

Environmental Audit Report

For

Nagar Yuwak Shikshan Sanstha's
**Yeshwantrao Chavan College of Engineering
(YCCE)**

Institute Code : 4167

NAAC Accredited with 'A++' Grade
(An Autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

Session- 2023-24



Report By

Dr. Harshal Madhukar Warade

Team Lead & Lead Auditor

ISO-14001:2015 EMS

TUV Nord Certificate No.- 35325443 01r

Certificate

This is to certify that an “**Environmental Audit**” for Yeshwantrao Chavan College of Engineering, Nagpur has been conducted for Session 2023-24 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 & Safety, Land use Land cover and the Eco-friendly initiatives implemented within the college campus.

Place: Nagpur

Date: 20/11/2024



Dr. Harshal Madhukar Warade

(Lead Auditor & Team Lead)

ISO-14001:2015-EMS

TUV NORD Certificate No.- 35325443 01r



**PR315: ISO 14001:2015 Lead Auditor
(Environmental Management Systems)
Training course**

Certificate of Achievement

Harshal Warade

has successfully passed all the course assessment requirements.

18th - 19th & 24th - 26th June 2022

INDIA

Certificate No. 35325443 01r

Unique Learner No. 416166



Katja Beyer
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Essen, 2022-11-30

Note: The course is certified by CQI and IRCA (Certification No. 18125). The learner meets the training requirements for those seeking certification under the IRCA EMS Auditor certification scheme. The certificate is valid for 5 years, starting from the last day of the course, for the purpose of IRCA auditor certification.

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A special thanks and appreciation go to the whole audit team who worked hard for data collection and also during compilation. This project has been possible with the team efforts.

Dr. Harshal Madhukar Warade

Audit Team

- 1) Dr. Harshal Madhukar Warade
(Principal Investigator & Certified Auditor)
- 2) Mr. Anurag Kharkar
(GIS Computation & Compilation)
- 3) Ms. Vidhi Vijin Kamble
(Data interpretation & Compilation)
- 4) Mr. Hrishkesh Rajendra Sawarkar
(Field Data Collection)
- 5) Mr. Meet Rakesh Kurani
(Field Data Collection)
- 6) Ms. Anushri Nandkumar Satpute
(Species Exploration)
- 7) Mr. Harshal Sudhir Bawankar
(Species Exploration)

