scholaris</i></u>	Dita bark	41	5.710
13)	<u><i>Hyphene coriacea</i></u>	Doum palm	4	0.557
14)	<u><i>Plumeria rubra</i></u>	Frangipani	4	0.557
15)	<u><i>Plumeria pudica</i></u>	Golden arrow	4	0.557
16)	<u><i>Lonicera japonica</i></u>	Honeysuckle	4	0.557
17)	<u><i>Washingtonia robusta</i></u>	Mexican fan palm	4	0.557
18)	<u><i>Bauhinia orficata</i></u>	Orchid tree	4	0.557
19)	<u><i>Ficus religiosa</i></u>	Sacred fig	4	0.557
20)	<u><i>Cycus revoluta</i></u>	Sago palm	4	0.557
21)	<u><i>Phoenix reclinata</i></u>	Senegal date palm	4	0.557
22)	<u><i>Annona squamosa</i></u>	Sugar apple	4	0.557
23)	<u><i>Citrus sinensis</i></u>	Sweet orange	4	0.557
24)	<u><i>Terminalia catappa</i></u>	Tropical almond	4	0.557
25)	<u><i>Schotia brachypetale</i></u>	Weeping boer bean	4	0.557
26)	<u><i>Platycladus orientalis</i></u>	Chinese arborvitae	4	0.557
27)	<u><i>Juniperus chinensis</i></u>	Chinese juniper	4	0.557
28)	<u><i>Thuja occidentalis</i></u>	Northern white cedar	4	0.557
29)	<u><i>Cupressus sempervirens</i></u>	Mediterranean cypress	4	0.557
30)	<u><i>Carica papaya</i></u>	Papaya	4	0.557
31)	<u><i>Alstonia scholaris</i></u>	Ditabark	4	0.557
32)	<u><i>Rovstonea regia</i></u>	Cuban royal palm	4	0.557
33)	<u><i>Senna siamea</i></u>	Siamese cassia	6	0.836
34)	<u><i>Caesalpinia echinata</i></u>	Brazil wood	15	2.089
35)	<u><i>Albizia lebbeck</i></u>	Frywood	2	0.279
36)	<u><i>Alstonia scholaris</i></u>	Devil tree	3	0.418

37)	<u><i>Plumeria obtusa</i></u>	Singapore graveyard	10	1.393
38)	<u><i>Ficus benjamina</i></u>	weeping fig	3	0.418
39)	<u><i>Citrus aurantifolia</i></u>	Sweet orange	4	0.557
40)	<u><i>Campsis radican</i></u>	Trumpet vine	7	0.975
41)	<u><i>Terminalia catappa</i></u>	Indian almond	5	0.696
42)	<u><i>Bambusa vulgaris</i></u>	Common bamboo	59	8.217
43)	<u><i>Alstonia scholaris</i></u>	Devil tree	6	0.836
44)	<u><i>Caesalpinia pulcherrima</i></u>	Peacock flower	19	2.646
45)	<u><i>Caryota urens</i></u>	Jaggery palm	11	1.532
46)	<u><i>Platycladus orientalis</i></u>	Chinese arborvitae	9	1.253
47)	<u><i>Platycladus orientalis</i></u>	Chinese arborvitae	26	3.621
48)	<u><i>Ficus cvanthistipula</i></u>	African fig tree	29	4.039
49)	<u><i>Bismarckia nobilis</i></u>	Silver Bismarck Palm	6	0.836
50)	<u><i>Duranta erecta</i></u>	golden dewdrop	19	2.646
51)	<u><i>Bombax ceiba</i></u>	Cotton tree	5	0.696
52)	<u><i>Ficus sycomorus</i></u>	Sycamore fig	9	1.253
53)	<u><i>Pongamia pinnata</i></u>	Indian beech	2	0.279
54)	<u><i>Ficus religiosa</i></u>	Sacred fig	9	1.253
55)	<u><i>Alstonia scholaris</i></u>	Ditabark	8	1.114
56)	<u><i>Magnolia grandiflora L.</i></u>	Southern magnolia	19	2.646
57)	<u><i>Juniperus thurifera L.</i></u>	Incense Juniper	7	0.975
58)	<u><i>Citrus sinensis (L.)</i></u>	Valencia orange	3	0.418
59)	<u><i>Ravenala madagascariensis</i></u>	Traveler's palm	13	1.811
60)	<u><i>Ficus benjamina</i></u>	Weeping fig	10	1.393
61)	<u><i>Terminalia catappa</i></u>	Tropical almond	5	0.696
62)	<u><i>Gleditsia triacanthos</i></u>	Honey locust	3	0.418
63)	<u><i>Senna siamea</i></u>	Ironwood Cassia	4	0.557
64)	<u><i>Rauvolfia caffra Sond.</i></u>	Quininetree	15	2.089

65)	<u><i>Psidium guajava L.</i></u>	Common guava	6	0.836
66)	<u><i>Rovstanea regia (Kunth)</i></u> <u><i>O.F.Cook</i></u>	Cuban royal palm	18	2.507
67)	<u><i>Tipuana tipu (benth.)</i></u> <u><i>Kuntze</i></u>	Tiputree	35	4.875
68)	<u><i>Theobroma cacao L.</i></u>	cocoa	39	5.432
69)	<u><i>Caesalpinia pulcherrima</i></u> <u><i>(L.)Sw.</i></u>	Pride-of-Barbados	14	1.950
70)	<u><i>Prosopis pallida (wild.)</i></u> <u><i>Kunth</i></u>	Kiawe	6	0.836
71)	<u><i>Ficus hispida L.f.</i></u>	Hairy fig	2	0.279
72)	<u><i>Dalbergia latifolia Roxb.</i></u>	East Indian rosewood	1	0.139

Scientific Classification**[1] Name of Species: *Saraca asoca***

Kingdom:	<u>Plantae</u>
Clade:	<u>Tracheophytes</u>
Order:	<u>Fabales</u>
Family:	<u>Fabaceae</u>
Genus:	<u>Saraca</u>
Species:	S. asoca

[2] Name of Species: *Ficus religiosa*

Kingdom:	Plantae
Clade:	Rosids
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	F. subg. Urostigma
Species:	F. religiosa

[3] Name of Species: *Roystonea regia*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Roystonea
Species:	R. regia

[4] Name of Species: *Casuarina cunninghamiana*

Kingdom:	Plantae
Clade:	Rosids
Order:	Fagales
Family:	Casuarinaceae
Genus:	Casuarina
Species:	C. cunninghamiana

[5] Name of Species: *Ficus cyathistipula*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	F. subg. Urostigma
Species:	F. cyathistipula

[6] Name of Species: *Syngonium podophyllum*

Kingdom:	Plantae
Order:	Alismatales
Family:	Araceae
Genus:	Syngonium
Species:	S. podophyllum

[7] Name of Species: *Hymenocallis littoralis*

Kingdom:	Plantae
Order:	Asparagales
Family:	Amaryllidaceae
Subfamily:	Amaryllidoideae
Genus:	Hymenocallis
Species:	<i>H. littoralis</i>

[8] Name of Species: *Ligustrum lucidum*

Kingdom:	Plantae
Order:	Lamiales
Family:	Oleaceae
Genus:	Ligustrum
Species:	<i>L. lucidum</i>

[9] Name of Species: *Psidium guajava*

Kingdom:	Plantae
Order:	Myrtales
Family:	Myrtaceae
Genus:	Psidium
Species:	<i>P. guajava</i>

[10] Name of Species: *Roystonea regia*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Roystonea
Species:	<i>R. regia</i>

[11] Name of Species: *Murraya koenigii*

Kingdom:	Plantae
Order:	Sapindales
Family:	Rutaceae
Genus:	Murraya
Species:	<i>M. koenigii</i>

[12] Name of Species: *Alstonia scholaris*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Alstonia
Species:	<i>A. scholaris</i>

[13] Name of Species: *Hyphene coriacea*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Hyphaene
Species:	<i>H. coriacea</i>

[14] Name of Species: *Plumeria pudica*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Plumeria
Species:	<i>P. pudica</i>

[15] Name of Species: *Lonicera japonica*

Kingdom:	Plantae
Order:	Dipsacales
Family:	Caprifoliaceae
Genus:	Lonicera
Species:	<i>L. japonica</i>

[16] Name of Species: *Washingtonia robusta*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Tribe:	Trachycarpeae
Genus:	Washingtonia
Species:	<i>W. robusta</i>

[17] Name of Species: *Bauhinia forficata*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Genus:	Bauhinia
Species:	<i>B. forficata</i>

Name of Species: *Ficus religiosa*

Kingdom:	Plantae
Clade:	Rosids
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	F. subg. Urostigma
Species:	<i>F. religiosa</i>

Name of Species: *Cycus revoluta*

Kingdom:	Plantae
Division:	Cycadophyta
Class:	Cycadopsida
Order:	Cycadales
Family:	Cycadaceae
Genus:	Cycas
Species:	<i>C. revoluta</i>

Name of Species: *Phoenix reclinata*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Phoenix
Species:	<i>P. reclinata</i>

Name of Species: *Annona squamosa*

Kingdom:	Plantae
Order:	Magnoliales
Family:	Annonaceae
Genus:	Annona
Species:	<i>A. squamosa</i>

Name of Species: *Citrus Sinensis*

Kingdom:	Plantae
Order:	Sapindales
Family:	Rutaceae
Genus:	Citrus
Species:	<i>C. × sinensis</i>

Name of Species: *Terminalia Catappa*

Kingdom:	Plantae
Order:	Myrtales
Family:	Combretaceae
Genus:	Terminalia
Species:	<i>T. catappa</i>

Name of Species: *Schotia brachypetale*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Genus:	Schotia
Species:	<i>S. brachypetala</i>

Name of Species: *Platycladus orientalis*

Kingdom:	Plantae
Division:	Pinophyta
Class:	Pinopsida
Order:	Cupressales
Family:	Cupressaceae
Subfamily:	Cupressoideae
Genus:	Platycladus Spach
Species:	<i>P. orientalis</i>

Name of Species: *Juniperus Chinensis*

Kingdom:	Plantae
Division:	Pinophyta
Class:	Pinopsida
Order:	Cupressales
Family:	Cupressaceae
Genus:	Juniperus
Section:	Juniperus sect. Sabina
Species:	<i>J. chinensis</i>

Name of Species: *Thuja occidentalis*

Kingdom:	Plantae
Division:	Pinophyta
Class:	Pinopsida
Order:	Cupressales
Family:	Cupressaceae
Genus:	Thuja
Species:	<i>T. occidentalis</i>

Name of Species: *Cupressus sempervirens*

Kingdom:	<u>Plantae</u>
Division:	<u>Pinophyta</u>
Class:	<u>Pinopsida</u>
Order:	<u>Cupressales</u>
Family:	<u>Cupressaceae</u>
Genus:	<u><i>Cupressus</i></u>
Species:	<i>C. sempervirens</i>

Name of Species: *Carica papaya*

Kingdom:	Plantae
Order:	Brassicales
Family:	Caricaceae
Genus:	Carica
Species:	<i>C. papaya</i>

Name of Species: *Alstonia Scholaris*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Alstonia
Species:	<i>A. scholaris</i>

Name of Species: *Roystonea regia*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Roystonea
Species:	<i>R. regia</i>

Name of Species: *Senna Siamea*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Tribe:	Cassieae
Genus:	Senna
Species:	<i>S. siamea</i>

Name of Species: *Caesalpinia echinata*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae[2]
Tribe:	Caesalpinieae[3]
Genus:	Paubrasilia
Species:	<i>P. echinata</i>

Name of Species: *Albizia lebbek*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Clade:	Mimosoid clade
Genus:	Albizia
Species:	<i>A. lebbek</i>

Name of Species: *Alstonia Scholaris*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Alstonia
Species:	<i>A. scholaris</i>

Name of Species: *Plumeria obtusa*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Plumeria
Species:	<i>P. obtusa</i>

Name of Species: *Ficus benjamina*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Tribe:	Ficeae
Genus:	Ficus
Subgenus:	<i>F. subg. Urostigma</i>

Name of Species: *Citrus aurantifolia*

Kingdom:	Plantae
Order:	Sapindales
Family:	Rutaceae
Genus:	Citrus
Species:	<i>C. × aurantifolia</i>

Name of Species: *Campsis radican*

Kingdom:	Plantae
Order:	Lamiales
Family:	Bignoniaceae
Genus:	Campsis
Species:	<i>C. radicans</i>

Name of Species: *Terminalia catappa*

Kingdom:	Plantae
Family:	Combretaceae
Genus:	Terminalia
Species:	<i>T. catappa</i>

Name of Species: *Bambusa vulgaris*

Kingdom:	Plantae
Order:	Poales
Family:	Poaceae
Genus:	Bambusa
Species:	<i>B. vulgaris</i>

Name of Species: *Alstonia Scholaris*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Alstonia
Species:	<i>A. scholaris</i>

Name of Species: *Caesalpinia pulcherrima*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Genus:	Caesalpinia
Species:	<i>C. pulcherrima</i>

Name of Species: *Caryota urens*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Caryota
Species:	<i>C. urens</i>

Name of Species: *Platyclusus orientalis*

Kingdom:	Plantae
Division:	Pinophyta
Class:	Pinopsida
Order:	Cupressales
Family:	Cupressaceae
Subfamily:	Cupressoideae
Genus:	Platyclusus Spach
Species:	<i>P. orientalis</i>

Name of Species: *Ficus cyanthistipula*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	F. subg. Urostigma
Species:	<i>F. cyanthistipula</i>

Name of Species: *Bismarckia nobilis*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Subfamily:	Coryphoideae
Tribe:	Borasseae
Genus:	Bismarckia Hildebr. & H.Wendl.
Species:	<i>B. nobilis</i>

Name of Species: *Duranta erecta*

Kingdom:	Plantae
Order:	Lamiales
Family:	Verbenaceae
Genus:	Duranta
Species:	<i>D. erecta</i>

Name of Species: *Bombax ceiba*

Kingdom:	Plantae
Order:	Malvales
Family:	Malvaceae
Genus:	Bombax
Species:	<i>B. ceiba</i>

Name of Species: *Ficus Sycomorus*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	<i>F. subg. Sycomorus</i>

Name of Species: *Pongamia pinnata*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Faboideae
Tribe:	Millettieae
Genus:	Millettia
Species:	<i>M. pinnata</i>

Name of Species: *Ficus religiosa*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	<i>F. subg. Urostigma</i>

Name of Species: *Alstonia Scholaris*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Alstonia
Species:	<i>A. scholaris</i>

Name of Species: *Magnolia grandiflora. L*

Kingdom:	Plantae
Order:	Magnoliales
Family:	Magnoliaceae
Genus:	Magnolia
Section:	Magnolia sect. Magnolia
Species:	<i>M. grandiflora</i>

Name of Species: *Citrus sinensis. L*

Kingdom:	Plantae
Order:	Sapindales
Family:	Rutaceae
Genus:	<i>Citrus</i>

Name of Species: *Ravenala madagascariensis*

Kingdom:	<u>Plantae</u>
Order:	<u>Zingiberales</u>
Family:	<u>Strelitziaceae</u>
Genus:	Ravenala <u>Adans.</u>
Species:	<i>R. madagascariensis</i>

Name of Species: *Ficus benjamina*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Tribe:	Ficeae
Genus:	Ficus
Subgenus:	<i>F. subg. Urostigma</i>

Name of Species: *Terminalia catappa*

Kingdom:	Plantae
Order:	Myrtales
Family:	Combretaceae
Genus:	Terminalia
Species:	<i>T. catappa</i>

Name of Species: *Gleditsia triacanthos*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Genus:	Gleditsia
Species:	<i>G. triacanthos</i>

Name of Species: *Senna siamea*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Tribe:	Cassieae
Genus:	Senna
Species:	<i>S. siamea</i>

Name of Species: *Rauwolfia caffra sond*

Kingdom:	Plantae
Order:	Gentianales
Family:	Apocynaceae
Genus:	Rauwolfia
Species:	<i>R. caffra</i>

Name of Species: *Psidium guajava*

Kingdom:	Plantae
Order:	Myrtales
Family:	Myrtaceae
Genus:	Psidium
Species:	<i>P. guajava</i>

Name of Species: *Roystonea regia*

Kingdom:	Plantae
Order:	Arecales
Family:	Arecaceae
Genus:	Roystonea
Species:	<i>R. regia</i>

Name of Species: *Tipuana tipu*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Faboideae
Tribe:	Dalbergieae
Genus:	<i>Tipuana Benth.</i>

Name of Species: *Theobroma cacao*

Kingdom:	Plantae
Order:	Malvales
Family:	Malvaceae
Genus:	Theobroma
Species:	<i>T. cacao</i>

Name of Species: *Caesalpinia pulcherrima*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Genus:	Caesalpinia
Species:	<i>C. pulcherrima</i>

Name of Species: *Prosopis pallida*

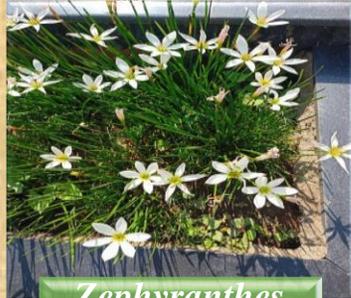
Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Genus:	Prosopis
Species:	<i>P. pallida</i>

Name of Species: *Ficus hispida*

Kingdom:	Plantae
Order:	Rosales
Family:	Moraceae
Genus:	Ficus
Subgenus:	F. subg. Sycomorus
Species:	<i>F. hispida</i>

Name of Species: *Dalbergia latifolia*

Kingdom:	Plantae
Order:	Fabales
Family:	Fabaceae
Subfamily:	Faboideae
Genus:	Dalbergia
Species:	<i>D. latifolia</i>



Zephyranthes candida



Musa paradisiaca



Tecoma stans



Ficus benjamina



Brahea armata



Phoenix reclinata



Bauhinia variegata



Duranta erecta



Ixora chinensis



Thuja occidentalis



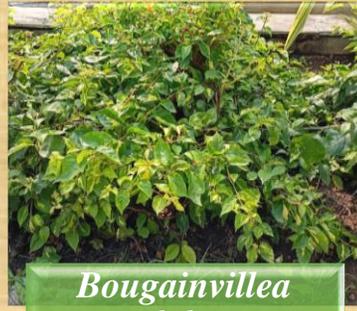
Murraya paniculata



Plumeria rubra



Caryota urens



Bougainvillea glabra



Galphimia glauca



Agave vivipara



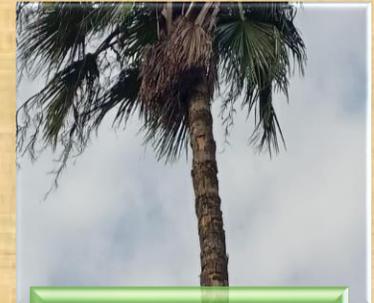
Jasminum sambac



Dracaena fragrans



Bougainvillea buttiana



Washingtonia robusta



Ficus carica



Hamelia patens



Plumbago auriculata



Agave sisalana



Carrisa carandas



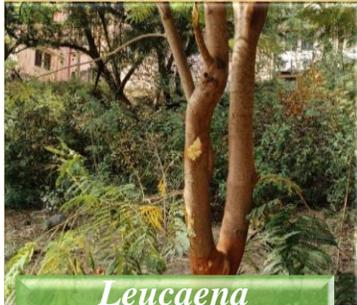
Jatropha podagrica



Alistonia scholaris



Magnifera indica



Leucaena leucocephala



Senna siamea



Acacia farnesiana



Ficus benjamina



Ficus microcarpa



Thespesia populnea



Cordia myxa



Ixora coccinea



VI) FAUNA AUDIT

Diversity of avifauna is one of the most important ecological indicators to evaluate the quality of habitats. Random destruction of natural habitats by cutting nesting trees and foraging plants for commercial use of woods and lands are the main factors responsible in narrowing down the avian foraging habitat and nesting sites. Urban bird densities are normally extremely high (Walsh, 2006). Increase in bird densities may be the result of high food density, low predation pressure or combination of both (Shochat, 2004). Birds are essential animal group of an ecosystem that maintains a trophic level. Therefore, a detail study on avifauna and their ecology is important to protect them (Sruti, 2008).