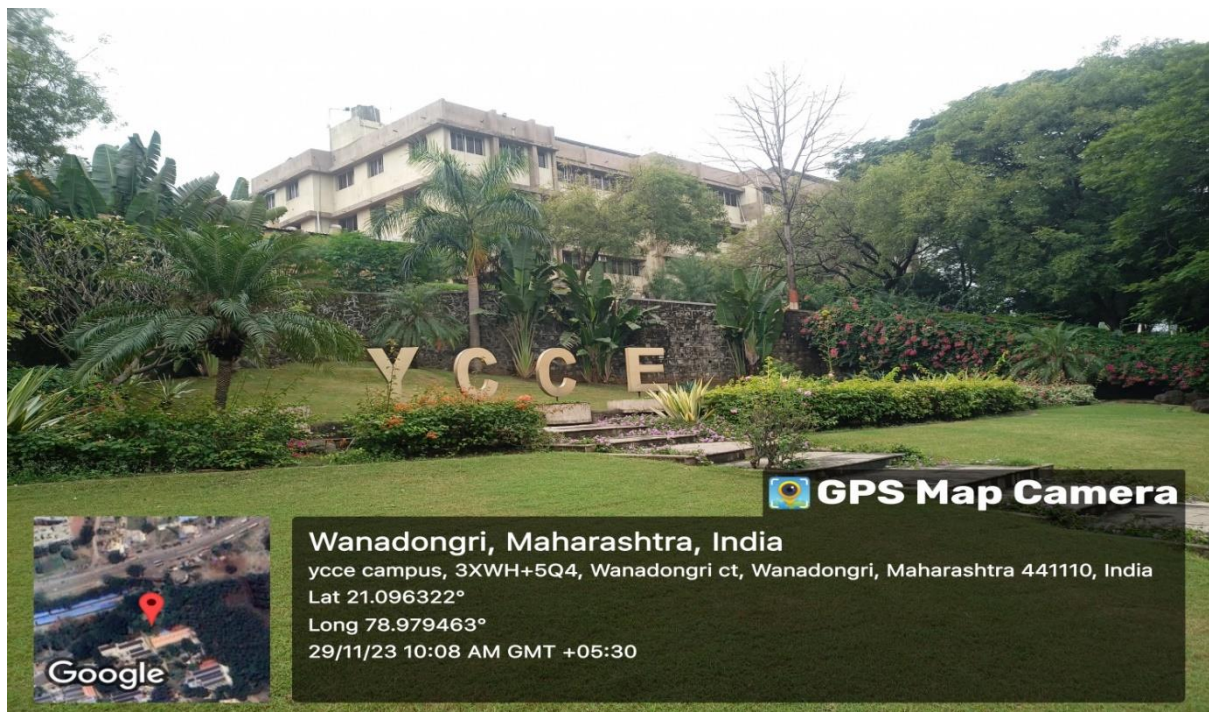
1.0 Introduction

Yeshwantrao Chavan College of Engineering (YCCE), established in 1984 by Nagar Yuwak Shikshan Sanstha, Nagpur, has been a leading institution for engineering education and research for nearly four decades. As the first private engineering college in Central India to achieve "Autonomous Status," YCCE has become one of the most sought-after engineering colleges in Maharashtra. The college is guided by an Academic Advisory Board comprising distinguished academicians from prestigious institutions across India. YCCE is committed to producing skilled, dedicated, and resourceful engineers who contribute to both organizational and national progress. The institute emphasizes high-quality professional education delivered by experienced faculty and supported by state-of-the-art infrastructure. Its focus on cultivating leadership and technical expertise among students has made YCCE a preferred choice for those aspiring to pursue higher education and secure placements in competitive software and core industries. YCCE's commitment to academic excellence is further highlighted by its recent reaccreditation with an 'A++' grade by the National Assessment and Accreditation Council (NAAC) and the extension of its autonomy by the University Grants Commission (UGC) for a decade (2022–2032). YCCE also excels in research and innovation, with all its departments recognized as research centers under Rashtrasant Tukadoji Maharaj Nagpur University. To date, 152 students have been awarded Ph.D. degrees, while 82 scholars are currently pursuing doctoral research in various disciplines. Faculty members have made significant contributions, publishing 102 patents, including 100 that have been granted nationally and internationally. The institute was ranked among the top 300 institutions in the country by the National Institutional Ranking Framework (NIRF) in 2022-23. In addition to its academic achievements, YCCE has established itself as a hub for innovation and industry collaboration. It has set up specialized Centers of Excellence, such as the Siemens Centre for Digital Manufacturing and Robotics, the AVEVA Centre for Excellence, and the NVIDIA Centre for Artificial Intelligence and Machine Learning. The college has also been selected as a Technical Business Incubator under the Ministry of Micro, Small, and Medium Enterprises ASPIRE scheme, fostering 10 startups. These initiatives demonstrate YCCE's commitment to bridging the gap between education, research, and industry, solidifying its reputation as a premier engineering institution.

Image No. 1: Map of YCCE Campus



Image No. 2: Green Campus of YCCE



The infrastructure and atmosphere of Yeshwantrao Chavan College of Engineering (YCCE) are meticulously designed to foster an enriching teaching-learning environment, enhancing students' focus and engagement in academics. These attributes have established YCCE as one of the most ideal and preferred engineering colleges in Central India. The institution's commitment to

excellence is reflected in its prestigious 'A++' Grade accreditation by the National Assessment and Accreditation Council (NAAC) for the period 2022-2027.

Geographically, YCCE is located at 21.096742 latitude and 78.979402 longitude, approximately 14.7 km from Nagpur Airport and the railway station, along the Nagpur-Hingna Road. The college campus, situated on a lush green hilltop, was developed on what was once barren land 39 years ago. The elevated location not only offers a serene and picturesque environment but also reduces exposure to street-level air pollution, creating a healthier and more conducive atmosphere for learning.

1.1 Institute Details

Detail Address of the Institute

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

Detail Address of the Management

Nagar Yuvak Shikshan Sanstha SDMP Campus. Atrey Layout, Pratap Nagar Nagpur – 440 022	
State	Maharashtra

MEGHE GROUP OF INSTITUTIONS	
Regd. Office	Atrey Layout, Pratap Nagar, Nagpur-440 022 (M.S.) INDIA
Phone	+91 712 3295234, 2249462
Fax	+91 712 2220428, 2245318
E-mail	mgingp@gmail.com
Website	www.mginagpur.com

1.2 About College

Yeshwantrao Chavan College of Engineering (YCCE) is a premier institution renowned for its excellence in engineering education and research. Guided by an Academic Advisory Board comprising eminent academicians from prestigious technical institutes in India and the USA, YCCE is supported by highly qualified and experienced faculty. Over the past 36 years, YCCE has nurtured countless engineering professionals, making it a preferred destination for students aspiring to higher technical education and successful placements in competitive software and core industries. The institution offers a unique blend of interdisciplinary studies, global connections, and distinguished scholars. As one of the few selected colleges under the Government of India's Technical Education Quality Improvement Program (TEQIP Phase I), funded by the World Bank, YCCE has established cutting-edge infrastructure, advanced laboratories, computational facilities, and a comprehensive library. YCCE also holds the distinction of being the first private engineering college in Central India to achieve "Autonomous Status," with its first autonomous batch commencing in 2010. In 2021-22, the University Grants Commission (UGC) extended YCCE's autonomy for 10 years (2022-2032). Since 2003, YCCE's undergraduate and postgraduate programs have been accredited and re-accredited by the National Board of Accreditation (NBA), ensuring quality education. Currently, the B.Tech. Civil Engineering, B.Tech. Electronics & Telecommunication Engineering, and B.Tech. Electronics Engineering programs are accredited by the NBA for six years (2023-24 to 2028-29), while the B.Tech. Mechanical Engineering and B.Tech. Electrical Engineering programs are accredited for three years (2023-24 to 2025-26). Several M.Tech. programs, including Structural Engineering, Integrated Power Systems, and CAD-CAM, were also accredited by the NBA up to June 2019. The institution has received an 'A++' Grade accreditation from the National Assessment and Accreditation Council (NAAC), Bangalore, and was honored with the ISTE National Award in 2014 for being the "Best Private Engineering College" in the country. YCCE has consistently performed well in national rankings. It was ranked 32nd in India and 23rd among self-financed colleges by Data Quest-CMR Ranking 2020. The National Institutional Ranking Framework (NIRF), under the Ministry of Education, ranked YCCE among the top 150 engineering institutions nationwide in 2017 and 2018, and it secured the 93rd position in 2016. Additionally, the institution received the 'A' Grade by the Government of Maharashtra in 2002-2003 and second prize for its college magazine from RTM Nagpur University in 2019-20. All technical departments of YCCE are recognized as research centers by RTM Nagpur University, with 152 Ph.D. degrees awarded and 82 scholars currently pursuing doctoral programs. In the last five years, the institution has received ₹5.5 crore in financial assistance from agencies like AICTE, DST, and UGC. The college has established an Innovation Gallery to showcase student projects and serves as a business incubator under the MSME-ASPIRE scheme, promoting innovation and entrepreneurship. Additionally, YCCE acts as a nodal center for the Smart India Hackathon, an initiative of the Ministry of Education, Government of India. With strong industry collaborations, YCCE is accredited by top companies such as TCS, Capgemini, and Wipro for enhancing student placements and internships. These partnerships, along with the college's focus on quality education and innovation, make YCCE a leading institution for engineering education in India.

1.2.1 Visionary

Hon'ble Shri Dattaji Meghe, the visionary architect of Nagar Yuwak Shikshan Sanstha, Nagpur, has been a guiding force in spreading the light of education. His unwavering determination and progressive vision have sparked an intellectual revolution, transforming the social, educational, economic, and cultural landscape of rural Maharashtra. Under his leadership, a modest initiative taken 36 years ago has evolved into a vast educational empire encompassing 27 institutions across Maharashtra, offering programs from pre-primary to postgraduate levels. These institutions span diverse disciplines, including Medical Sciences, Pharmacy, Engineering, Social Sciences, Commerce, Science, Physical Education, and Performing Arts. Today, the society nurtures approximately 30,000 students supported by 1,500 highly qualified and dedicated staff members. Shri Dattaji Meghe's commitment to quality education, discipline, and the well-being of students and staff remains central to the success of this educational legacy. Yeshwantrao Chavan College of Engineering (YCCE), one of the premier institutions under this society, adheres to its motto of becoming a leader in imparting quality education and training in engineering. The institution contributes significantly to expanding knowledge and skills in the professional sphere through scientific inquiry, applied research, and innovation, thus playing a vital role in socio-economic development. YCCE is committed to academic excellence, ensuring that students achieve their full potential across all dimensions of their personalities. The management and faculty strive to uphold the founder's vision by fostering an environment of learning, discipline, and innovation, preparing students to make meaningful contributions to society and excel in their chosen fields.

1.2.2 Leadership

Shri Sagar Meghe and Shri Sameer Meghe, empowered with profound knowledge and inspired by a legacy of achievement, have elevated Yeshwantrao Chavan College of Engineering (YCCE) to new heights. With their focused expertise, visionary leadership, and unwavering commitment to humanity, they have transformed YCCE into a hub for producing skilled students, scholars, and technocrats who contribute significantly to society and their respective professions. Under their dynamic leadership, YCCE fosters an environment where students not only excel in navigating and understanding engineering sciences within classrooms and laboratories but also apply this knowledge innovatively to practical engineering challenges. This holistic approach equips graduates to make meaningful contributions to the advancement of mankind and the engineering profession.

Vision of the Institute

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

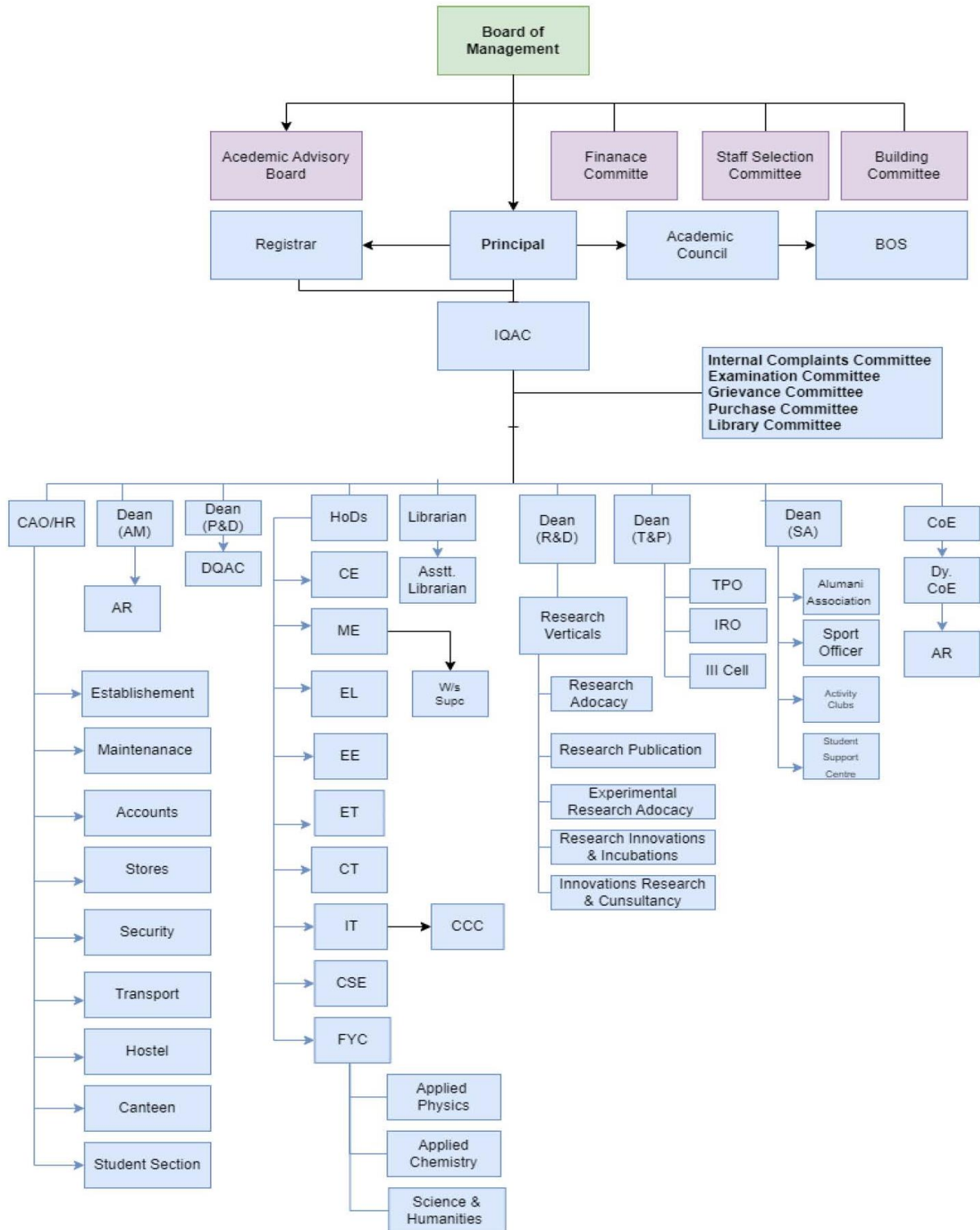
Mission of the Institute

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.