Birds are considered as excellent bio-indicators of the effects urbanization has on ecosystems since they are highly diverse and conspicuous elements of the ecosystems. Also they respond rapidly to changes in landscape configuration, composition and function (Hobson & Rempel, 2001). Comparative studies on avian community structure in different habitats can improve our knowledge of the general patterns and processes that characterize the bird species and communities.

The fauna species were documented by observation and identification method during the field excursion. The observed species are photographed as an evidence of presence in the YCCE campus. This data shall help understand the type of Ecological food chain existing in the environmental segment of YCCE.



Satellite Imagery No. 11: Sampling Area for Fauna Audit

Table No. 31: Bird Species at YCCE

List of Bird Species		
Sr. No.	Scientific Name	Common Name
1)	<u><i>Merops orientalis</i></u>	Asian green bee-eater
2)	<u><i>Columbia livia domestica</i></u>	Rock dove
3)	<u><i>Spilopelia senegalensis</i></u>	Laughing dove
4)	<u><i>Psittacula krameri</i></u>	Rose-ringed parakeet
5)	<u><i>Leptocoma zeylonica</i></u>	Purple-rumped sunbird
6)	<u><i>Pericrocotus cinnamomeus</i></u>	Small minivet
7)	<u><i>Halcyon smyrnensis</i></u>	White throated kingfisher
8)	<u><i>Dendrocitta vagabunda</i></u>	Rufous treepie
9)	<u><i>Turdoides striata</i></u>	Jungle Babbler
10)	<u><i>Saxicoloides fulicatus</i></u>	Indian Robin
11)	<u><i>Pycnonotus cafer</i></u>	Red-vented Bulbul
12)	<u><i>Dicrurus macrocercus</i></u>	Black drongo
13)	<u><i>Trochilidae</i></u>	Humming bird
14)	<u><i>Myadestes obscurus</i></u>	Oma'o
15)	<u><i>Cinnyris aiaticus</i></u>	Purple sunbird
16)	<u><i>Lonchura punctulata</i></u>	Scaly-breasted munia

Scientific Classification:**[1] Name of Species: Merops orientalis**

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Coraciiformes
Family:	Meropidae
Genus:	Merops
Species:	M. orientalis

Ecological Importance: These birds are mostly seen sitting on the cables in small groups. The bee-eaters are always found in pairs due to their monogamous nature. These beautiful birds are often seen in small groups of about 20-25 birds but they are found to roost together in larger groups in the evening showing frantic flights and making high-pitched nasal-trilling and typical tree - tree sounds. The bee-eaters cower very close to the ground and then wriggle their bodies in the loose sand and continuously flap their wings. After this they vigorously shake their body to remove the dust particles and any parasites on their skin and preen their feathers with their bill.

[2] Name of Species: Columba livia domestica

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Columbiformes
Family:	Columbidae
Genus:	Columba
Species:	C. livia

Ecological Importance: Not only is the pigeon a species that can thrive in an urban habitat but it is also contributes to the tropic levels in an urban ecosystem. They are effective as primary

consumers to the extent that their population can support substantial predation and are an important food source for many birds of prey.

[3] Name of Species: *Spilopelia senegalensis*

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Columbiformes
Family:	Columbidae
Genus:	<i>Spilopelia</i>
Species:	<i>S. senegalensis</i>

Ecological Importance: Laughing doves eat the fallen seeds, mainly of grasses, other vegetable matter and small ground insects such as termites and beetles. They are fairly terrestrial, foraging on the ground in grasslands and cultivation. Their flight is quick and direct with the regular beats and an occasional sharp flick of the wings characteristic of pigeons in general

[4] Name of Species: *Psittacula krameri*

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Psittaciformes
Family:	Psittaculidae
Tribe:	Psittaculini
Genus:	<i>Psittacula</i>

Ecological Importance: Their breeding population has successfully established in several cities, particularly in Johannesburg and eThekweni Metropole. Although their population seems to be expanding at an alarming rate, little is currently known about their population size, breeding status, and feeding biology. This includes public knowledge and perception towards them as invasive

species. Moreover, impacts (environmental and socio-economic) and areas that are at risk of becoming invaded by rose-ringed parakeets and other selected invasive bird species are unknown.

[5] Name of Species: leptocoma zeylonica

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Nectariniidae
Genus:	Leptocoma
Species:	L. zeylonica

Ecological Importance: They pollinate the flowers of many plant species such as Bruguiera, Woodfordia, Hamelia and Sterculia. They tend to perch while foraging for nectar and do not hover as much as the syntopic Loten's sunbird. It has been noted that they maintain special scratching posts, where they get rid of pollen and nectar sticking to their head. When the flowers are too deep to probe, they sometimes pierce the base of the flower and rob the nectar, an action termed as "nectar theft" since the flower's primary purpose of attracting pollinators is foiled. They sometimes visit open crop fields and take honeydew exuded by leafhoppers.

[6] Name of Species: Pericrocotus cinnamomeus

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Campephagidae
Genus:	Pericrocotus
Species:	P. cinnamomeus

Ecological Importance: The small minivet is a widespread and common resident breeding bird in thorn jungle and scrub. The nest is a cup-like structure into which two to four spotted eggs are

laid and incubated by the female. This minivet catches insects in trees by flycatching or while perched. The small minivet will form small flocks. Its call is a high, thin swee.

[7] Name of Species: Halcyon smyrnensis

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Coraciiformes
Family:	Alcedinidae
Subfamily:	Halcyoninae
Genus:	Halcyon
Species:	H. smyrnensis

Ecological Importance: The white-throated kingfisher begins breeding at the onset of the Monsoons. Males perch on prominent high posts in their territory and call in the early morning. The tail may be flicked now and in its courtship display the wings are stiffly flicked open for a second or two exposing the white wing mirrors. They also raise their bill high and display the white throat and front. The female in invitation makes a rapid and prolonged kit-kit-kit... call. They subsequently perch and continue digging the nest with their bills. Nest tunnels in a haystack have also been recorded. A single clutch of 4–7 round white eggs is typical. The eggs take 20–22 days to hatch while the chicks fledge in 19 days.

[8] Name of Species: Dendrocitta vagabunda

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Corvidae
Genus:	Dendrocitta
Species:	D. vagabunda

Ecological Importance: The breeding season in India is April to June. In Bengal, the peak is in April and May with heightened levels of pineal gland activity and serotonin production. It builds its shallow nest in trees and bushes and usually lays 3-5 eggs. The rufous treepie has a wide repertoire of calls, but a bob-o-link or ko-tree call is most common. A local name for this bird kotri is derived from the typical call while other names include Handi Chancha and taka chor ("coin thief")

[9] Name of Species: Turdoides striata

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Leiothrichidae
Genus:	Argya
Species:	A. striata

Ecological Importance: They breed throughout the year, with peak breeding in northern India being noted between March–April and July–September. Birds reach sexual maturity after their third year. The nest is built halfway up in a tree, concealed in dense masses of foliage. The normal clutch is three or four (but can be up to seven) deep greenish blue eggs. In northern India, birds breeding during July–September tend to be parasitized by the pied crested cuckoo and sometimes by the common hawk-cuckoo. Helpers assist the parents in feeding the young. Post fledging survival is very high.

[10] Name of Species: Saxicoloides fulicatus

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Muscicapidae
Genus:	Copsychus

Species:	C. fulicatus
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Ecological Importance: Population densities of 193-240 individuals per square km have been estimated in the Pondicherry University campus. The ratio of males to females was about 1.5:1. Territory size for males is estimated at about 6650 m². Males can be aggressive to others during the breeding season and will even attack reflections. Human activities such as felling and firewood removal in forests appear to benefit them.

[11] Name of Species: Pycnonotus cafer

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Pycnonotidae
Genus:	Pycnonotus
Species:	P. cafer

Ecological Importance: They are important dispersers of seeds of plants such as *Carissa spinarum*. The red-vented bulbul was among the first animals other than humans that was found to be incapable of synthesizing vitamin C. However, a large number of other birds were later found to likewise lack the ability to synthesize vitamin C. Like most birds, these bulbuls are hosts to coccidian blood parasites (*Isospora* sp.) while some bird lice such as *Menacanthus guldum* (Ansari 1951 Proc. Natl. Inst. Sci. India 17:40) have been described as ectoparasites. Along with red-whiskered bulbuls this species has led to changes in the population dynamics of butterfly morphs on the island of Oahu in Hawaii. Here the population of white morphs of the *Danaus plexippus* butterfly has risen over a period of 20 years due to predation of the orange morphs by these bulbuls

[12] Name of Species: Dicrurus macrocercus

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Dicruridae
Genus:	Dicrurus
Species:	D. macrocercus

Ecological Importance: In southern India, they moult their feathers from June to October. The wing moult begins in July with the first primary and proceeds towards the tenth. Secondaries are replaced from August after the primaries are at the third quill. The secondary moult is not orderly, the 8th and 7th being dropped earlier than the rest. The tail feathers are moulted centrifugally. Seasonal Colour changes in the testicular tissues are caused by variation in melanin synthesis, with the dark pigmentation being lost during the breeding season.

[13] Name of Species: Trochilidae

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Apodiformes
Family:	Trochilidae

Ecological Importance: As they move from plant to plant, they carry pollen. As they pollinate the native wildflowers in parks and the plants in your garden, hummingbirds add a splash of color to our landscapes.

[14] Name of Species: Myadestes obscurus

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Turdidae
Genus:	Myadestes

Ecological Importance: Ōma'os are mostly frugivores, but will take insects or other small invertebrates. The bird has a song that is a set of jerky liquid notes, whip-per-weeo-whip-per-weet. Their many calls include a catlike rasp, a frog like croak and even a high pitched police whistle type sound. During breeding, the birds make a bulky nest in a tree or tree fern, laying one to three bluish eggs inside.

[15] Name of Species: Cinneryis asiaticus

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Nectariniidae
Genus:	Cinneryis

Ecological Importance: They are important pollinators of some plant species such as Butea monosperma, Acacia, Woodfordia and Dendrophthoe. but they sometimes steal nectar by slitting flowers such as Hamelia patens at the base. They are known to feed on small berries such as those of Salvadora persica and cultivated grapes.

[16] Name of Species: Lonchura punctulata

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Passeriformes
Family:	Estrildidae
Genus:	Lonchura

Ecological Importance: This munia eats mainly grass seeds apart from berries and small insects. They forage in flocks and communicate with soft calls and whistles. The species is highly social and may sometimes roost with other species of munias.

Table No. 32: Insect species at YCCE

List of Insect Species		
Sr. No.	Scientific Name	Common Name
1)	<u><i>Apis mellifera</i></u>	Western honey bee comb
2)	<u><i>Omocestus viridulus</i></u>	Green Grasshopper
3)	<u><i>Catopsilia florella</i></u>	Africn emigrant
4)	<u><i>Orthetrum sabina</i></u>	Slender Skimmer
5)	<u><i>Euthalia nais</i></u>	Baronet
6)	<u><i>Ariadne merione</i></u>	Common castor
7)	<u><i>Papilio demodocus</i></u>	Citrus swallowtail
8)	<u><i>Anisoptera</i></u>	Dragonfly
9)	<u><i>Appia libythea</i></u>	Stripped Albatross
10)	<u><i>Euploea core</i></u>	Common crow

Scientific Classification:**[1] Name of Species: Apis mellifera**

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Hymenoptera
Family:	Apidae
Genus:	<i>Apis</i>

Ecological Importance: *Apis mellifera* Linnaeus (1758), a honey bee, is a eusocial insect widely known for its role in pollination, an essential ecosystem service for plant biodiversity, and quality of vegetables and fruit products. As pollinators, bees play a part in every aspect of the ecosystem. They support the growth of trees, flowers, and other plants, which serve as food and shelter for creatures large and small. Bees contribute to complex, interconnected ecosystems that allow a diverse number of different species to co-exist.

[2] Name of Species: Omocestus viridulus

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Orthoptera
Suborder:	Caelifera
Family:	Acrididae
Subfamily:	Gomphocerinae
Genus:	<i>Omocestus</i>
Species:	<i>O. viridulus</i>

Ecological Importance: The role of plant-mediated constraints to herbivore populations in terrestrial ecosystems remains relatively poorly understood. One aim of this study was therefore to explore the effects of low host plant nitrogen (N) content on herbivore performance and feeding behaviour, and thereby to evaluate the utility of the N limitation and nutrient balance concepts.

[3] Name of Species: *Catopsilia florella*

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Lepidoptera
Family:	Pieridae
Genus:	Catopsilia

Ecological Importance: *Catopsilia florella* is known by the common names: African Migrant, African Emigrant, or Common Vagrant. It's a delicate looking, pale green-yellow, migrating butterfly. They occur in most frost-free regions of Africa, requiring species of *Senna* to survive successfully. They're also found on the Canary Islands, the caterpillars eating *Cassia* spp. Here, they're frequent on roadside verges and parks.

[4] Name of Species: *Orthetrum sabina*

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Odonata
Infraorder:	Anisoptera
Family:	Libellulidae
Genus:	Orthetrum

Species:	O. sabina
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Ecological Importance: It is a medium-sized dragonfly with a wingspan of 60-85mm. Adults are grayish to greenish yellow with black and pale markings and green eyes. Its abdomen is greenish-yellow, marked with black. It is very similar to *Orthetrum serapia* in appearance, with both species appearing in northern Australia. Pale markings on segment four of the abdomen do not extend into the posterior section when viewed from above on *Orthetrum sabina*. Females are similar to males in shape, color and size; differing only in sexual characteristics

[5] Name of Species: Euthalia nais

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Lepidoptera
Family:	Nymphalidae
Genus:	Euthalia
Species:	E. nais

Ecological Importance: Butterflies are part of the class of insects in the order Lepidoptera. The group comprises the true butterflies (superfamily Papilionoidea), the skippers (superfamily Hesperioidea) and the moth-butterflies (superfamily Hedyloidea). Butterfly fossils date to the mid Eocene epoch, 40–50 million years ago. Butterflies have 4 stages of life cycle: Egg; Larva; Pupa and Adult. Butterflies in their adult stage can live from a week to nearly a year depending on the species. Adult butterflies have large, often brightly coloured wings, and conspicuous, fluttering flight. Many species have long larval life stages while others can remain dormant in their pupal or egg stages and thereby survive winters.

[6] Name of Species: Ariadne merione

Kingdom:	<u>Animalia</u>
Phylum:	<u>Arthropoda</u>
Class:	<u>Insecta</u>
Order:	<u>Lepidoptera</u>
Family:	<u>Nymphalidae</u>
Genus:	<u><i>Ariadne</i></u>
Species:	<i>A. merione</i>

Ecological Importance: Male: Upperside brownish ochraceous. Forewings and hindwings crossed by slender, somewhat obscure, very sinuous or zigzag dark basal, two subbasal and two discal lines disposed in pairs, followed by a single, sometimes double, postdiscal and a single subterminal slender line. All these lines more or less interrupted anteriorly on the hindwing, which has a smooth unmarked uniform appearance from costa to subcostal vein and vein.

[7] Name of Species: Papilio demodocus

Kingdom:	<u>Animalia</u>
Phylum:	<u>Arthropoda</u>
Class:	<u>Insecta</u>
Order:	<u>Lepidoptera</u>
Family:	<u>Papilionidae</u>
Genus:	<u><i>Papilio</i></u>
Species:	<i>P. demodocus</i>

Ecological Importance: *Papilio demodocus* is a butterfly, common in southern Africa. It occurs throughout sub-Saharan Africa, extending into Saudi Arabia, Yemen, and Oman. It is most abundant during the rains when its larvae (caterpillars) may cause damage to citrus trees. Most of the *Papilio* species reported till now preferably feed on various plants of Rutaceae family with

Special preference towards both wild and cultivated species of Citrus. Among all the known species of *Papilio*, *P. demoleus* is the most prevalent and economically important one. Out breaks of PDL were not uncommon as experienced in Nagpur region

[8] Name of Species: Anisoptera

Kingdom:	<u>Animalia</u>
Phylum:	<u>Arthropoda</u>
Class:	<u>Insecta</u>
Order:	<u>Odonata</u>
Suborder:	<u>Eiprocta</u>
Infraorder:	Anisoptera

Ecological Importance: They play a significant role in controlling the insect population, especially pests such as mosquitoes and agricultural pests. They are freshwater insects, showing a semi-aquatic life cycle. Their larvae are underwater and adults are terrestrial and aerial predators.”