1.2.3 Organization Structure of YCCE

Image No. 3: Organization Structure of YCCE



2.0 Green Audit

2.1 Introduction

Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It exposes the authenticity of the proclamation made by multinational companies, armies and national governments with the concern of health issues as the consequences of environmental pollution. It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulation, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

Green Audit is assigned to the Criteria 7th of National Assessment and Accreditation Council (NAAC) which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation.

The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

2.2 Objectives of Green Audit:

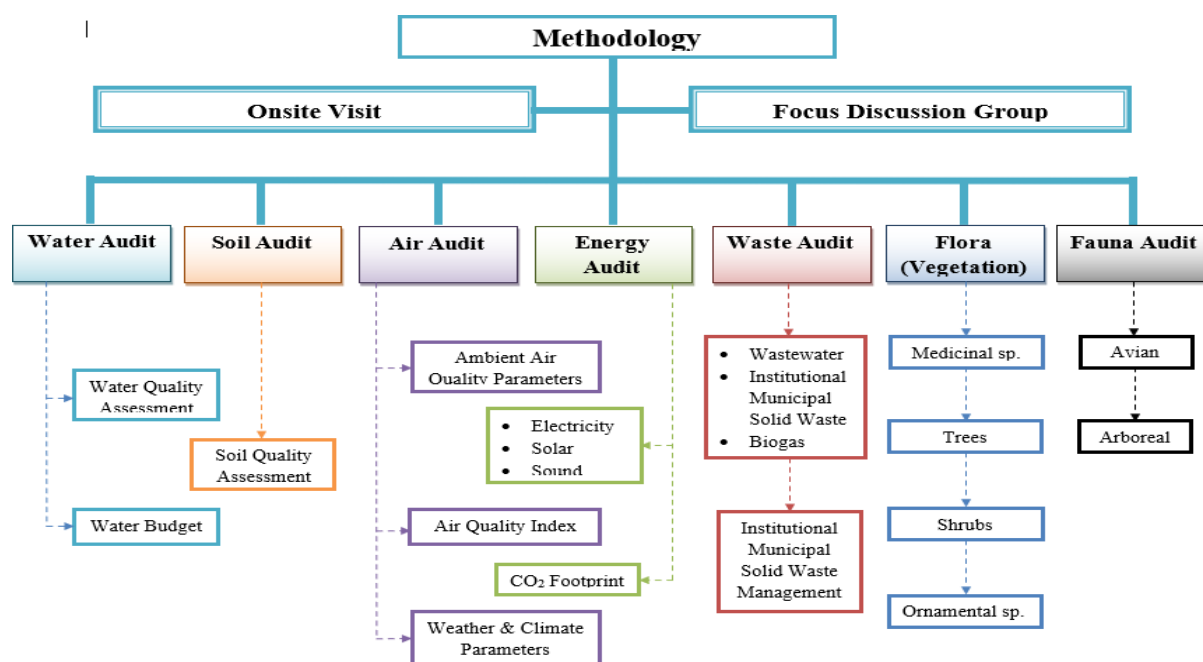
The main aim objective of this Environmental Audit is to assess the environmental quality and the management strategies being implemented and the conformation to the standards prescribed for management of environmental segments by Yeshwantrao Chavan College of Engineering, Nagpur.

- To assess the quality of the Water Component and Soil Component in the YCCE college campus.
- To track the Weather & Climate parameters around the campus and monitor Ambient Air Quality parameters of the YCCE college campus.
- To monitor the Energy Consumption pattern (Electricity & Solar Energy) of the YCCE college campus.
- To explore the flora and fauna species within the surrounding of YCCE college campus.
- To quantify the Solid Waste Generation and Management Plans in the YCCE college campus.
- To assess the Carbon footprint potential drawn Electricity and Solar Energy Consumption of the YCCE college campus.
- To evaluate the fire and safety equipment and facility existing at YCCE college campus.
- To assess whether extracurricular activities of the YCCE 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 Yeshwantrao Chavan College of Engineering, Nagpur.

2.3 Few key components under Green Audit

- **Water Audit:** Evaluating the facilities of raw water intake and determining the facilities for water treatment. Water harvesting is one of the best techniques that can be adopted by simply storing the water and using it at the time of scarcity. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.
- **Waste Disposal Audit:** The waste clearance measures associated to hazardous wastes and recycling are reviewed. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.
- **Energy Audit:** It deals with the energy conservation and methods to reduce its consumption and the related pollution. The auditor targets at the energy consuming methods adopted and find whether these methods are using the energy in a conservative way or not.
- **Environmental Quality Audit:** Analyzes the air quality, noise level and the programs undertaken by the institute for plantation. The Green Belt should be maintained to reduce the pollution level by decreasing the Carbon Dioxide Level.
- **Health Audit:** It analyzes the occupational diseases and safety measures undertaken within the institutes. Advocate the college initiative to encourage students to respect environment and conserve it through plantations. Excessive Plantations also helps in reducing the Carbon dioxide emission.
- **Using Renewable Energy:** Resources which can be replenished should be used such as rain, sunlight, wind tides etc. These resources are more advantageous as they cause least pollution. The importance of these resources is explained by the Audit team.
- **Carbon accounting:** It undertakes the measure of bulk of carbon dioxide equivalents exhaled by the organization through which the carbon accounting is done. It is necessary to know how much the organization is contributing towards the sustainable development. The auditor considers several efforts practiced by the institute to lower the Green House Gases in the atmosphere in order to make the campus more environmental friendly. But no technical Carbon Sequestration in basic audit report will cover due to restricted time & purpose of audit.