[9] Name of Species: Appias libythea

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Lepidoptera
Family:	Pieridae
Genus:	Appias
Species:	A. libythea

Ecological Importance Butterfly species and larval host plants were scored for a number of variables considered to influence herbivory. Butterfly species were distinguished for specificity (phagy) into monophagous (feeding on one plant family) and polyphagous (feeding on more than one plant family). Butterfly species were also scored for ant associations (ant protection versus no recorded association) and egg laying batch size (1 single or few eggs each batch, 2 small batch of 5 to 20; 3 large batch of 20 to 100, 4 very large batch of eggs each time > 100)

[10] Name of Species: Euploea core

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Lepidoptera
Family:	Nymphalidae
Genus:	Euploea
Species:	E. core

Ecological Importance: The common crow is a glossy-black butterfly with brown undersides with white markings along the outer margins of both wings. The wingspan is about 8–9 cm and the body has prominent white spots. The male has a velvety black band located near the rear edge on the upper side of the forewing. On the underside there is a white streak in the same location. This white streak is present in both male and female. In its natural position this streak is hidden behind the hindwing and can be seen only when the butterfly is captured and observed closely.

Table No. 33: Reptile Species at YCCE

List of Reptile Species		
Sr. No.	Scientific Name	Common Name
1)	<i>Eutropis multifasciata</i>	Many stripped skink
2)	<i>Anoplodesmus saussurii</i>	Millipedes
3)	<i>Sitana ponticeriana</i>	Pondichery fan throated lizard
4)	<i>Takydromus tachy deomoides</i>	Grass lizard
5)	<i>Achatina fulica</i>	Giant African snail

Scientific Claification:**[1] Name of Species: Eutropis multifasciata**

Kingdom:	Animalia
Phylum:	Chordata
Class:	Reptilia
Order:	Squamata
Family:	Scincidae
Genus:	Eutropis

Ecological Importance: Ecology of *Eutropis multifasciata* in the tropical plains of central Vietnam to understand better the foraging mode, spatiotemporal and sexual variation in dietary composition, and rarefaction curves of prey-taxon richness for males and females.

[2] Name of Species: Anoplodesmus saussurii

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Diplopoda
Order:	Polydesmida
Family:	Paradoxosomatidae
Genus:	Anoplodesmus
Species:	A. saussurii

Ecological Importance: They are much largely aggregated species that can be found undercover of decaying litter layers in the agricultural and horticultural land areas and forests on humid soils. Mainly herbivores, they are known to eat any decaying and rotting leaves and vegetable parts, and even wood, decaying fish, and cow dung. After 20 to 25 days of copulation, female laid 200 to 400 eggs in earthen nests.

[3] Name of Species: Sitana Ponticeriana

Kingdom:	Animalia
Phylum:	Chordata
Class:	Reptilia
Order:	Squamata
Suborder:	Iguania
Family:	Agamidae
Genus:	Sitana

Ecological Importance: This species attains a maximum length of 8 inches, of which the tail takes 5 inches. From snout to vent 3-5 inches. Ebanasar (1989) reported the histomorphology of thyroid gland and thyroid activity in *Sitana ponticeriana* in juveniles, males and females with different ovary maturation stages. He has also reported ovoviviparity in females from Madurai and Virudhunagar areas of Tamil Nadu.

[4] Name of Species: Takydromus tachydromoides

Kingdom:	Animalia
Phylum:	Chordata
Class:	Reptilia
Order:	Squamata
Family:	Lacertidae
Genus:	Takydromus
Species:	T. tachydromoides

Ecological Importance: *Takydromus tachydromoides*, the Japanese grass lizard, is a wall lizard species of the genus *Takydromus*. It is found in Japan. Its Japanese name is 'kanahebi' 'Hebi' means 'snake' in Japanese, although this lizard is not a snake. There are three lizards found in the four main islands of Japan. The other two are the Japanese gekko (also, Schlegel's Japanese gekko, *Gekko japonicus*), and the Okada's Five-lined Skink (*Eumeces latiscutatus*, also *Plestiodon latiscutatus*; this skink shows five lines only as a juvenile).

Table No. 34: Amphibian Species at YCCE

List of Amphibian Species		
Sr. No.	Scientific Name	Common Name
1)	<i>Duttaphrynus melanostictus</i>	Asian common toad
2)	<i>Strongylopus grayii</i>	Gray's steam frog

Table No. 35: Rodent Species at YCCE

List of Rodent Species		
Sr. No.	Scientific Name	Common Name
1)	<i>Funambulus palmarum</i>	Three-striped palm squirrel



Merops orientalis



Columba livia domestica



Spilopelia senegalensis



Psittacula krameri



Leptocoma zeylonica



Pericrocotus cinnamomeus



Halcyon smyrnensis



Dendrocitta vagabunda



Turdoides striata



Papilio demodocus



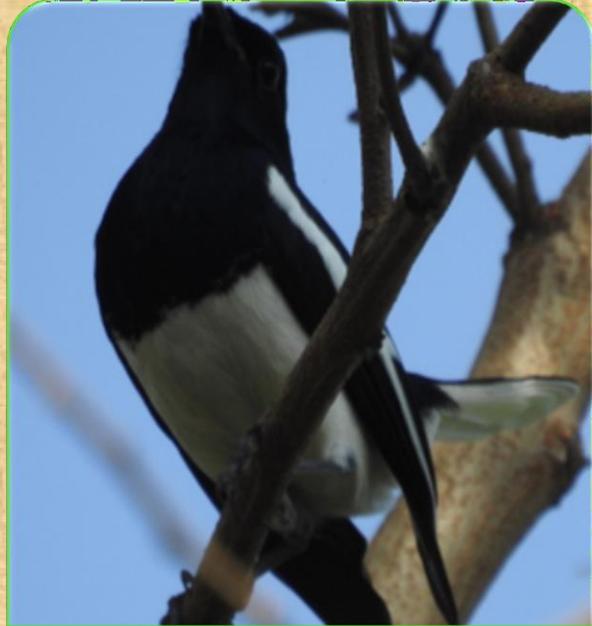
Pycnonotus cafer



Dicrurus macrocerus



Trochilidae



Copsychus saularis



Myadestes obscurus



Cinnyris asiaticus



Lonchura punctulate



Jungle Babbler



Columbidae

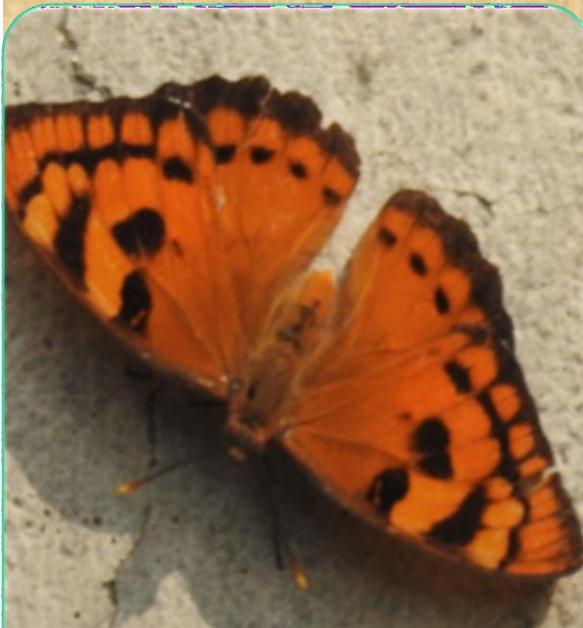




Euploea core



Catopsilia florella



Euthalia nails



Ariadne merione



Papilion demoleus



Cepora nerissa



Brown Longtail



Blue Tiger



Polygonia interrogationis



Appias (Albina)



Acisoma panorpoides



Dragonfly



Grasshopper



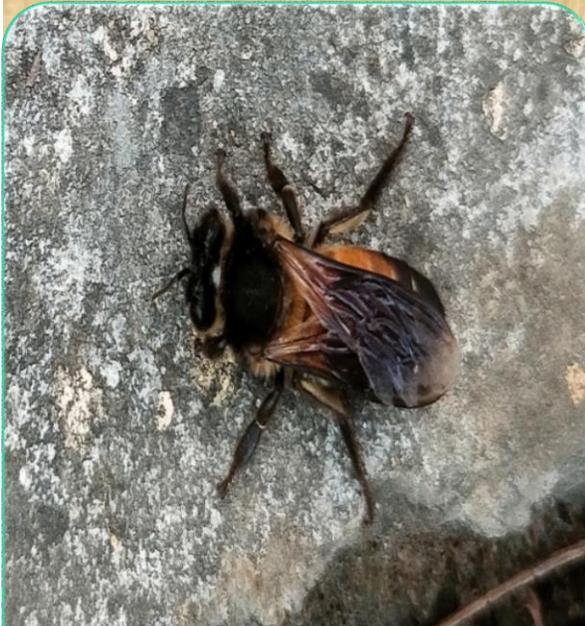
Apis mellifera comb



Apis dorseta



Jewel Bugs



Giant Resin bee



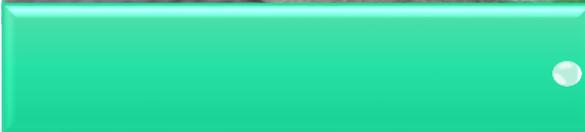
Cochliomyia hominivorax



Western honeybee



Chrysoperla carnea

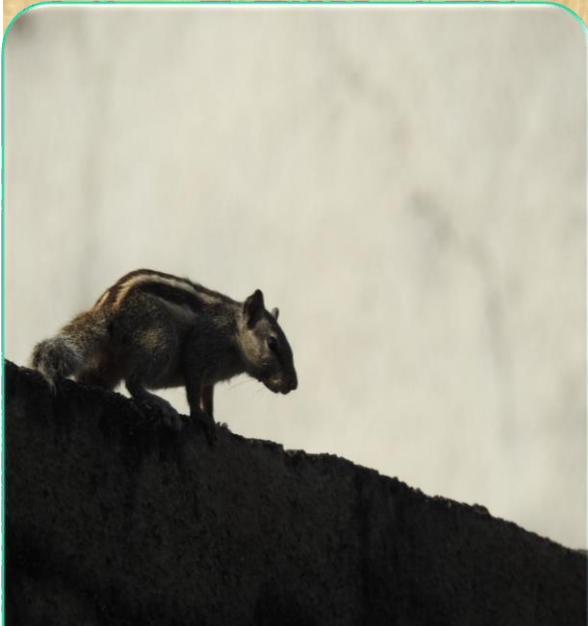




Funambulus palmarum



Duttaphrynus melanostictus



Funambulus palmarum



Rattle snake



Achatina fulica



Anoplodesmus saussurii



Takydromus tachydromoides





VII) ENERGY AUDIT: A] ELECTRIC ENERGY

Electricity is a basic part of nature and it is one of our most widely used forms of energy. Many cities and towns were built alongside waterfalls (a primary source of mechanical energy) that turned water wheels to perform work. An electric utility power station uses a turbine, engine, water wheel, or other similar machine to drive an electric generator or a device that converts mechanical or chemical energy to generate electricity. Electricity is measured in units of power called watts. It was named to honor James Watt, the inventor of the steam engine. The amount of electricity a power plant generates or a customer uses over a period of time is measured in kilowatt-hours (kWh).

The electric energy component was analyzed with due details about no. of units utilized daily/monthly and also departmentwise all the electrical equipments utilizing electrical energy were enlisted with the amount of energy they utilize.

Table No. 36: List of Electrical Equipments at Department of Civil

Sr No	Name of Lab	Fan 60 w		Tube light		LED 18 W	CFL 18x2 w	Tube Light 36 w	PC	Printer	Projector	Monitor	EPBX m/c	TV	Exhaust Fan	Wall Fan	AC Split	AC Window	Freez	Universal Testing m/c	M/C 5 HP	Oven	motor 0.75 hp	motor 2 hp	motor 180 w	motor 2.5 hp	coil 1000w	Motor 0.5 hp	motor 3.7 kw	Heater 5000 w			
		T5	20 w																														
Ground Floor																																	
1	1 staff Room	2		2				2	1																								
2	2 Lab	4		3				4	1						1																		
3	3 & 4 Office	2	1	2	1	5	1			1	2		1		1																		
4	5 Office	2	1	5					1	1							2																
5	Passage			4										1																			
6	Gents Toilet panel Room			2											1																		
7	Transportation Engg 006	4		2				5	1							1								1	1	1	1	2					
8	Structures Lab 007	4		3				2	1																								
9	Geology Engg Lab 008	3	4	1				1	2	1																							
10	CE 009	4		4				3																2									
11	12 Lab	4		7				4																									
12	13 Lab	4		7				4																									
13	14 Lab	3	2	1					3	1																							
14	15 Girls Common Room	3		4												1																	
15	Strength of Material	4	1	2				2	2																								
16	Geotechnical Lab	6		4				5	1							1																	
17	Concret Lab	10	7	1				10																	4		2						
18	Sarve Lab	3	2	2				5	1																								
First Floor																																	
19																																	
20	Staff Room	2	1	2				2																									
21	Computer Lab 102	8			15			40										3															
22	Computer Lab 103	8			15			25	2	1	3						4																
23	Computer Lab 104	4		2				6															3										
24	Computer Lab 105	4				24		30									3																
25	Water supply Lab 106 A	4		2				4	1														4	1									
26	Servey Lab	4						6	1																								
	CE 110	1		2																													
	Structural Dynamics 109	7	7	1					2							1								1									
27	CE 108	1		2					1	1																							
28	Passage			3				1																									
29	Toilet			1																													
30	CE 111	7	5	1					2											1													
Second Floor																																	
31																																	
32	Room no 203 A	3		3																													
	Room no 203 B	3		3				1																									
	Room No 204A	3		5																													
33	Room no 204 B	4		3				1																									
34	Room no 205 A	3		4				1																									
	Room no 205 B	2		4																													
35	Room no 208	8	3	5																													
36	Room no 209	9	6	4																													
37	Toilet			1											1																		
38	Passage			2				2																									
Third Floor																																	
39																																	
40	Room no 302	7	5	4																													
41	Room no 303	7	4	5																													
42	Room no 304	7	6	2																													
43	Room no 305	9	4	5																													
44	Room no 306	7	2	6																													
45	Room no 308	7	2	5																													
46	Room no 310	9	4	7																													
47	Toilet			3																													
48	Passage		3	4											2																		
49	Total	200	70	147	31	29	60	127	8	3	3	1	1	7	4	4	10	1	1	1	8	5	5	1	5	2	2	2	2	2	2	2	
50	Total Watts	60	28	20	18	36	36	150	100	100	100	200	100	300	60	2000	2000	500	500	3730	2000	560	1492	180	1865	1000	373	3700	5000				
51	Total Watts Per day Hrs	12000	1960	2940	558	1044	2160	19050	800	300	300	200	100	2100	240	8000	20000	500	500	3730	16000	2800	7460	180	5595	2000	746	3700	5000				
52	Per Month KWH	7	7	7	7	7	7	7	1	1	24	24	2	12	7	7	7	7	7	2	2	2	2	2	2	2	2	2	2	2	2	2	
53	Per Month KWH	2016	329.3	493.92	93.7	175.39	362.88	3200.4	19.2	7.2	172.8	115.2	4.8	604.8	40.3	1344	3360	84	24	175	768	134.4	358.1	4.32	134.28	48	35.808	177.6					

Table No. 37: List of Electrical Equipments at Department of Electronics

Sr no.	Name of Lab	Fan 60 w	Tube light			LED 6 W	LED 18 w	CFL 36x2 W	CFL 18x2 w	Tube Light 36 w	PC	Printer	Projector	Monitor	Dotmatrix Pri.	Ducting Cooler	Exhaust Fan	Wall Fan	AC Split	Ducting AC	Speaker	CRO	Water cooler	Zerex M/C	Calibration M/c	Napli n/m/c
			T5	20w	36x2																					
First Floor																										
1	HOD Office	2				1	2	2	4		1	1				1			1					1		
2	HOD Office	4						2	4		1	1														
3	Dept. Library	6							7		1		1				6	2								
4	Faculty Room	11						6	17		14			1		1										
5	Toilet		2													1										
6	Faculty Room		2								1	1					2									
7	Conference Hall	12						8	18		1		1						1	6						
8	PG Lab 102	6						4	14		25								1							
9	Faculty Room 101	2							6		3						3	1								
10	Faculty Room 110	3					2		5		2	1						1								
11	PG Lab 111	7						6	14		23		1													
12	Electronics measurement 116	6						6	14		8											10				
13	AIC Lab 115	7		1				6	14		8											26				
14	Passage						3		13													1				
Ground Floor																										
16	Reserch Lab	3							6		10														1	
17	Microprocessor Lab	12				1		10	7		37						2		1		2					
18	DSD Lab 005 B	12						10	8		47	1	1		1		2				2					
19	Gents Toilet			1												1										
20	Passage Right						3		19																	
21	Passage Left						2		14														1			
22	Workshop Lab	6	2	4							12			1							2	4				
23	Electronics Device 007B	11	6	5					4		11											8				
Second Floor																										
25	Class Room 206	7	3	5						1	1		1													
26	Class Room 207	7		8				2			1		1													
27	Class Room 208	11						10	12		1		1													
28	Class Room 209	7		5				2		1	1		1													
29	Class Room 210	7	1	7						1	1		1													
30	Class Room 211	8	3	4						1	1		1													
31	Class Room 212	3	1	1						1	1		1													
32	Passage Left		1				3		13							1						1				
33	Girls Common Room								4								2									1
34	Students Activity Room								2								1									
35	Passage Right						4		23							1						1				
Third Floor																										
37	ET 325	6						2	12		25															
38	Distance Education center 302	3						6	10		1		1						1							
39	Class Room 315	3		2							1		1													
40	Class Room 315 B	3		2							1		1													
41	Passage left						3		4																	
42	Toilet			1												1							1			
43	Deshmukh sir Store Cabin	1		1	1			1			2	1			1											
44	Issue Counter	2		3							1	1			1											
45	Store Room		1	9																				1		
46	Passage	1		3																						
47	Vastage Room	1		1																						
48	Out Side	0		2																						
49	Total	180	22	65	1	1	23	83	261	5	243	7	14	3	2	2	6	18	6	3	8	50	5	2	1	1
50	Watts	60	28	20	72	6	18	72	36	36	150	100	100	100	###	300	60	2000	2000	100	50	1500	500	100	200	
51	Total Watts	###	616	1300	72	6	414	5976	9396	180	36450	700	1400	300	###	1800	1080	12000	6000	800	2500	7500	1000	100	200	
52	Per day Hrs	7	7	7	7	2	7	7	7	7	7	1	2	24	2	12	7	7	2	2	1	7	1	1	1	
53	Per Month KWH	1890	108	228	13	0.3	72	1046	1644	31.5	6379	17.5	70	180	200	540	189	2100	300	40	62.5	1313	25	2.5	5	

Table No. 38: List of Electrical Equipments at Department of Electronics and Telecommunication

Sr no.	Name of Lab	Fan 60 w	Tube light		LED 6 W	LED 18 w	CFL 36x2 W	CFL 18x2 w	Tube Light 36 w	PC	Printer	Projector	Monitor	Ducting Cooler	TV	Exhaust Fan	Wall Fan	AC Split	Speaker	CRO	Zero M/C	Hand Drill m/c
			T5	20																		
Ground Floor																						
1	Electronics Device 01	6	2	7						10										6		
2	Cumunication Lab	11		4			6	4	5						8					10		
3	Micro vave Lab	9	5	8			1			1										10		
4	Programing 001A	12					10	6		41		1					1	1				
5	Digital Signal 002A	12					10	6		42		1	1				1	1				
6	Faculty Room	1		1						1							1					
7	Passage							10							1							
First Floor																						
8	Dept. Library119	3						10		1		1							2			
9	HOD Office 118	3						10		3	2		2						1		1	
10	Faculty Room 117	3		1		1		8		4	2								2			
11	Faculty Room 112	11		1		1	6	20		15	3			2		1	5					
Second Floor																						
12	ETC Dept.218	3		3				3	7	1							1					
13	Class Room 217	7	1	5				1	1		1											
14	Class Room 216	7		7				3	1		1											
15	Class Room 215	7	1	3				5	1		1											
16	Class Room 201	10					9	12		1		1								2		
17	Class Room 202	7			1	5	9			1		1										
18	Class Room 203	7		6				1	1		1											
Third Floor																						
19	Class Room318	3	1	1																		
20	PG Lab321	7	1	7				1	21	1												
21	Anolog Circuit 317	6	2	3					5											10		
22	Project Lab 322	6	2	2					6											3		2
23	Class Room 316	6	10																			
24	Class Room 323	8	1	6																		
25	Class Room 324	3	2	2																		
26	Faculty Room 313	4					4	6		3							1					
27	Faculty Room 311	4					4	6		3	1											
28	Lab 309	4					4	12		5							1	1				
29	Conference Hall 304	16					8	17		1	1			2						4		
30	Class Room 308	6					6	2														
31	Micro Controler 307	6					6			23	1								1			
32	Toilet			1													1					
33	Passage					3		23								1						
34	Total	198	28	68	0	6	79	161	19	198	12	9	3	4	9	3	11	9	6	39	1	2
35	Watts	60	28	20	6	18	72	36	36	150	100	100	100	2000	200	300	60	2000	100	50	500	100
36	Total Watts	11880	784	1360	0	108	5688	5796	684	29700	1200	900	300	8000	1800	900	660	18000	600	1950	500	200
37	Per day Hrs	7	7	7	2	7	7	7	7	7	2	2	24	2	2	12	7	7	2	2	2	1
38	Per MonthKWH	1995.8	132	228	0	18	955.6	974	115	4990	57.6	43.2	173	384	86.4	259.2	111	3024	29	93.6	24	4.8

Table No. 39: List of Electrical Equipments at Department of Information Technology

Sr no.	Name of Lab	Fan 60 w	Tube light		CFL 1x18 w	LED 18 w	PC	Printer	Projector	Monitor	Ducting Cooler	TV	Exhaust Fan	Wall Fan	AC Split	Zero x M/C
			T5	20												
Second Floor																
1	Software Engg Lab	10			14		20									
2	Advance NetWorking	6			13		20									
3	Project Lab	10			14		21	1		1						
4	Staff Room	1			3	1	1									
5	Staff Room 2				8		2	1						3		
6	Ladies Toilet		2	2									1			
7	Passage				18						5	1				
8	HOD Office				11		2	2		1					1	1
9	Dept. Library	3			8		2		1						2	
10	ACL Lab	8			15		22	1						1	1	
11	Tutorial Room	3			8				1							
12	IT Staff Room 1	10			14		23									
Third Floor																
13	Open Source Lab	10			14		21		1							
14	Com. Program Lab2	7			13		20									
15	Com. Program Lab1	10			14		22			1						
16	Staff Room 3	2		2			5	1						3		
17	Gentes Staff Room															
18	Class Room 309		3	1												
19	Class Room 302	9	4	2					1							
20	Class Room 301	9	4	3					1							
21	Tutorial Room	9	3	5					1							
22	Passage	2	2	1					1							
23	311			8		6					3					
First Floor																
24	Class Room 102	6	1	3												
25	Class Room 107	6	2	3												
26	Class Room 105	6	2	3												
27	Toilet			2												
28	Passage		5	2												
29	Student Activity															
30	Engg Graphics															
31	Total	127	28	37	167	7	181	6	7	3	8	1	1	7	4	1
32	Watts	60	28	20	18	18	150	100	100	100	2000	200	300	60	2000	500
33	Total Watts	7620	784	740	3006	126	27150	600	700	300	16000	200	300	420	8000	500
34	Per day Hrs	7	7	7	7	7	7	1	2	24	2	2	12	7	7	2
35	Per MonthKWH	1280	132	124	505	21	4561	14	33.6	173	768	9.6	86.4	70.6	1344	24

Table No. 40: List of Electrical Equipments at Department of Old Science

Sr no.	Name of Lab	Fan 60 w	Tube light			CFL 18x2 w	LED 15 w	LED 9 w	PC	Printer	Scanner	Monitor	Water Cooler	Exhaust Fan	Wall Fan	AC Split	Oven	Oven	sodium lamp
			T5	36	LED 20														
Ground Floor																			
1	SC-004	1	1	1				3						1					
2	SC-006	1			2			1	1										
3	SC-005	1			2			1	1										
4	Porch				1														
5	Gentes Toilet				1								1						
6	Students Toilet				1								1						
7	Class Room	6			8														
8	Class Room	6	1	6	6														
9	Chemistry Lab	1			2														
10	Chemistry Lab	6		8	3								2			2	1		
11	Staff Room	1		3	1			1											
12	Class Room	2		1	2														
13	Staff Room	3	2	2	1			4											
14	Class Room	9	1			16													
15	Passage				4							1							
First Floor																			
16	Cabin	1		2				3	1					2					
17	Cabin	1		2				1	1	1	1								
18	Cabin	1		1	1			2	1					1					
19	Toilet Gents				1								2						
20	Ladies Toilet				1								1						
21	Class Room	7		4	2														
22	Lab	6		9	3			1									1		
23	Class Room	10				16													
24	Lab	6	1	8	3														
25	Dark Room	2		2									1						5
26	Staff Room	1	1	2				1											
27	Lab	1		1															
28	Lab	1		2				1											
29	Lab	2	2										1						4
30	Passage			2	2														
Second Floor																			
31	Room no-205	2		1	2			2	1										
32	Room no-206	1			2			1						1					
33	Room no-207	1	1		1			2	1										
34	Room no-208	7	2	3	2														
35	Gentes Toilet				1								1						
36	Students Toilet				1								1						
37	Language Lab	6					12	36	1						3				
38	Class Room	7	1	2	3														
39	Class Room	10				12													
40	Class Room	9		1	4														
41	First year co-or	1					3												
42	Passage	1	2		3														
Third Floor																			
43	Toilet Gents				1								1						
44	Ladies Toilet				2								2						
45	Staff Room	4					7	5											
46	Class Room	7						15											
47	Room 304	5						3											
48	Room 303	9						15											
49	Room 310	9						15											
50	Room 311	5						12											
51	Room 301	9						16											
52	Room 302	7					6	5	1										
53	Total	175	15	63	69	44	15	89	70	9	1	1	1	14	5	3	3	1	9
54	Watts	60	28	36	20	36	15	9	150	100	100	100	1500	300	60	2000	2000	1000	250
55	Total Watts	10500	420	2268	1380	1584	225	801	10500	900	100	100	1500	4200	300	6000	6000	1000	2250
56	Per day Hrs	7	7	7	7	7	7	7	7	1	1	24	7	12	7	7	2	2	2
57	Per MonthKWH	1764	71	381	231.8	266	38	135	1764	22	2.4	57.6	252	1210	50.4	1008	288	48	108

Table No. 41: List of Electrical Equipments at Department of Mechanical

Sr no.	Name of Lab	Fan 60 w	Tube light				L 36x	18x2 w	PC	Printer	Sector	Monitor	Cooler	Exhaust Fan	dow AC	AC Split	x M/C	ary M/C
			T5	36	36x2	20												
Ground Floor																		
1	Mech Dept. Library	4		6		2			3	1								
2	Toilet 010					1								1				
3	Toilet 009					1								1				
4	Lab	4		1	3	2			3									
5	Class Room	2		2					1									
6	Cad Lab	11						24	36	1	1				3			
7	First Floor																	
8	HOD Office 109	2		1		1			1			2				1		
9	Staff Room 107	1				2			1	1								
10	Room No 108	1		2													1	
11	Class Room 106	8					6		1		1							
12	Class Room 101A	2		3														
13	Class Room 101B	2		2		2												
14	Staff Room 102	2	1	1		2			6	1								
15	Center of Excellence 105A+	2		6			6		10						4			
16	Lab 103	4		6														
17	Lab 104A	2	1			1												
18	Lab 104	5		10														
19	Passage	1		1		1								1				
20	Toilet Ladies 111					1												
21	Gentes Toilet 110			1										1				
Second Floor																		
22	Class Room 206	5	3	4		1												
23	Class Room 202	7	1	5														
24	Class Room 205	5		3		3												
25	Class Room 201	9					11											
26	Class Room 204	7		4		5								1				
27	Staff Room 203	2	1	1		2			3									
28	Staff Room 209	2				2			3									
29	Room No 208	1		1		1												
30	Room No 207	1		1		1												
31	Toilet 210					1												
32	Toilet 211					1								1				
Third Floor																		
33	Class Room 307	9				10												
34	Class Room 303	9				9												
35	Class Room 306	9				10												
36	Class Room 305	9				10												
37	Class Room 301	9				10												
38	Class Room 302	6				2			9									
39	Class Room 304	2				2			1	1								
40	Passage					6												
41	Boys Toilet					1												
42	Toilet 309					1												
43	Staff Room 308	4				2												2
44	Total	149	7	61	3	96	12	35	78	5	2	2	1	7	4	4	1	2
45	Watts	60	28	36	72	20	72	36	150	100	100	100	1500	300	2000	2000	500	1000
46	Total Watts	8940	196	###	216	###	864	1260	11700	500	200	200	1500	2100	8000	8000	500	2000
47	Per day Hrs	7	7	7	7	7	7	7	7	1	1	24	7	12	7	7	1	1
48	Per MonthKWH	1502	33	369	36	323	145	212	1966	12	4.8	115	252	604.8	1344	1344	12	48

Table No. 42: List of Electrical Equipments at Department of Electrical

Sr no.	Name of Lab	Fan 60 w	Tube light		LED	LE D 15 w	LE D 12 w	CFL 36x 2	CFL 18x2 w	PC	Printer	Projector	Wall Fan	Exhaust Fan	AC Split	Motor 5 hp	Load 5 kw	Reh ostate 500 w	Load 10 kw	Rheo state
			T5	36																
1	Ground Floor																			
2	EL 001	2		1	2					2										
3	EL 002	8			9					10										
4	EL 003	2				2	2		9	3	2				1					
5	EL 004	4							12						2					
6	EL 005	4	1	5	26					26		1			2					
7	EL 012	4		7																1
8	EL 006	10	8	4	1					1						30	2	4	1	
9	EL 011	2																		
10	EL 007 A+B	8			40			24	40		1									
11	EL 010	2		8								7	2							
12	EL 008	4		10	1					1						1				
13	EL 009	4	1	7	1					1						8				
14	Passage			1																
15	Toilet & Pannel												1							
16	EL 101	2		1	2					2										
17	EL 102	4		6																
18	EL 103	7																		
19	Toilet 114 A												1							
20	Room No 202	2			4			5	4	2										
21	Staff Room	2			4			6	4				3							
22	Class Room 204	5		1																
23	EL 205 B	12	13																	
24	EL 212																			
25	EL 205A	6											1							
26	EL 213 B																			
27	EL 206	5																		
28	EL 207	6																		
29	EL 208	5		2																
30	Passage																			
31	E1 307	4						6												
32	ower Electronics La	5				5		5												
33	EL 310	5						7												
34	EL 311	7						9												
35	EL 312	2						8												
36	EL 308	4				2		6												
37	Passage					1		3												
38	Girls Toilet				1															
39	E1 304	8		6	2															
40	Total	145	23	59	93	10	2	11	89	94	4	2	10	5	5	38	3	4	1	1
41	Watts	60	28	36	20	15	12	72	36	150	100	100	60	300	2000	3730	5000	500	10000	200
42	Total Watts	8700	644	2124	1860	150	24	792	3204	14100	400	200	600	1500	10000	1E+05	15000	2000	10000	200
43	Per day Hrs	7	7	7	7	7	7	7	7	7	1	1	7	12	7	2	2	2	2	2
44	Per MonthKWH	1462	108	357	312	25	4	133	538	2369	9.6	4.8	101	432	1680	6804	720	96	480	9.6

Table No. 44: Monthly utilization of Electricity at YCCE

Sr. No.	Months /Year	Total Units (KVA)	Amount charged per unit	Amount (Rs)
1)	Apr-21	420	432	359412
2)	May-21	420	432	365617
3)	Jun-21	420	432	427189
4)	Jul-21	420	432	423614
5)	Aug-21	420	432	602329
6)	Sep-21	420	432	622316
7)	Oct-21	420	432	466118
8)	Nov-21	420	432	370953
9)	Dec-21	420	432	487675
10)	Jan-22	420	432	367540
11)	Feb-22	420	432	358635
12)	Mar-22	420	432	660372

Table No. 45: Carbon Footprint based on Electrical Consumption

Sr. No.	Months /Year	Total Units	Amount	CO ₂ Emission kt
1)	Apr-21	420	359412	357
2)	May-21	420	365617	357
3)	Jun-21	420	427189	357
4)	Jul-21	420	423614	357
5)	Aug-21	420	602329	357
6)	Sep-21	420	622316	357
7)	Oct-21	420	466118	357
8)	Nov-21	420	370953	357
9)	Dec-21	420	487675	357
10)	Jan-22	420	367540	357
11)	Feb-22	420	358635	357
12)	Mar-22	420	660372	357





VII) ENERGY AUDIT: B] SOLAR ENERGY

The sun is an incredible and renewable resource that has the power to fuel life on earth and provide clean, sustainable energy to all of its inhabitants. In fact, more energy from the sun reaches our planet in one hour than is used by the entire population of the world in one year. The sun's energy can be converted into electricity through solar photovoltaic (PV) modules. The potential for solar energy is enormous, since about 200,000 times the world's total daily electric-generating capacity is received by Earth every day in the form of solar energy. Unfortunately, though solar energy itself is free, the high cost of its collection, conversion, and storage still limits its exploitation in many places. Solar radiation can be converted either into thermal energy (heat) or into electrical energy, though the former is easier to accomplish.

The college campus is having Solar panels installed on rooftop of each of the departmental building. The electricity generated is further directed to the adjacent polytechnic college premises where the required electric energy is utilized and the remaining unutilized is led to the powergrid.

The data regarding Solar energy generation was measured to understand the solar energy potential at YCCE campus.