Image No. 4: Methodology on Key Components of Green Audit

2.4 Procedure for conducting Green Audit:

Green Audit was conducted systematically by using following procedure:

1. The members of green audit team visited the campus of the institute.
2. Green audit team members held an initial discussion with key staff members of the institute such as NAAC Criteria In-charge, maintenance manager as well as external service providers such as building architect, who have been assigned the responsibility of sustainable practices implemented throughout the campus.
3. Further, it was discussed and decided to follow Guidelines of NAAC Criteria for assessment of green initiatives.
4. Green audit team members created awareness among the staff members of the institute about importance of Green Audit and its contribution in improving the overall environmental performance of the institute.
5. Team members physically checked the presence of various green initiatives undertaken and facilities created through campus tour.
6. Then green audit team members identified the avenues for improvement in the existing green systems of the institute as well as continual improvement necessary for sustainable development of the institute.
7. Thereafter, green audit team discussed the technical and economic feasibility of implementation of new systems with institute's staff members and management.
8. A draft report of all these findings and suggestions was prepared and a presentation was given to management to identify any corrections/improvements.
9. The report was finalized after incorporating the suggestions by management/staff members as well as green audit team members and final report submitted to the institute.

2.5 Area Statements

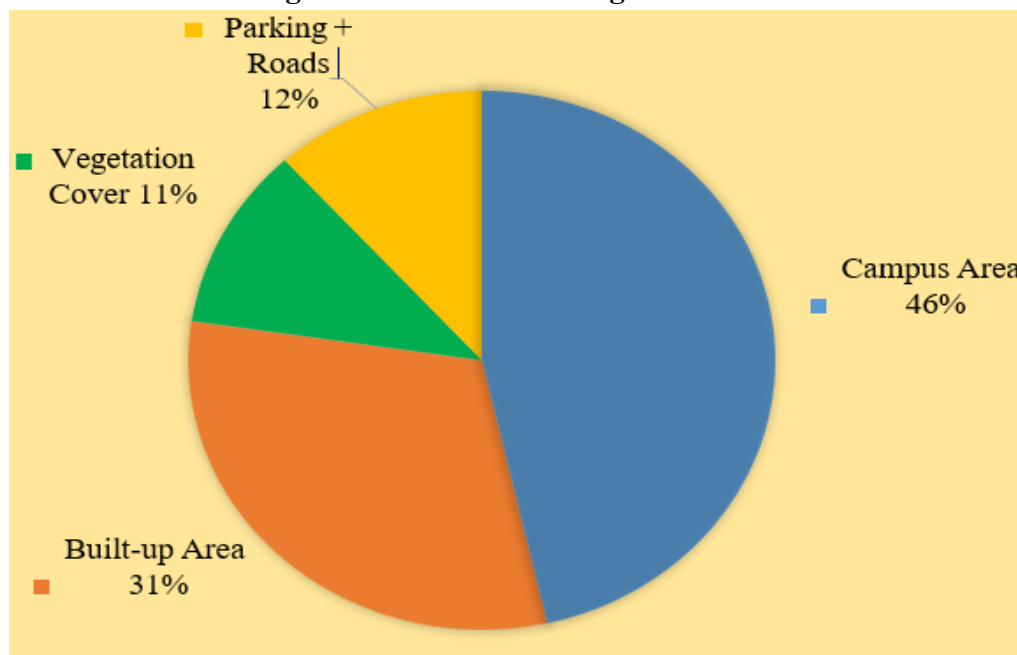
Yeshwantrao Chavan College of Engineering has a very good and systematic building infrastructure. All classrooms are fully ventilated and comfortable. Presently, it is one of the premier educational institutions of the country encompassing a vast, beautiful, and pollution-free campus which sprawls over 14 acres of land having vast playgrounds and experimental fields, botanical garden, well equipped Central Library, hostels for both girls and boys, Administrative Block, Spacious Auditorium, Computer Center, Health Center, Yoga Centre, Horticulture Section, Canteen and ATM. The teaching department belonging to different faculties, are housed in spacious buildings and have well-equipped laboratories and advanced facilities. The YCCE Campus is itself is a combination of all standards and amenities required as far as great educational infrastructure is concerned such as School, Health Centre, etc. The Central library has a large number of books to issue or read in the library itself. There is ample sitting space also available. Students can get Internet access at the library and power back up. YCCE has provided a Wi-Fi facility to all students and also has a book bank facility that enables students to use the books, for the entire academic session and the computer laboratories have access to advance web activity with its subscription to E-resources through a digital Network that links students and researchers to the databases required for research. YCCE has facilities for both outdoor and indoor games.

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

Image No. 5: 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

Table No. 4: Infrastructure of YCCE

Sr. No.	Description	Nos.
1)	Total Classroom	97
2)	Total Tutorial rooms	
3)	Total Labs including Workshop	115
4)	Drawing Halls	3
5)	Smart Class Rooms	6
6)	Seminar Halls	4
7)	Computer Centre's	4
8)	Innovation Labs	3