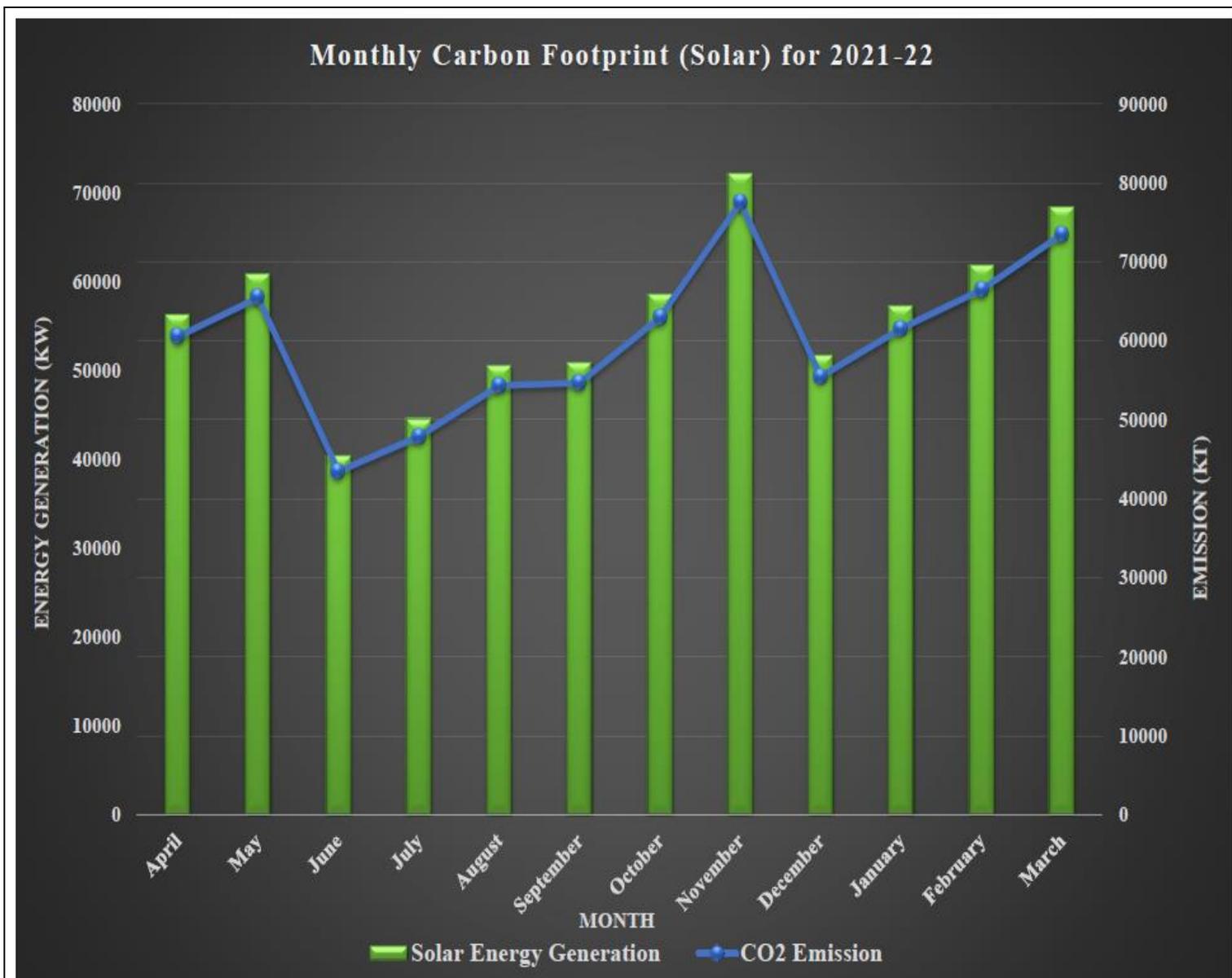
Table No. 46: Solar Energy Potential and CO₂ Emission at YCCE

Sr. No.	Bill Month	Roof top solar net metering capacity (kW)	Total Solar Energy Generation	CO ₂ Emission kt
1)	April-21	400	63294	53799.9
2)	May-21	400	68470	58199.5
3)	June-21	400	45475	38653.8
4)	Jul-21	400	50101	42585.9
5)	Aug-21	400	56843	48316.6
6)	Sep-21	400	57206	48625.1
7)	Oct-21	400	65874	55992.9
8)	Nov-21	400	81062	68902.7
9)	Dec-21	400	58036	49330.6
10)	Jan-22	400	64382	54724.7
11)	Feb-22	400	69513	59086.1
12)	Mar-22	400	76849	65321.7

* kW - KiloWatts

kt - Kiloton

Emission factor – 0.85



Graph No. 4: Monthly Carbon Footprint (Solar)



Image No. 7: Rooftop Solar Panels Installed



VII) ENERGY AUDIT: C] SOUND LEVEL

Sound is all around us and can be measured to inform and protect us, as some sounds are not safe. In fact, loud noise can be very damaging to hearing. The level of noise, where a person is in relation to the noise (distance to the noise), and the amount of time they listen to it can all result in risk for hearing loss. Sound can be measured with a device called a decibel meter. It samples and measures sound, giving a readout. Decibel meters (also called sound-level meters) can even be accessed on a smartphone through apps. Sound is measured in units called decibels (dB). The higher the decibel level, the louder the noise. On the decibel scale, the level increase of 10 means that a sound is actually 10 times more intense, or powerful. A Sound Level Meter (SLM) is an instrument (commonly hand-held) that is designed to measure sound levels in a standardized way.

The noise level was measured at different locations within the campus to understand the noise pollution level points and the calm zones. This help understand the sound level conforms to the prescribed range in daytime and night time in the educational institute.



Satellite Imagery No. 12: Sampling Locations of Sound Component

Table No. 47: Sound Level Standard

CPCB Standards of Noise Levels					
Rural	Sub-Urban	Residential (Urban)	Urban (Residential & Business)	City	Industrial
25-35	30-40	35-45	40-50	45-50	50-60

Table No. 48: Noise Quality Standards

		Noise level in Leq dB (A)	
		Day Time	Night Time
1)	Industrial Area	75	70
2)	Commercial Area	65	55
3)	Residential Area	55	45
4)	Silence Zone	50	40

Source: Notification of MoEF, dated 26-12-1989

Note:

1. Day time is reckoned between 6 a.m – 10 p.m
2. Night time is reckoned between 10 p.m – 6 a.m
3. Silence Zone is defined as areas upto 100 m around premises as hospitals, educational institutions and courts. The silence zones are to be declared by Competent Authority. Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these Zones.
4. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the Corresponding standards shall apply.

Table No. 49: WHO Guidelines for Sound Level

Specific Environment	Time Base (hours)	Standards limits as per WHO guidelines	
		LAeq (dB)	LAm _{ax} , fast (dB)
Outdoor living area	16	50-55	-
Dwelling, indoors, inside bedrooms	16	30	-
	8	35	45
Outside Bedrooms	8	45	60
School Classrooms and preschool, indoors	During class	35	-
Preschool bedrooms, indoors	Sleeping time	30	45
School playground, outdoors	During play	55	-
Hospital, ward rooms, indoors	8	30	40
	16	30	-
Hospital, Treatment rooms, indoors	-	As low as possible	-
Industrial Commercial, shopping and traffic areas, indoors and outdoors	24	70	110
Ceremonies, festivals and entertainment events	4	100	110

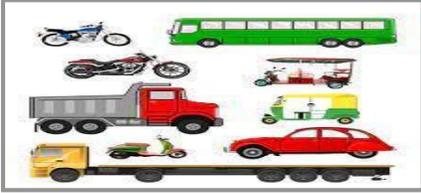
Public addresses, indoors and outdoors	1	85	110
Music through headphones and earphones	1	85 (under headphones, adapted to free-field valued)	110
Impulse sounds from toys, fireworks and firearms	-	-	120-140 (peak sound pressure) not LAmax, fast), measured 100 mm from the car)
Outdoor in parkland and conversation areas	-	Exiting quite outdoor areas should be preserved and the of intruding noise to natural background sound should be kept low	-

Source: <http://cpcb.nic.in/who-guidelines-for-noise-quality>

Table No. 50: Quantitative Characteristics of Noise Level at YCCE

Sr. No.	Locations	Noise level (Day Time)	Noise level (Night Time)
1)	Location 1	77 dB	45 dB
2)	Location 2	68 dB	42 dB
3)	Location 3	70 dB	48 dB
4)	Location 4	66 dB	47 dB
5)	Location 5	64 dB	43 dB
6)	Location 6	64 dB	45 dB
7)	Location 7	67 dB	46 dB
8)	Location 8	66 dB	49 dB
9)	Location 9	68 dB	51 dB
10)	Location 10	72 dB	50 dB

* dB - Decibel



VII) ENERGY AUDIT: D] VEHICLE

An energy audit is defined as a systematic procedure that obtains an adequate knowledge of existing energy consumption profile of the site. It is a process inspection, survey and analysis of energy flows for energy conservation in a building, process or system to reduce the amount of energy input into the system without affecting the output.

It helps to identify the factors that have an effect on the energy / power consumption. The performance of an energy audit is the essential step to the energy efficiency improvements. It is a procedure that helps to analyse the use of energy in an industries, enterprise, commercial or building. It serves to identify how a facility of factories uses energy and to identify opportunities of energy conservation. Energy audit can assist in evaluating energy efficiency, identifying energy saving opportunities and establishing a plan to implement energy saving projects.

Table No. 51: Details of Vehicle owned by YCCE for Transportation

Sr. No.	Vehicle No.	Make	Year of purchase	Seating Capacity	Fuel
1	MH 31 CQ 4296	SML	Jun-09	40	CNG
2	MH 31 EK 0747	Bolero	2013	7	Diesel
3	MH 31 CQ 8250	Tata 407	Sep-10	1+1	Diesel
4	MH 31 CQ 4294	SML	Jun-09	40	Diesel
5	MH 40 AT 0084	SML	RRA/July 2015	50	CNG
6	MH 40 AT 0124	SML	RRA/July 2015	50	Diesel
7	MH 40 Y 2169	SML	SMG REAL- 2012	40	Diesel
8	MH 49 J 1072	Tata	Ladies Hostel/2017	50	Diesel
9	MH 31 CQ 4297	SML	RRA-2009	41	Diesel
10	MH 40 AT 0125	SML	RRA/July 2015	50	CNG



VIII) WASTE AUDIT- Generation & Disposal: A) Institutional Municipal Solid Waste

Solid waste refers to the range of garbage materials arising from animal and human activities that are discarded as unwanted and useless. Solid waste is generated from industrial, residential, and commercial activities in a given area, and may be handled in a variety of ways. As such, landfills are typically classified as sanitary, municipal, construction and demolition, or industrial waste sites.

Waste can be categorized based on material, such as plastic, paper, glass, metal, and organic waste. Categorization may also be based on hazard potential, including radioactive, flammable, infectious, toxic, or non-toxic wastes. Categories may also pertain to the origin of the waste, whether industrial, domestic, commercial, institutional, or construction and demolition.

Regardless of the origin, content, or hazard potential, solid waste must be managed systematically to ensure environmental best practices. As solid waste management is a critical aspect of environmental hygiene, it must be incorporated into environmental planning.

The Institutional Municipal Solid Waste data was generated with due consideration to the number of individuals per department and the duration of day they spend at each of the department.

Institutional Municipal Solid Waste (IMSW) Standard Unit =0.147 kg/per person/day



Satellite Imagery No. 13: Institutional Municipal Solid Waste Pit

Table No. 52: Institutional Municipal Solid Waste Generation (IMSW) at YCCE

Sr. No	Name of Department	Departmental sub-categories	Teaching Faculty	Non-Teaching Staff	Students UG+PG+ Ph. D	Total no. of Individuals	Solid waste generated per department (kg)/day
1)	Administrative Office		-	122	-	122	17.934
2)	Library		-	9	-	9	1.323
3)	Applied Science and Humanities		34	8	0+0+21	63	9.261
4)	Computer Technology	M.Tech.Computer Science & Engineering	27	5	480+30+9	569	80.997
5)	Electronics Engineering	M.Tech . Electronics Engineering	30	6	480+67+5	588	86.436
6)	Electronics & Telecommunication Engineering	M.Tech .Communication Engg	37	6	720+30+8	795	116.865
7)		M.tech .CAD-CAM					
8)	Electrical Engineering	M. Tech . Integrated Power Systems	46	4	660+30+5	793	109.515
9)	Information Technology		24	4	360+18+10	296	61.152
10)	Mechanical Engineering		47	1	660+43+6	817	111.279
11)	Civil Engineering	M.Tech Environmental Engg	50	7	660+86+9	829	119.364
		M.Tech . Structural Engg					
Total							714.126

Henceforth,

Total Institutional Municipal Solid Waste (IMSW) = **714.126** kg
generated at YCCE per day

Waste generated for Session 2021-2022 (April 2021 to March 2022) = 714.126 kg*365 days
= 260655.99 kgs/yr

Institutional Municipal Solid Waste Management Plan

- ❖ Future Projections
 - Population Forecast of College
 - Anticipated Lifestyle Changes
 - Change in Socio-economic Status
- ❖ Conformation to Rules, Regulations and Municipal Bye-Laws
- ❖ Stakeholders Participation/Information, Education and Communication (IEC)
- ❖ Institutional and Financial Structuring
 - Timeline
 - Manpower Requirement
 - Financial Viability
- ❖ Storage, Collection, Transportation
- ❖ Identification of Land within campus
- ❖ Selection of Process and Best Available Technology for Processing and Disposal



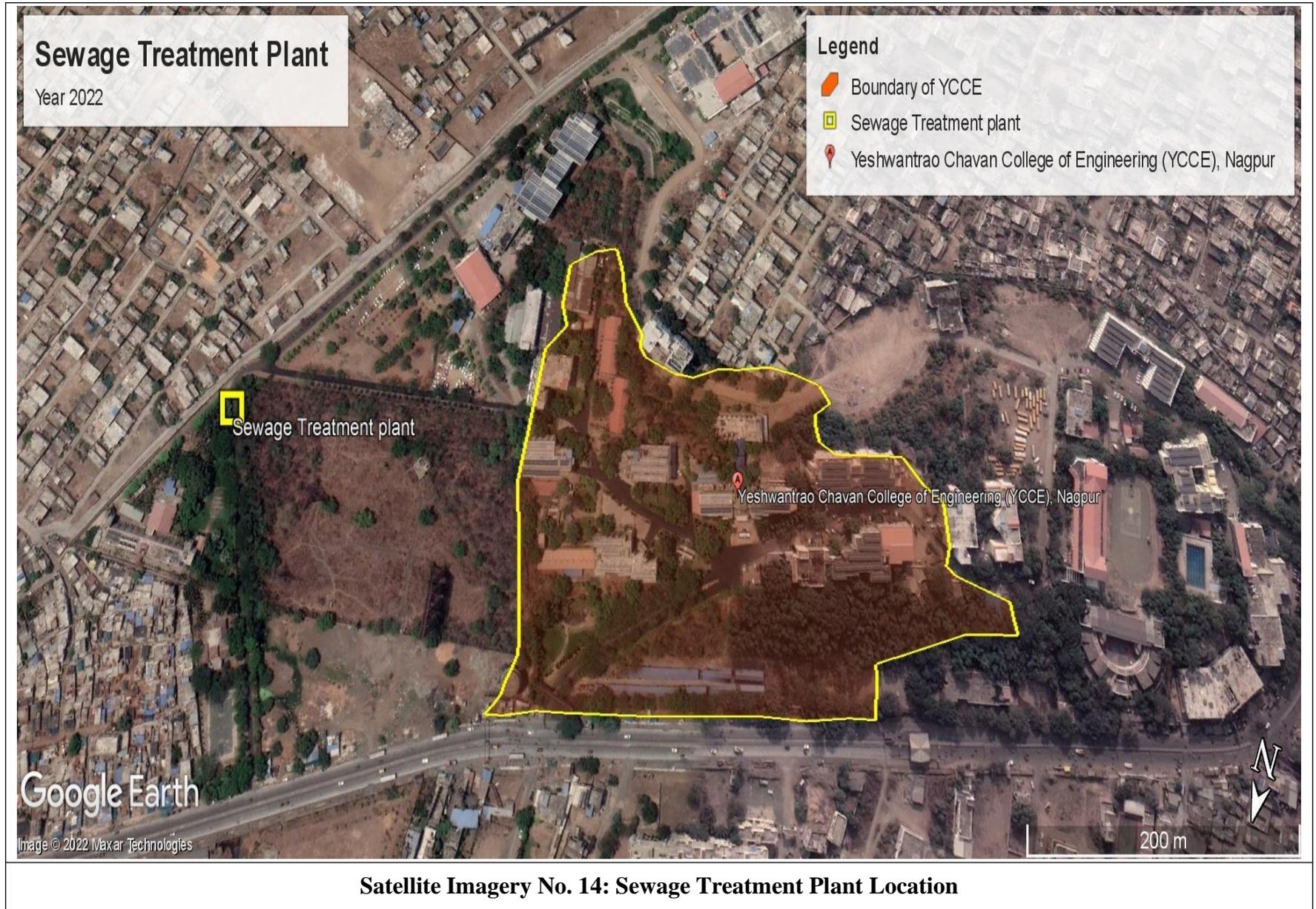
VIII) WASTE AUDIT- Generation & Disposal: B) Municipal Sewage

Wastewater or sewage is the byproduct of many uses of water. There are the household uses such as showering, dishwashing, laundry and, of course, flushing the toilet. The sewer or collection system is designed so that it flows to a centralized treatment location. The collection system is comprised of smaller sewers with a diameter of about four inches. We need to remove the wastewater pollutants to protect the environment and protect public health. When water is used by our society, the water becomes contaminated with pollutants. If left untreated, these pollutants would negatively affect our water environment. For example, organic matter can cause oxygen depletion in lakes, rivers, and streams. Waterborne diseases are also eliminated through proper wastewater treatment. Sewerage (or sewage system) is the infrastructure that conveys sewage or surface runoff (storm water, rainwater) using sewers. It encompasses components such as receiving drains, manholes, pumping stations, storm overflows, and screening chambers of the combined sewer or sanitary sewer. Sewerage ends at the entry to a sewage treatment plant or at the point of discharge into the environment. It is the system of pipes, chambers, manholes, etc. that conveys the sewage or storm water.

The YCCE campus has a own Sewage Treatment Plant (STP) with 1,25000 lpd capacity with the regeneration of treated water further subjected to gardening and waging as well as flushing activities. The college has a combined type of efficient wastewater collection system well connected to all the departments and administration building for conveyance of wastewater. The downhill location of STP is selected to utilize the benefit of elevation and henceforth the conveyance of sewage and wastewater flows by gravity to STP.

The STP has inclusion of unit processes:

- 1) Primary Treatment
- 2) Secondary Treatment and
- 3) Tertiary Treatment



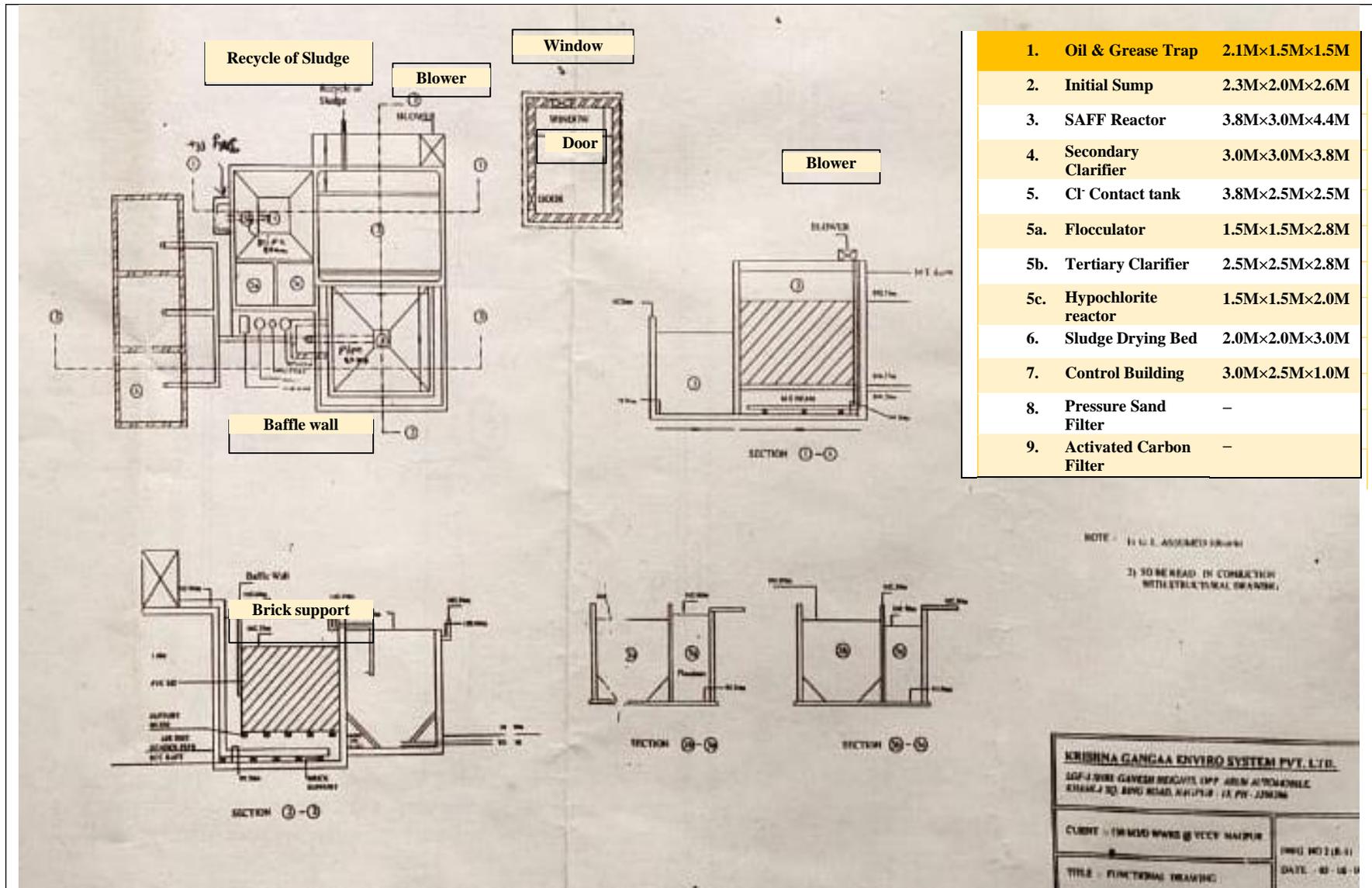
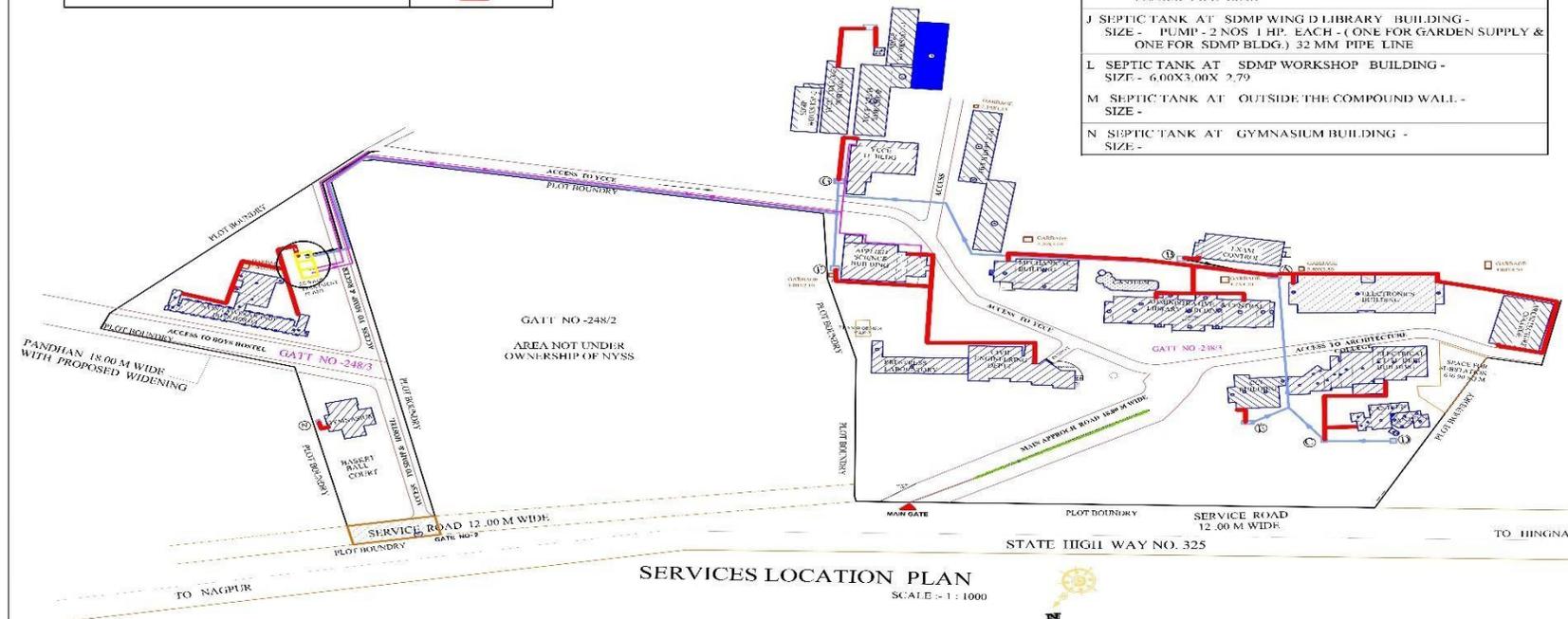


Image No. 8: Sewage Treatment Plant Design and Description

NOTE	
HDPE 110 MM PIPE	
HDPE 90 MM PIPE	
HDPE 63 MM (CLEAR WATER)	
HDPE 32 MM PIPE	
GARDEN SUPPLY CONNETION	
SEWAGE LINE	
GARBAGE	
SEWAGE TREATMENT PLANT	
MAN HOLE	

INDEX	
A	SEPTIC TANK AT ELECTRONICS BUILDING - SIZE -6.47X3.47X2.45 PUMP - 7.50 H.P. - 110 MM PIPE LINE TO NEW SCIENCE BUILDING
B	SEPTIC TANK AT YCCE PG & RESEARH BUILDING - SIZE: -5.62 X3.37X2.05, PUMP -1.00 H.P. - 90 MM PIPE LINE CONNECTED TO ELECTRONICS BUILDING SEPTIC TANK.
C	SEPTIC TANK AT ELECTRICAL BUILDING - SIZE -2.77 X2.00 X2.45, PUMP -1.00 H.P. - 110 MM PIPE LINE CONNECTED TO ELECTRONICS BUILDING SEPTIC TANK.
D	SEPTIC TANK BEHIND CANTEN BUILDING - SIZE -3.00 X3.00 X 1.90, PUMP -1.00 H.P. - 110 MM PIPE LINE
E	SEPTIC TANK BEHIND CCC BUILDING - SIZE -6.00 X2.24 X 1.80, PUMP -1.00 H.P. - 110 MM PIPE LINE
F	SEPTIC TANK AT OLD SCIENCE BUILDING - SIZE -3.77 X2.77 X 2.45, PUMP -NIL.(WATER SUPPLY BY GRAVITY)- 110 MM PIPE LINE
G	SEPTIC TANK AT NEW SCIENCE BUILDING - SIZE -4.80 X2.70 X 2.20, PUMP -NIL.(WATER SUPPLY BY GRAVITY)- 110 MM PIPE LINE
J	SEPTIC TANK AT SDMP WING D LIBRARY BUILDING - SIZE - PUMP - 2 NOS 1 HP. EACH - (ONE FOR GARDEN SUPPLY & ONE FOR SDMP BLDG.) 32 MM PIPE LINE
L	SEPTIC TANK AT SDMP WORKSHOP BUILDING - SIZE - 6.00X3.00X 2.70
M	SEPTIC TANK AT OUTSIDE THE COMPOUND WALL - SIZE -
N	SEPTIC TANK AT GYMNASIUM BUILDING - SIZE -



Map No. 3 : Sewer Line Drainage Map

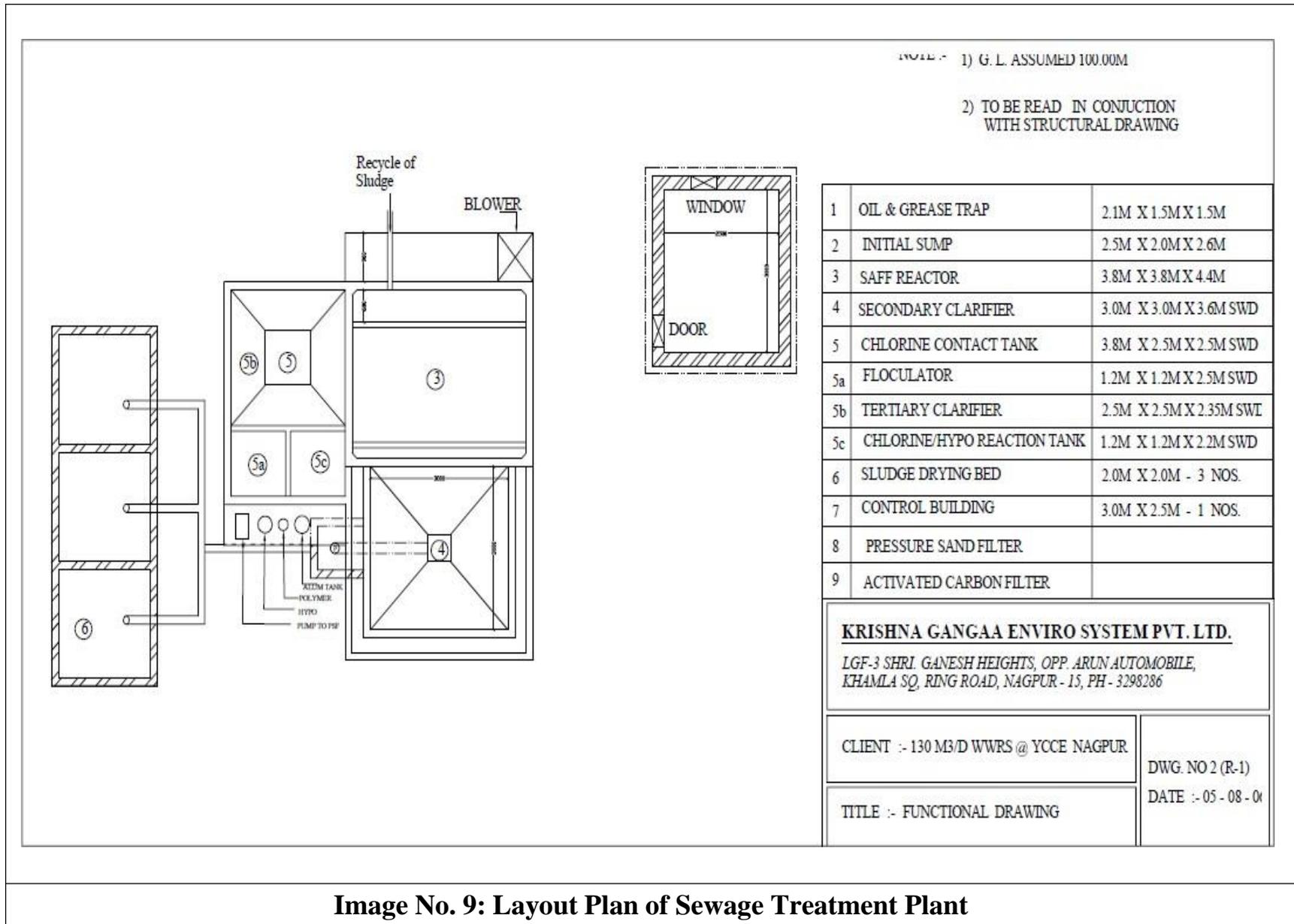


Image No. 9: Layout Plan of Sewage Treatment Plant

Table No. 53: Sewage Standards

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE New Delhi, the 13th October, 2017				
Sr. No.		Parameters	Standards	
			Effluent discharge standards (applicable to all mode of disposal)	
			Location	Concentration not to exceed
			(a)	(b)
1)	Sewage Treatment Plant	pH	Anywhere in the country	6.5-9.0
2)		Bio-Chemical Oxygen Demand (BOD)	Metro Cities*, all State Capitals except in the State of Arunachal Pradesh, Assam, Manipur, Meghalaya Mizoram, Nagaland, Tripura Sikkim, Himachal Pradesh, Uttarakhand, Jammu & Kashmir, and Union territory of Andaman and Nicobar Islands, Dadar and Nagar Haveli Daman and Diu and Lakshadweep	20-30
3)		Total Suspended Solids (TSS)	Same as above [(2)-BOD]	50-100
4)		Fecal Coliform (FC) (Most Probable Number per 100ml, MPN/100ml)	Anywhere in the country	<1000

Table No. 54: Qualitative and Quantitative Characteristics of Sewage at YCCE

Sr. No.	Parameters	Unit	Result		Limit	Method Reference
			STP Inlet	STP Outlet		
1)	pH	–	7.7	8.1	–	APHA 23 rd Ed. 2017, 4500-H ⁺ - B, 4-95
2)	Total Dissolve Solids	mg/L	324	310	–	IS 3025 (Part 16): 1984 Reaffirmed 2006, Ed.2.1 (1999-12)
3)	Total Suspended Solids	mg/L	46	24	100 Max	APHA 23 rd Ed. 2017, 2500-D, 2-70
4)	Chlorides (as Cl ⁻)	mg/L	44	48	–	APHA 23 rd Ed. 2017, 4500-Cl- B, 4-75
5)	Sulphates (as SO ₄)	mg/L	42.6	56.4	–	APHA 23 rd Ed. 2017, 4500-SO ₄ -E,4-199
6)	Dissolved Oxygen	mg/L	4.1	6	–	APHA 23 rd Ed. 2017, 4500-O,B,4-144&C,4-146
7)	Bio-chemical Oxygen Demand	mg/L	8	5.9	100 Max	IS 3025 (Part 44): 1993, Reaffirmed 2009
8)	Chemical Oxygen demand	mg/L	41	22	–	APHA 23 rd Ed. 2017, 5220-B,5-18
9)	Oil & Grease	mg/L	Not Detected	Not Detected	–	IS 3025 (Part 39): 1991, Reaffirmed 2009, Amds.1



Image No. 10: Sewage Treatment Plant

Table No. 55: Qualitative & Quantitative Parameters of Recycle Water Source at YCCE

Sr. No	Characteristics Parameters	Values
1)	Odour	Agreeable
2)	Colour	<1 Hazen
3)	pH	8.10
4)	Electrical Conductivity mS/cm	0.76
5)	Water Temperature	22
6)	Relative Density	1
7)	Carbonate	Absent
8)	Bicarbonate (HCO₃)	9.40
9)	Sodium (meq/L)	4.23
10)	Calcium (meq/L)	1.60
11)	Magnesium (meq/L)	4.0
12)	Potassium (meq/L)	0.01
13)	Chloride (meq/L)	48
14)	Sulphate (mg/L)	Absent
15)	Sodium Absorption Ratio (SAR)	2.52
16)	Residual Sodium Carbonate (RSC)	3.80

Biogas Technology

The college campus has two canteens, with their own individual mess, where daily generated kitchen waste is subjected for Biogas generation. For harnessing the maximum energy pre-digester tank in which any type of kitchen waste, manure etc. is fermented, has been installed. In order to maintain the temperature of biogas plant the solar water heater fully home made using copper coil and glass has also been used.

Biodigester consist a plastic tank of capacity 1000 liters. The retention time period for production of gas is about 30-45 days depending upon season, temperature and many other environmental factors. The biodigestion process involves the four key stages of anaerobic digestion- hydrolysis, acidogenesis, acetogenesis and methanogenesis. The overall process can be described by the chemical reaction, where organic material such as glucose is biochemically digested into carbon dioxide (CO_2) and methane (CH_4) by the anaerobic microorganisms.

The major nutrients required by the bacteria in the digester are C, H₂, O₂, N₂, P and S of these nutrients N₂ and P are always in short supply and therefore to maintain proper balance of nutrients an extra raw materials rich in phosphorus and chopped leguminous plants should be added along with the cow dung to obtain maximum production of gas.



Image No. 11: Biogas Digester at YCCE



Satellite Imagery No. 15: Location of Biogas Plant at YCCE

Use of food crusher helps in reducing the solid contents in the feedstock, which makes the anaerobic digestion process faster, resulting in increase in output of gas. In Biogas model by considering the size and capacity of the digester tank by 7 Kg of feedstock daily. The feedstock is fed daily and in 1:2 proportion with water and feedstock. Since bacteria in the digester have very limited reach to their food it is necessary that slurry is properly mixed and bacteria get their proper supply. The biogas generation process is highly depends upon the C/N ratio of the feedstock. Higher the C/N ratio higher will be the production. The temperature affects in large extent to the gas production. It is found that the production of gas is faster in summer days as compared to winter days.