Image No. 6: Marked Boundary Area of YCCE campus

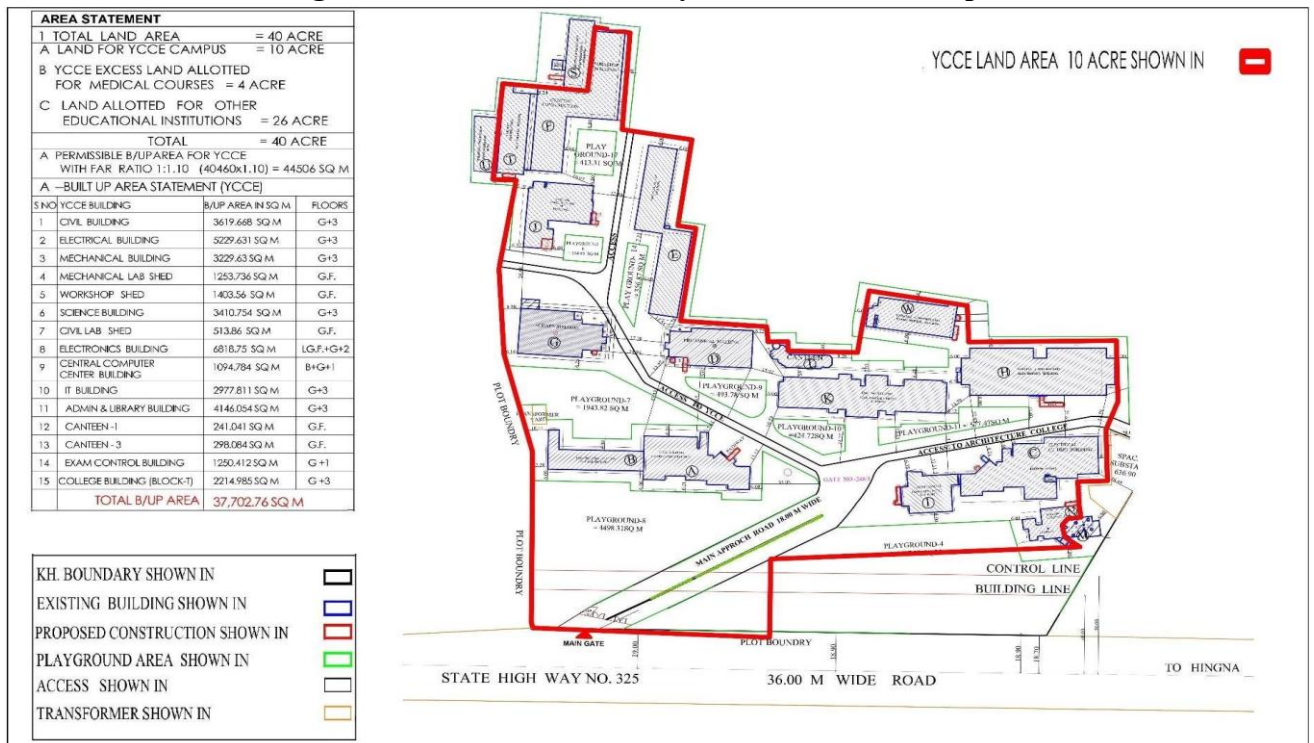


Image No. 7: Satellite image of YCCE campus



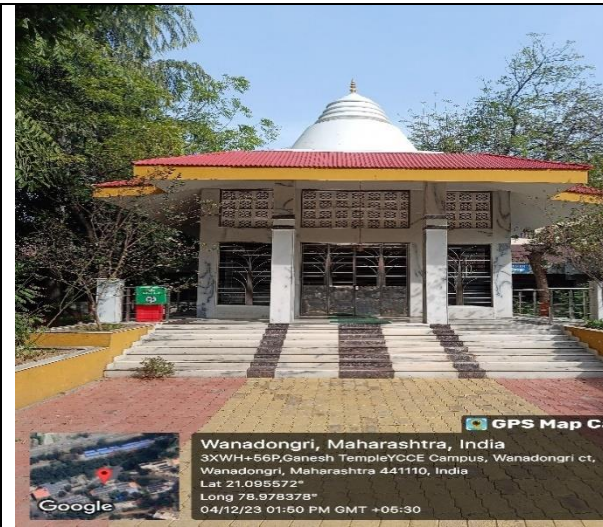
The YCCE campus has outdoor sports facilities which include a well maintained Cricket ground, football ground, and basketball court. Students also use this platform for their cultural competitions etc. A 1000 seats auditorium is available for seminars and conferences in the YCCE Campus. YCCE has a dedicated health center also tie up with renowned hospitals with all the necessary first aid facilities. The existing facilities are continuously upgrading and improving. Following are some photographs of major building infrastructures in YCCE campus.

Image No. 8: Building infrastructures of YCCE campus



Main Entrance

Administration Building and Library



Temple



Student Parking's



Civil Engg. Department



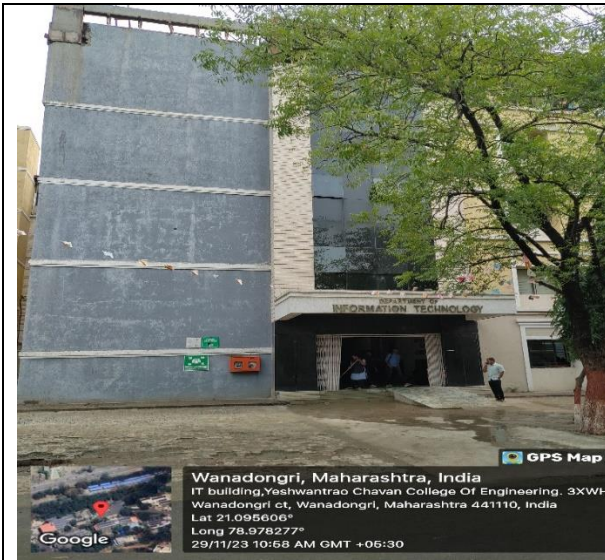
Mechanical Engg. Department



Applied Science & Hum. Department



Staff Parking



Information Tech. Engg. Department



Old CCC & Computer Engg. Labs



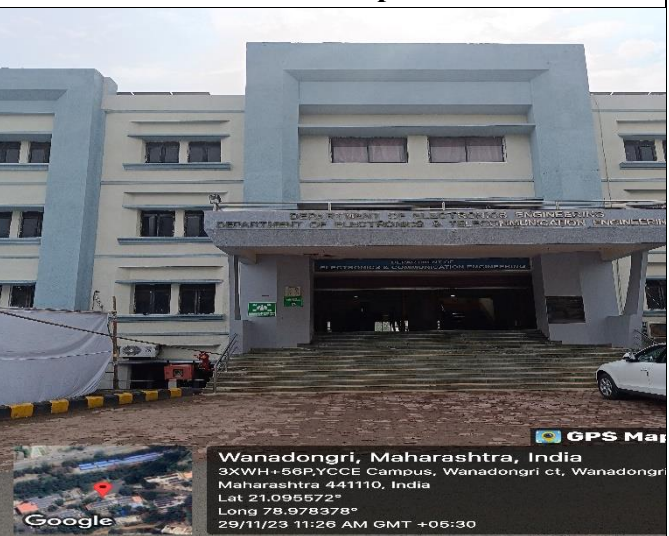
New CCC Lab



Workshop



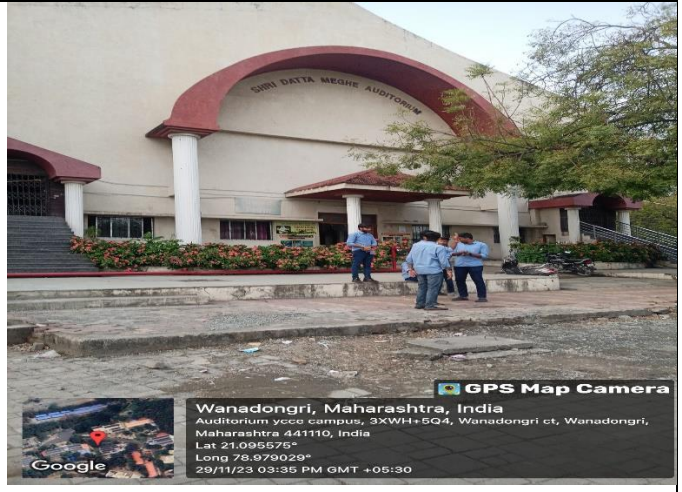
**Computer Tech. & Electrical Engg.
Department**



**Electronics and Telecommunication Engg.
Department**



Canteen



Auditorium

3.0 Water Audit

Water is a valuable natural resource for all living organisms. It is freely available depending on the climate and topographic features of a region. Although water is natural freely available but portable (drinkable) water is not available freely for human consumption. In our planet 70% area is covered by water but only 3% of it is fresh water. Around 1.1 billion people of the world face water crisis. Water pollution and wastage plays a vital role in water crisis. Water contaminations are taking place at an alarming rate. Drinking or using contaminated water leads to many diseases or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease. It is also important to conserve protect and manage the water resources availability and usage so that it is sustainably used. YCCE has examine the quality and usage of water in the college campus. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water.

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.

Image No. 9: Water sources within YCCE campus



3.1 Indian Standards Specifications for Drinking Water

The Bureau of Indian Standards (BIS) has set several standards for drinking water quality in India. The standards may be updated, and it's advisable to check the latest documents from the Bureau of Indian Standards or other relevant authorities for the most recent information. Some key standards related to drinking water in India include:

IS 10500:2012 - Drinking Water Specification: This standard outlines the permissible limits for various physical, chemical, and microbiological parameters in drinking water. It covers aspects such as color, odor, taste, turbidity, pH, hardness, alkalinity, toxic elements, and microbiological contaminants.

IS 10501:2012 - Packaged Drinking Water (Other Than Natural Mineral Water) - Specification: This standard provides specifications for packaged drinking water, excluding natural mineral water. It covers the requirements for raw water, processing, and the finished product.

IS 13428:2005 - Packaged Natural Mineral Water - Specification: This standard outlines the specifications for natural mineral water and includes requirements for the source, composition, and labelling of packaged natural mineral water.

IS 14543:2004 - Packaged Drinking Water (Natural Mineral Water) - Specification: This standard covers the requirements for packaged drinking water produced from a source that may or may not be a natural mineral water source.

IS 16240:2015 - Drinking Water - Reverse Osmosis Systems for Household and Similar Use - Performance Requirements: This standard focuses on the performance requirements for reverse osmosis systems used for household and similar purposes to ensure the production of safe drinking water.

Following Table shows the permissible and acceptable limits of Drinking Water as per BIS.

Table No. 5: Organoleptic and Physical Parameters

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 of Substances Undesirable in Excessive Amounts

Sr. No.	Characteristic	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	Remarks
1)	Aluminium (as Al), mg/l, Max	0.03	0.2	—
2)	Ammonia (as total ammonia-N), mg/l, Max	0.5	No relaxation	—
3)	Anionic detergents (as MBAS) mg/l, Max	0.2	1.0	—
4)	Barium (as Ba), mg/l, Max	0.7	No relaxation	—
5)	Boron (as B), mg/l, Max	0.5	1.0	—
6)	Calcium (as Ca), mg/l, Max	75	200	—
7)	Chloramines (as Cl ₂), mg/l, Max	4.0	No relaxation	—
8)	Chloride (as Cl), mg/l, Max	250	1,000	—
9)	Copper (as Cu), mg/l, Max	0.05	1.5	—
10)	Fluoride (as F) mg/l, Max	1.0	1.5	—
11)	Free residual chlorine, mg/l, Min	0.2	1	It should be minimum 0.5 mg/l.
12)	Iron (as Fe), mg/l, Max	0.3	No relaxation	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	Shall not exceed 0.3 mg/l
15)	Mineral oil, mg/l, Max	0.5	No relaxation	—
16)	Nitrate (as NO ₃), mg/l, Max	45	No relaxation	—
17)	Phenolic compounds (as C ₆ H ₅ OH), 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 SO ₄) mg/l, Max	200	400	—
21)	Sulphide (as H ₂ S), mg/l, Max	0.05	No relaxation	—
22)	Total alkalinity as calcium carbonate, mg/l, Max	200	600	—
23)	Total hardness (as CaCO ₃), 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

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 Water

Sr. No.	Organisms	Requirements
1)	All water intended for drinking: E. coli or thermo-tolerant coliform bacteria	Shall not be detectable in any 100 ml sample
2)	Treated water entering the distribution system: E. coli or thermo-tolerant coliform bacteria Total coliform bacteria	Shall not be detectable in any 100 ml sample
3)	Treated water in the distribution system: E. coli or thermo-tolerant coliform bacteria Total coliform bacteria	Shall not be detectable in any 100 ml sample