VIII) WASTE AUDIT- Generation & Disposal : C) Sanitation Utilities

Rapid population growth, urbanisation, climate change, pollution and inadequate financing, present unprecedented challenges to the provision of water and sanitation services.

Improving and managing universal services of water and sanitation in a holistic manner is critical to achieving the Sustainable Development Goals, and addressing the needs of millions of people around the world. To do so, it must take into account social, economic and environmental factors, while adapting to climate change risks to ensure the resilience of water and sanitation systems.

In 2020, 54% of the global population (4.2 billion people) used a safely managed sanitation service; 34% (2.6 billion people) used private sanitation facilities connected to sewers from which wastewater was treated; 20% (1.6 billion people) used toilets or latrines where excreta were safely disposed of in situ; and 78% of the world's population (6.1 billion people) used at least a basic sanitation service.

Benefits of improved sanitation extend well beyond reducing the risk of diarrhoea. These include:

- ✓ reducing the spread of intestinal worms, schistosomiasis and trachoma, which are neglected tropical diseases that cause suffering for millions;
- ✓ reducing the severity and impact of malnutrition;
- ✓ promoting dignity and boosting safety, particularly among women and girls;
- ✓ promoting school attendance: girls' school attendance is particularly boosted by the provision of separate sanitary facilities;
- ✓ reducing the spread of antimicrobial resistance;
- ✓ potential recovery of water, renewable energy and nutrients from faecal waste; and
- ✓ potential to mitigate water scarcity through safe use of wastewater for irrigation especially in areas most affected by climate change.

Table No. 56: Department-wise Provision of Sanitary Utilities

Sr. No.	Name of Department		Toilet					Washrooms		Wash Basin		Pad M/C
			Male			Female		Male	Female	Male	Female	
			WC	Seat	Urinal	WC	Seat					
1)	CSE Building	Ground Floor	0	1	3	1	0	1	1	1	1	0
		1st Floor	0	0	0	1	2	0	2	0	2	0
		2nd Floor	1	2	3	0	0	2	0	2	0	0
		3rd Floor	0	1	0	0	0	1	0	1	0	0
2)	IT Building	Ground Floor	1	0	0	3	1	1	2	1	3	1
		1st Floor	2	0	3	0	0	2	0	4	0	0
		2nd Floor	6	0	0	3	0	2	1	2	2	0
		3rd Floor	1	1	3	0	0	2	0	3	0	0
3)	Old Science Building	Ground Floor	1	2	8	0	0	3	0	3	0	0
		1st Floor	0	0	0	2	2	0	2	0	2	1
		2nd Floor	0	2	8	0	0	2	0	2	0	0
		3rd Floor	1	0	4	2	0	1	1	2	2	0
4)	Civil Building	Ground Floor	1	1	6	1	0	2	1	3	1	1
		1st Floor	0	0	0	2	0	1	1	0	0	0
		2nd Floor	0	1	6	0	0	1	0	2	2	0
		3rd Floor	0	0	0	2	1	1	1	2	0	0
5)	Mechanical Building	Ground Floor	1	2	9	0	0	3	0	2	0	0
		1st Floor	0	1	2	2	1	1	1	1	1	0
		2nd Floor	0	0	6	0	0	2	0	2	0	0

		3rd Floor	0	1	4	1	1	1	1	1	1	1
6)	Administrati on Building	Ground Floor	1	0	2	1	0	2	1	3	1	0
		1st Floor	5	0	2	0	2	5	1	6	2	0
		2nd Floor	2	0	1	0	2	2	1	2	1	0
		3rd Floor	2	0	3	3	0	2	2	2	2	0
7)	COE Building	Ground Floor	1	1	3	1	3	2	1	3	2	0
		1st Floor	2	0	3	1	0	2	1	3	2	0
8)	Electronics Building	Ground Floor	3	2	4	3	2	2	2	3	3	0
		1st Floor	4	2	4	3	3	3	3	2	2	1
		2nd Floor	4	2	4	3	2	2	2	3	3	0
		3rd Floor	4	3	2	3	3	3	1	4	3	0
9)	Electrical Building	Ground Floor	1	1	6	0	1	2	1	1	1	0
		1st Floor	2	1	0	2	1	1	1	2	1	1
		2nd Floor	0	2	2	1	1	1	2	1	1	0
		3rd Floor	6	1	4	1	0	1	1	1	1	0
10)	CCC Building	Ground Floor	1	0	2	2	0	1	2	1	2	0
		1st Floor	1	0	3	0	1	1	1	2	1	0
11)	Workshop 1	Ground Floor	1	0	0	0	0	1	0	1	0	0
12)	Workshop 2	Ground Floor	0	2	3	2	0	1	1	1	1	0
13)	Swaragi Canteen	Ground Floor	0	1	2	0	1	1	1	1	1	0
14)	Total		55	33	115	46	30	64	39	76	47	6



IX) Fire And Safety

Fire safety is the set of practices intended to reduce the destruction caused by fire. Fire safety measures include those that are intended to prevent the ignition of an uncontrolled fire and those that are used to limit the development and effects of a fire after it starts.

Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing, and those that are taught to occupants of the building.

Threats to fire safety are commonly referred to as fire hazards. A fire hazard may include a situation that increases the likelihood of a fire or may impede escape in the event a fire occurs.

Fire safety is often a component of building safety. Those who inspect buildings for violations of the Fire Code and go into schools to educate children on fire safety topics are fire department members known as Fire Prevention Officers. The Chief Fire Prevention Officer or Chief of Fire Prevention will normally train newcomers to the Fire Prevention Division and may also conduct inspections or make presentations.

Table No. 57: Building-wise Availability of Fire Safety Systems

Sr. No.	Buildings / Unit	Fire System Availability
1)	CCC Building	Fire Hydrant, Fire Auto Detection, Fire Alarm, Fire Extinguishers
2)	Admin Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
3)	Electronics Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
4)	Exam Control Building	Fire Hydrant, Fire Auto Detection, Fire Alarm, Fire Extinguishers
5)	IT Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
6)	Mech Workshop	Fire Extinguishers
7)	Science Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
8)	Civil Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
9)	Civil lab Shed	Fire Extinguishers
10)	Mechanical Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
11)	Mechanical Lab	Fire Hydrant, Fire Alarm, Fire Extinguishers
12)	Electrical Building	Fire Hydrant, Fire Alarm, Fire Extinguishers



Fire Hydrant Valve



Fire Hydrants



Pressure Gauge

Table No. 58: Fire Safety Details of CCC Building

Name of Building & Nos. of floor		YCCE- CCC BUILDING			Date :- 09-12-2022	
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		1082.67				
Height of Building (In Mtr.)		9.9				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	5000 LTR	YES	OK
		Under ground water tank (only Sprinkler system)	yes	25000 LTR	NA	OK
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA

		Jockey pump	NO	NA	NA	NA
		Booster pump	YES	7.5 HP	YES	WORKING & Oiling greasing
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	3NOS	YES	WORKING & Oiling greasing
		Hose Reel	YES	2NOS	YES	working
		Hose Box	YES	3NOS	YES	PRESENT
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	06NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	03NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	YES	NA	YES	WORKING
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	2NOS	YES	WORKING
		Sounder	YES	2NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	2NOS	YES	WORKING
		Co2 type	YES	04NOS	YES	OK (DUE 30/09/2023 & (14/01/2023)
		Foam type	NO	NA	NA	NA
		Water type	NO	NA	NA	NA
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES		YES	OK

Table No. 59: Fire Safety Details of ADMIN Building

Name of Building & Nos. of floor		YCCE- ADMIN BUILDING		Date :- 09-12-2022		
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		3574.02				
Height of Building (In Mtr.)		11.4				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	15000 LTR	YES	OK
		Under ground water tank (only Sprinkler system)	YES	20000LTR	YES	OK
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES			DG SUPPLY CONNECTED
3		Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA

		Jockey pump	NO	NA	NA	NA
		Booster pump	YES	15 HP	YES	WORKING & oling & greasing
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	5NOS	YES	WORKING & oling & greasing
		Hose Reel	yes	4NOS	YES	WORKING
		Hose Box	YES	5NOS	YES	PRESENT
		Sprinklers	NO		NO	NA
		RRL Hose Pipe	YES	10NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	05NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	12NOS	YES	OK
		Sounder	YES	12NOS	YES	ok
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	11NOS	YES	OK (DUE 30/09/2023)& (14/01/2023)
		Co2 type	YES	3NOS	YES	
		Foam type	YES	1NOS	YES	
		Water type	NA	NA	NA	
6	Fire Bucket		NA	NA	NA	NA
7	Evacuation Plan & Signages		YES		YES	OK

Table No. 60: Fire Safety Details of Electronics Building

Name of Building & Nos. of floor		YCCE- ELECTRONICS BUILDING		12/9/2022		
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		6763.78				
Height of Building (In Mtr.)		12.3				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	1000LTR	YES	OK
		Under ground water tank (only Sprinkler system)	NO	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA

		Booster pump	YES	7.5HP	YES	WORKING
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	4NOS	YES	WORKING & oiling & greasing
		Hose Reel	YES	3NOS	YES	WORKING
		Hose Box	YES	4NOS	YES	PRESENT
		Sprinklers	NO	NA	NO	NA
		RRL Hose Pipe	YES	4NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	04NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	4NOS	YES	WORKING
		Sounder	YES	4NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	24NOS	YES	ok (DUE 30/09/2023)& (14/01/2023)
		Co2 type	YES	02NOS	YES	
		Foam type	YES	02NOS	YES	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES	NA	YES	ok

Table No. 61: Fire Safety Details of Exam Control Building

Name of Building & Nos. of floor		YCCE- EXAM CONTROL BUILDING			12/8/2022	
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		625.19				
Height of Building (In Mtr.)		7.6				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)			Fire NOC Next Renewal Date :- NA	
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	15000 LTR	YES	working
		Under ground water tank (only Sprinkler system)	NO	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA
		Booster pump	YES	10HP	YES	working

		Fire pump Panel	YES	1NOS	YES	working
		Hydrant valve	YES	5NOS	YES	working
		Hose Reel	YES	4NOS	YES	working
		Hose Box	YES	5NOS	YES	PRESENT
		Sprinklers	NO	NA	NO	NA
		RRL Hose Pipe	YES	10NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	5NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	working
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	YES	NA	YES	working
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	4NOS	YES	working
		Sounder	YES	4NOS	YES	working
		Fire Alarm Panel	YES	1NOS	YES	working
5	Fire Extinguisher	ABC type	YES	2NOS	YES	OK (DUE 30/09/2023)&(14/01/2023)
		Co2 type	YES	4NOS	YES	
		Foam type	NO	NA	NA	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES	NA	YES	OK

Table No. 62: Fire Safety Details of IT Building

Name of Building & Nos. of floor		YCCE- IT BUILDING			Date :- 07-12-2022		
Address		YCCE WANADONGRI, NAGPUR					
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER					
Area of Building (In Sq. Mtr.)		2913.64					
Height of Building (In Mtr.)		14.9					
Whether Fire Fighting System Installaed (Yes / No)		YES					
Fire NOC Received (Yes / No)		YES (Provisional)			Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks	
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	20000 LTR	YES	OK	
		Under ground water tank (only Sprinkler system)	NO	NO	NA	NA	
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NO	NA	DG SUPPLY CONNECTED	
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NO	NA	NA	
		Sprinkler pump	NO	NO	NA	NA	
		Diesel pump	NO	NO	NA	NA	
		Jockey pump	NO	NO	NA	NA	
		Booster pump	YES	7.5HP	YES	WORKING &,oiling greasing	

		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	4NOS	YES	working & oiling greasing
		Hose Reel	YES	3NOS	YES	WORKING
		Hose Box	YES	4NOS	YES	present
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	08NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	04NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NO	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NO	NA	NA
		Heat Detector	NO	NO	NA	NA
		Manual call Point (MCP)	YES	4NOS	YES	WORKING
		Sounder	YES	4NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	12NOS	YES	OK (DUE 30/09/23)&(14/01/2023)
		Co2 type	YES	3NOS	YES	
		Foam type	YES	2NOS	YES	
		Water type	NO	NO	NA	
6	Fire Bucket		NO	NO	NA	NA
7	Evacuation Plan & Signages		YES	NO	YES	OK

Table No. 63: Fire Safety Details of Mechanical Workshop

Name of Building & Nos. of floor		YCCE- MECHANICAL WORKSHOP		Date :-07-12-2022		
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		1403.55				
Height of Building (In Mtr.)		5.25				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	yes	20000 ltr	yes	oK
		Under ground water tank (only Sprinkler system)	NO	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES		yes	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA

		Booster pump	yes	7.5hp	YES	WORKING
		Fire pump Panel	yes	1 nos	YES	WORKING
		Hydrant valve	yes	02 nos	YES	WORKING
		Hose Reel	yes	2nos	YES	WORKING
		Hose Box	yes	2 nos	Yes	PRESENT
		Sprinklers	NO	NA	NA	NA
		RRL Hose Pipe	yes	4	YES	PRESENT IN HOSE BOX
		Branch pipe	yes	2 nos	YES	PRESENT IN HOSE BOX
		Two Way	yes	1 nos	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	yes	03 nos	YES	WORKING
		Sounder	yes	03 nos	YES	WORKING
		Fire Alarm Panel	NO	NA	NA	WORKING
5	Fire Extinguisher	ABC type	YES	10NOS	YES	OK (DUE 30/09/23)&(14/01/2023)
		Co2 type	NO	NA	NA	
		Foam type	NO	NA	NA	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES		YES	OK

Table No. 64: Fire Safety Details of OLD Science Building

Name of Building & Nos. of floor		YCCE- OLD SCIENCE BUILDING			Date :- 08-12-2022	
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		2594.608				
Height of Building (In Mtr.)		10.95				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	10000 LTR	YES	OK
		Under ground water tank (only Sprinkler system)	NO	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT &	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA

	SPRINKLER SYSTEM	Jockey pump	NO	NA	NA	NA
		Booster pump	YES	11/15HP	YES	WORKING & OILING & GREASING
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	4NOS	YES	WORKING & OILING & GREASING
		Hose Reel	YES	3NOS	YES	WORKING
		Hose Box	YES	4NOS	YES	PRESENT
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	08NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	03NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	4NOS	YES	WORKING
		Sounder	YES	4NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	08NOS	YES	OK(DUE 30/09/23)&(14/01/2023)
		Co2 type	YES	NA	NA	
		Foam type	YES	1NOS	YES	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES		YES	OK

Table No. 65: Fire Safety Details of CIVIL Building

Name of Building & Nos. of floor		YCCE- CIVIL BUILDING			Date :- 08-12-2022	
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		2679.83				
Height of Building (In Mtr.)		14.9				
Whether Fire Fighting System Installaed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	5000LTR	NA	OK
		Under ground water tank (only HYDRANT system)	YES	15000LTR	YES	OK
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA

		Booster pump	YES	15 hp	YES	WORKING & OILING GREASING
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	5NOS	YES	WORKING & OILING GREASING
		Hose Reel	YES	4NOS	YES	WORKING
		Hose Box	YES	5NOS	YES	PRESENT
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	10NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	04NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	4NOS	YES	WORKING
		Sounder	YES	4NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	12NOS	YES	OK (DUE 30/09/23)&(14/01/2023)
		Co2 type	YES	03NOS	YES	
		Foam type	NO	NA	NA	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES	NA	YES	OK

Table No. 66: Fire Safety Details of Civil LAB Shed Building

Name of Building & Nos. of floor		YCCE- CIVIL LAB SHED			Date :- 08-12-2022	
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		513.86				
Height of Building (In Mtr.)		3.97				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	NO	NA	NA	NA
		Under ground water tank (only HYDRANT system)	NO	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	NO	NA	NA	NA
3		Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA

	FIRE HYDRANT & SPRINKLER SYSTEM	Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA
		Booster pump	NO	NA	NA	NA
		Fire pump Panel	NO	NA	NA	NA
		Hydrant valve	NO	NA	NA	NA
		Hose Reel	NO	NA	NA	NA
		Hose Box	NO	NA	NA	NA
		Sprinklers	NO	NA	NA	NA
		RRL Hose Pipe	NO	NA	NA	NA
		Branch pipe	NO	NA	NA	NA
		Two Way	NO	NA	NA	NA
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	NO	NA	NA	NA
		Sounder	NO	NA	NA	NA
		Fire Alarm Panel	NO	NA	NA	NA
5	Fire Extinguisher	ABC type	YES	4NOS	YES	OK (DUE30/09/23)&(14/01/2023)
		Co2 type	NO	NA	NA	
		Foam type	YES	1NOS	YES	
		Water type	NO	NA	NA	
6	Fire Bucket		YES	8	YES	OK FILLED WITH SAND
7	Evacuation Plan & Signages		YES	YES	PRESENT	OK

Table No. 67: Fire Safety Details of Mechanical Building

Name of Building & Nos. of floor		YCCE- MECHANICAL BUILDING		Date :- 08-12-2022		
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		2413.03				
Height of Building (In Mtr.)		14.9				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	15000 LTR	YES	OK
		Under ground water tank (only HYDRANT system)	NO	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA

		Booster pump	YES	15HP	YES	WORKING & OILING GREASING
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	5NOS	YES	WORKING & OILING GREASING
		Hose Reel	YES	4NOS	YES	WORKING
		Hose Box	YES	5NOS	YES	PRESENT
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	10NOS	YES	PRESENT
		Branch pipe	YES	05NOS	YES	PRESENT
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NA	NA	NA
		Heat Detector	NO	NA	NA	NA
		Manual call Point (MCP)	YES	4NOS	YES	WORKING
		Sounder	YES	4NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	10NOS	YES	OK (DUE 30/09/23)&(14/01/2023)
		Co2 type	YES	1nos	yes	
		Foam type	NO	NA	NA	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES		YES	ok

Table No. 68: Fire Safety Details of Mechanical LAB

Name of Building & Nos. of floor		YCCE- MECHANICAL LAB		Date :- 07/12/2022		
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		1253.71				
Height of Building (In Mtr.)		5.25				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	NO	NA	NA	NA
		Under ground water tank (only HYDRANT system)	YES	10000LTR	YES	working
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	NO	NA	NA	DG supply connected
3		Hydrant pump	NO	NA	NA	NA

	FIRE HYDRANT & SPRINKLER SYSTEM	Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA
		Jockey pump	NO	NA	NA	NA
		Booster pump	YES	7.5/10HP	YES	WORKING
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	3NOS	YES	WORKING
		Hose Reel	YES	3NOS	YES	WORKING
		Hose Box	YES	3NOS	YES	PRESENT
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	6NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	3NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NO	NO	NA
		Heat Detector	NO	NO	NO	NA
		Manual call Point (MCP)	YES	3NOS	YES	WORKING
		Sounder	YES	3NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	3NOS	YES	(DUE30/09/23)&(14/01/2023)
		Co2 type	YES	1NOS	YES	
		Foam type	YES	01NOS	YES	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES		YES	ok

Table No. 69: Fire Safety Details of Electrical Building

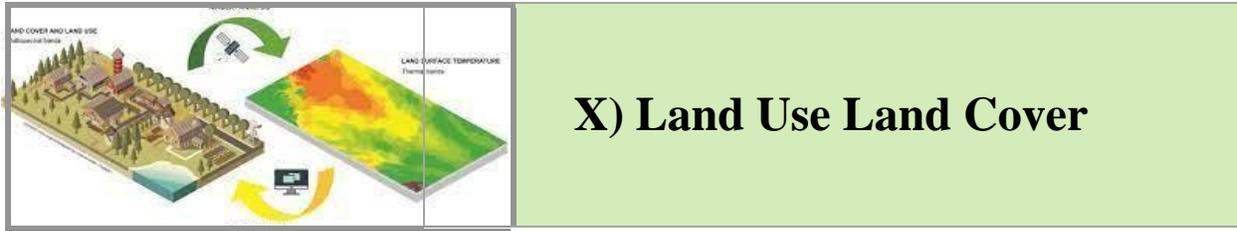
Name of Building & Nos. of floor		YCCE- ELECTRICAL BUILDING		Date :- 09-11-2022		
Address		YCCE WANADONGRI, NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		5239.05				
Height of Building (In Mtr.)		14.7				
Whether Fire Fighting System Installed (Yes / No)		YES				
Fire NOC Received (Yes / No)		YES (Provisional)		Fire NOC Next Renewal Date :- NA		
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	10000 LTR	YES	OK
		Under ground water tank (only HYDRANT system)	YES	20000LTR	YES	OK
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES	NA	NA	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NO	NA	NA	NA
		Sprinkler pump	NO	NA	NA	NA
		Diesel pump	NO	NA	NA	NA

		Jockey pump	NO	NA	NA	NA
		Booster pump	YES	15HP	YES	WORKING & OILING GREASING
		Fire pump Panel	YES	1NOS	YES	WORKING
		Hydrant valve	YES	7NOS	YES	WORKING & OILING GREASING
		Hose Reel	YES	6NOS	YES	WORKING
		Hose Box	YES	7NOS	YES	PRESENT
		Sprinklers	NO	NO	NO	NA
		RRL Hose Pipe	YES	14NOS	YES	PRESENT IN HOSE BOX
		Branch pipe	YES	7NOS	YES	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	WORKING
		Four Way	NO	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NO	NO	NO	NA
		Heat Detector	NO	NO	NO	NA
		Manual call Point (MCP)	YES	8NOS	YES	WORKING
		Sounder	YES	8NOS	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	18NOS	YES	OK (DUE 30/09/23)&(14/01/2023)
		Co2 type	YES	04NOS	YES	
		Foam type	NO	NA	NA	
		Water type	NO	NA	NA	
6	Fire Bucket		NO	NA	NA	NA
7	Evacuation Plan & Signages		YES	NA	YES	

Table No. 70: Fire Safety Details of CSE DEPT Building

Name of Building & Nos. of floor		CSE DEPT BUILDING			07/12//2022	
Address		YCCE,WANADONGRI,NAGPUR				
Building Incharge (Name & Designation)		CHETAN WAZALWAR - ADMIN OFFICER				
Area of Building (In Sq. Mtr.)		2215.28				
Height of Building (In Mtr.)		15				
Whether Fire Fighting System Installed (Yes / No)		NO				
Fire NOC Received (Yes / No)		Fire NOC Next Renewal Date :-				
Sr. No	Description	Specification / Details	Availability (Yes /No)	Capacity /Quantity/No's	Status as on date About the Working	Remarks
1	WATER STORAGE TANK	Over head water tank (only hydrant system)	YES	20000 LTR	YES	WORKING
		Under ground water tank (only Sprinkler system)	NA	NA	NA	NA
2	ELECTERICAL BACK UP	Whether Electric Back up Available or Not in Term of DG Set	YES		YES	DG SUPPLY CONNECTED
3	FIRE HYDRANT & SPRINKLER SYSTEM	Hydrant pump	NA	NA	NA	NA
		Sprinkler pump	NA	NA	NA	NA
		Diesel pump	NA	NA	NA	NA
		Jockey pump	NA	NA	NA	NA
		Booster pump	YES	10HP	YES	working
		Fire pump Panel	YES	1NOS	YES	working

		Hydrant valve	YES	8	YES	working
		Hose Reel	YES	8	YES	working
		Hose Box	YES	8	YES	PRESENT
		Sprinklers	NA	NA	NA	NA
		RRL Hose Pipe	YES	16	NA	PRESENT IN HOSE BOX
		Branch pipe	NA	NA	NA	PRESENT IN HOSE BOX
		Two Way	YES	1NOS	YES	working
		Four Way	NA	NA	NA	NA
4	Fire Detection & Alarm system	Smoke Detector	NA	NA	NA	NA
		Heat Detector	NA	NA	NA	NA
		Manual call Point (MCP)	YES	8	YES	WORKING
		Sounder	YES	8	YES	WORKING
		Fire Alarm Panel	YES	1NOS	YES	WORKING
5	Fire Extinguisher	ABC type	YES	5NOS	YES	REFILLING DATE- 30/09/2023
		Co2 type	YES	03NOS	YES	
		Foam type	NA	NA	NA	
		Water type	NA	NA	NA	
6	Fire Bucket	LPG STORE	NA	NA	NA	NA
7	Signages		YES		YES	OK.

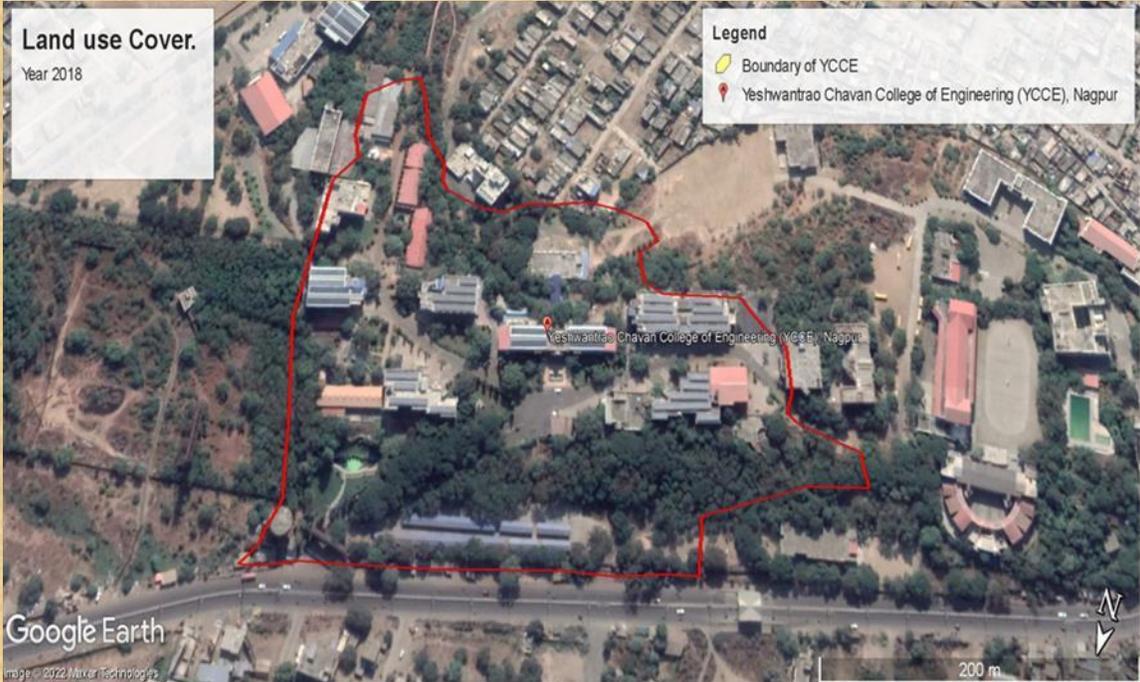


Land Use Land Cover (LULC) maps of an area provide information to help users to understand the current landscape. Annual LULC information on national spatial databases will enable the monitoring of temporal dynamics of agricultural ecosystems, forest conversions, surface water bodies, etc. on annual basis.

Land use and land cover change (LULCC) is **the conversion of different land use types** and is the result of complex interactions between humans and the physical environment. LULCC is a major driver of global change and has a significant impact on ecosystem processes, biological cycles and biodiversity.

They play an important role in agricultural policy making. Moreover, land-cover data are used as basic information for sustainable management of natural resources; they are increasingly needed for the assessment of impacts of economic development on the environment.

Land Use Land Cover Change Over the past 5 Years at YCCE



Satellite Imagery No. 16 & 17: Land Use Land Cover in 2017-2018



Satellite Imagery No. 18& 19: Land Use Land Cover in 2019-2020



Satellite Imagery No. 20 & 21: Land Use Land Cover in 2021-2022

Green Initiatives/ Activities in Campus

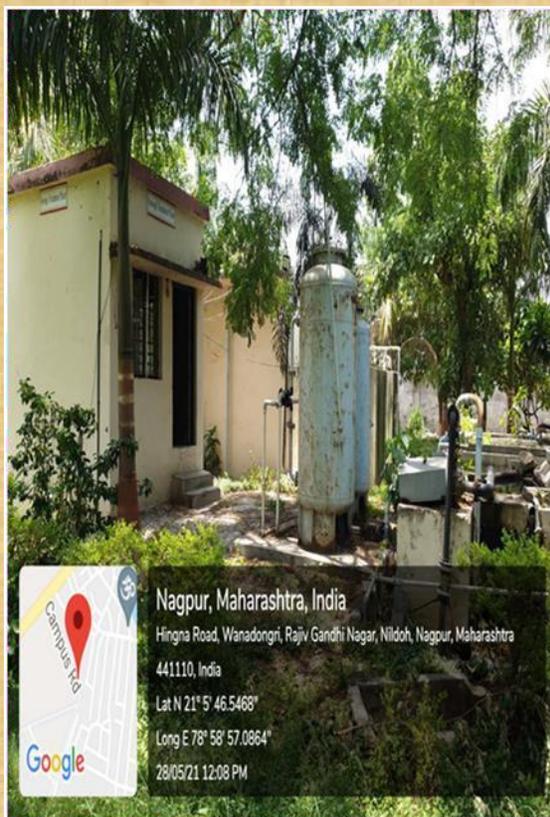
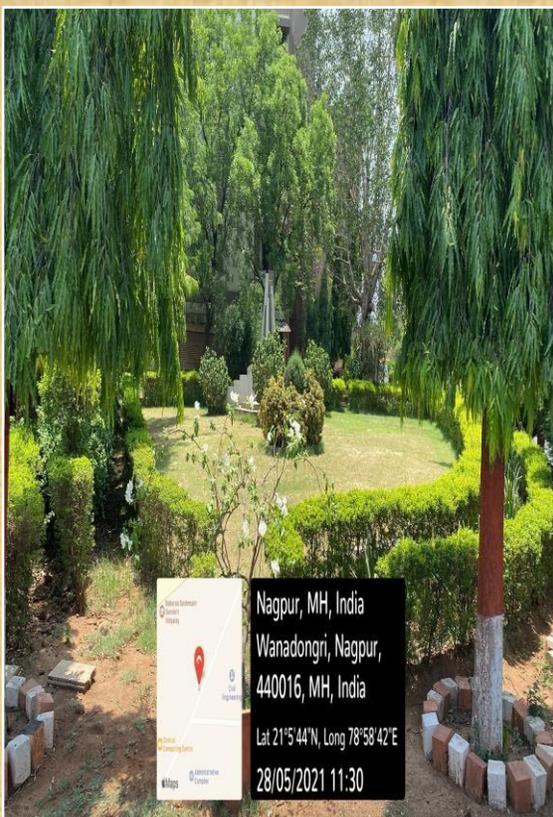
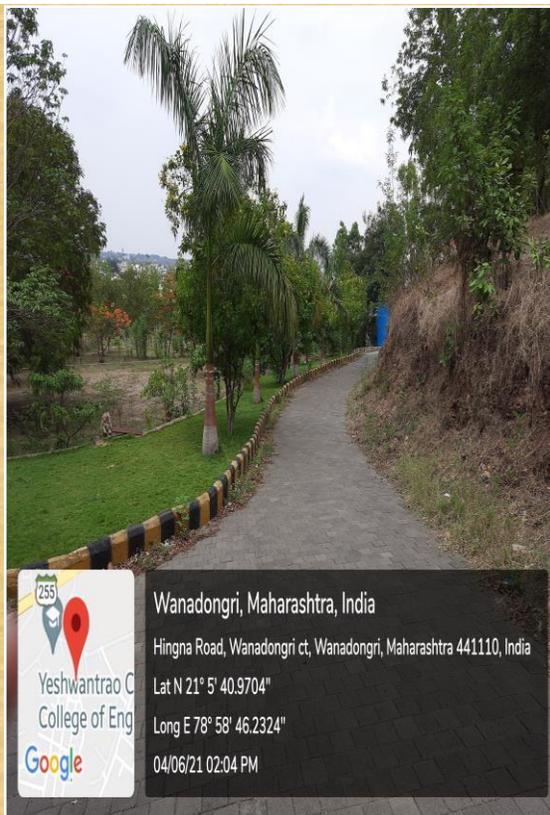
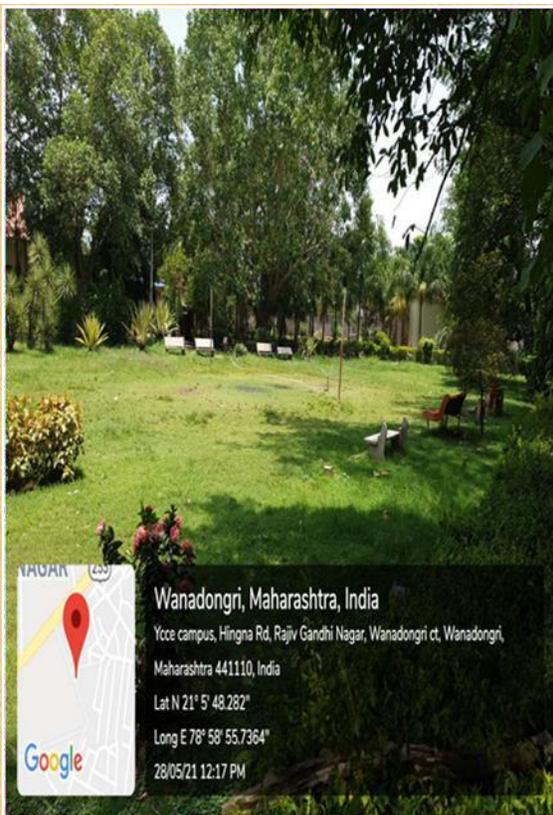
- ♣ Mass Plantation drive
- ♣ Plastic collection day in campus
- ♣ Interactive sessions for students to explore and channelize the young for environmental conservation
- ♣ Environment friendly and safe disposal of E-waste
- ♣ Conversion of Canteen waste to energy used in laboratory
- ♣ Sustainable construction of buildings
- ♣ Display board of conservation and prevention of resources within the campus for awareness
- ♣ Expert talks on Environmental Conservation practices
- ♣ Surface water run-off recharge to the well
- ♣ Solar Energy conversion to Electric energy
- ♣ Rooftop Rainwater Harvesting Systems are implemented
- ♣ Wastewater Treatment Recycle and Reuse for Gardening and Flushing purposes

Table No. 71: Compliance to the Previous Suggestions

Sr. No.	Description	Compliance
1)	Water Conservation practices	✓
2)	Air Pollution Prevention practices	✓
3)	Soil Conservation practices	✓
4)	Flora and Fauna Conservation	✓
5)	Solid & Liquid Waste Treatment and Disposal	✓
6)	Fire & Safety measures	✓



Image No. 12: Students Activities



Suggestions

- 1) One day in a year should be declared as vehicle free campus.
- 2) Implementation of Swaccha Bharat Abhiyan guidelines for garbage free and clean surrounding
- 3) Plastic waste management needs to be practiced efficiently.
- 4) Celebration of environmental days with awareness campaign should be carried out every month.
- 5) Two bin system should be mandatory in all campus as well as in canteen.
- 6) Regular check should be done at STP in regard of inlet and outlet wastewater characteristic parameters to maintain the work efficiency of STP.
- 7) Implementation of proper Institutional Municipal Solid Waste management plan is essential.
- 8) Ecosystem of the college should be managed properly. Snails spreaded all over the garden, great concern for biodiversity.
- 9) Each of the trees and plants should be numbered and their scientific classification in regards of common name, genus and scientific name should be displayed.
- 10) Fallen twigs and leaves can be used for bio-composting and the manure can be produced by integrating students in these practices.
- 11) NADEP compost method easy to maintain can be practiced for composting of waste.
- 12) A piece of land could be dedicated for organic farming and the students could be motivate to take responsibility to maintain the same during their physical activity hours.
- 13) Use of Solar energy for street lights and electrical equipment in laboratory should be encouraged.
- 14) Plantation should be done with due consideration to the indigenous species for balancing the native ecology.
- 15) Wild species to be maintained with due consideration during infrastructure development.
- 16) Bird watching should be encouraged amongst students