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

Sr. No	Characteristics Parameters	Values
1)	Odor	Odorless
2)	Color	<1 Hazen
3)	Taste	Agreeable
4)	pH	7.2
5)	Electrical Conductivity mS/cm	0.59
6)	Water Temperature	22
7)	Turbidity (NTU)	0.24
8)	Total Solids (mg/L)	234
9)	Dissolve Solids (mg/L)	257
10)	Suspended solids (mg/L)	<3
11)	Relative Density	1
12)	Dissolve Oxygen (mg/L)	6.2
13)	Alkalinity (as CaCO ₃ , mg/L)	195
14)	Total Hardness (as CaCO ₃ , mg/L)	164
15)	Carbonate	Absent
16)	Bicarbonate (HCO ₃)	8.2
17)	Sodium (meq/L)	3.58
18)	Calcium (meq/L)	2.2
19)	Magnesium (meq/L)	4.63
20)	Potassium (meq/L)	0.03
21)	Chloride (meq/L)	61
22)	Sulphate (mg/L)	4
23)	Ortho Phosphate (mg/L)	<0.04
24)	Fluorides (mg/L)	0.325
25)	Iron (mg/L)	0.139
26)	Nitrates (mg/L)	2.671
27)	Aluminum (mg/L)	<0.028
28)	Copper (mg/L)	0.025
29)	Zinc (mg/L)	0.0267
30)	Sodium Absorption Ratio (SAR)	1.3
31)	Residual Sodium Carbonate (RSC)	Absent
32)	Fecal coliform (CFU)	Absent
33)	E. Coli (CFU)	Absent

Image No. 10: Sample Report of Water Testing



Nagar Yashwantrao Chavan Sanstha's
Yeshwantrao Chavan College of Engineering
 (An Autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

Hingna Road, Wanadongri, Nagpur-441110

NAAC Accredited with 'A' Grade

Ph. : 07104-295083, 295085

Website : www.ycce.edu., Email : principal@ycce.edu.

Our Vision

To become most sought after destination for learning and research in civil engineering.

Our Mission

To prepare Civil Engineering professionals by practicing analytical, design tools, Field learning and live industrial projects in conducive environment

DEPARTMENT OF CIVIL ENGINEERINGDate :- 06th March 2023

To,
 The HOD,
Old Science Department,
 Wanadongri Campus, Hingna road, Nagpur.

Subject: Test results of water sample of Old Science Department, YCCE Nagpur.

Respected Sir,

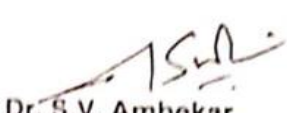
Following are results for the water sample send by you,

Sr. No.	Parameter	Permissible limit by IS10500	Results
1.	Physical appearance	Unobjectionable	Colorless
2.	Odor	Unobjectionable	Odorless
3.	Turbidity	5NTU	0NTU
4.	pH	6.5- 8.5	6.5
5.	Total Hardness	200mg/l	68mg/l
6.	Chloride	250mg/l	12.5mg/l
7.	Total Dissolved Solids	500mg/l	40mg/l
10.	Dissolved Oxygen	8mg/l	6.4mg/l
11.	Total alkalinity	600mg/l	30mg/l
12.	Nitrate	45mg/l	0
13.	Sulphate	200mg/l	0.63mg/l
14.	Bacterial Test (MPN)	0/100ml	Negative

Remark :

1. All above Parameters have been found out as per Standard methods and relevant IS codes.
2. The bacterial quality of water is found to be safe.
3. Water is **POTABLE**

Thanking You,


 Dr. S.V. Ambekar
 HOD, WOODS LAB

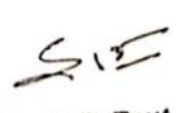

 Dr. S.P. Raut
 Head

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

Sr. No.	Month	Year	Meter Readings	Total water quantity (Cu.m)	Total Amount
1)	April	2022	2873	1320	11881
2)	May	2022	16915	14042	106391
3)	June	2022	22346	5431	48879
4)	July	2022	29681	7335	66015
5)	August	2022	38831	3838	37785
6)	September	2022	45834	7003	67072
7)	October	2022	45834	7003	67072
8)	November	2022	58908	13074	121953
9)	December	2022	63992	5084	48501
10)	January	2023	74991	10999	122086
11)	February	2023	85502	10511	120492
12)	March	2023	89333	3831	23425
13)	April	2023	91076	1743	16123

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	2022	250	2910000	291	72750
2)	June-July	2022	250	2910000	291	72250
x`3)	August-September	2022	250	2910000	291	72250
4)	October- January	2023	250	2470000	247	61750
5)	February-March	2023	250	1800000	188	47000

* 1 Unit-10000 Lit. of water

Table No. 12: Availability of Drinking Water Systems

Sr · No	Location	Capacity of RO	Centralized / Domestic	Centralized RO working mode	Flow of water centralized RO	TDS of Inflow Water	TDS of outflow water
1)	Maintenance Dept.	50	Domestic			675	101
2)	Admin Building	50	Domestic			650	102
3)	New Electronics (EE)	500	Centralized	Manual	475	650	94
4)	New Ele & Tel. (ETC)	500	Domestic	Manual	480	650	108
5)	CCC (Conf.)	50	Centralized			650	85
6)	Electrical Engg.	500	Domestic	Manual	450	625	78
7)	Civil Engg.	500	Centralized	Manual	500	625	97
8)	Old Sci. Dept.	500	Centralized	Manual	500	625	107
9)	Mechanical Engg. Lab	UV kent	Domestic			625	625
10)	IT Building	500	Domestic	Manual	450	625	87
11)	Mechanical Engg.	500	Domestic	Manual	500	625	105
12)	Workshop	UV kent +R.O 20 Lph	Domestic			625	198
13)	CCC Building	UV kent	Domestic			625	625
14)	COE Office	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
Total			7,41,720	

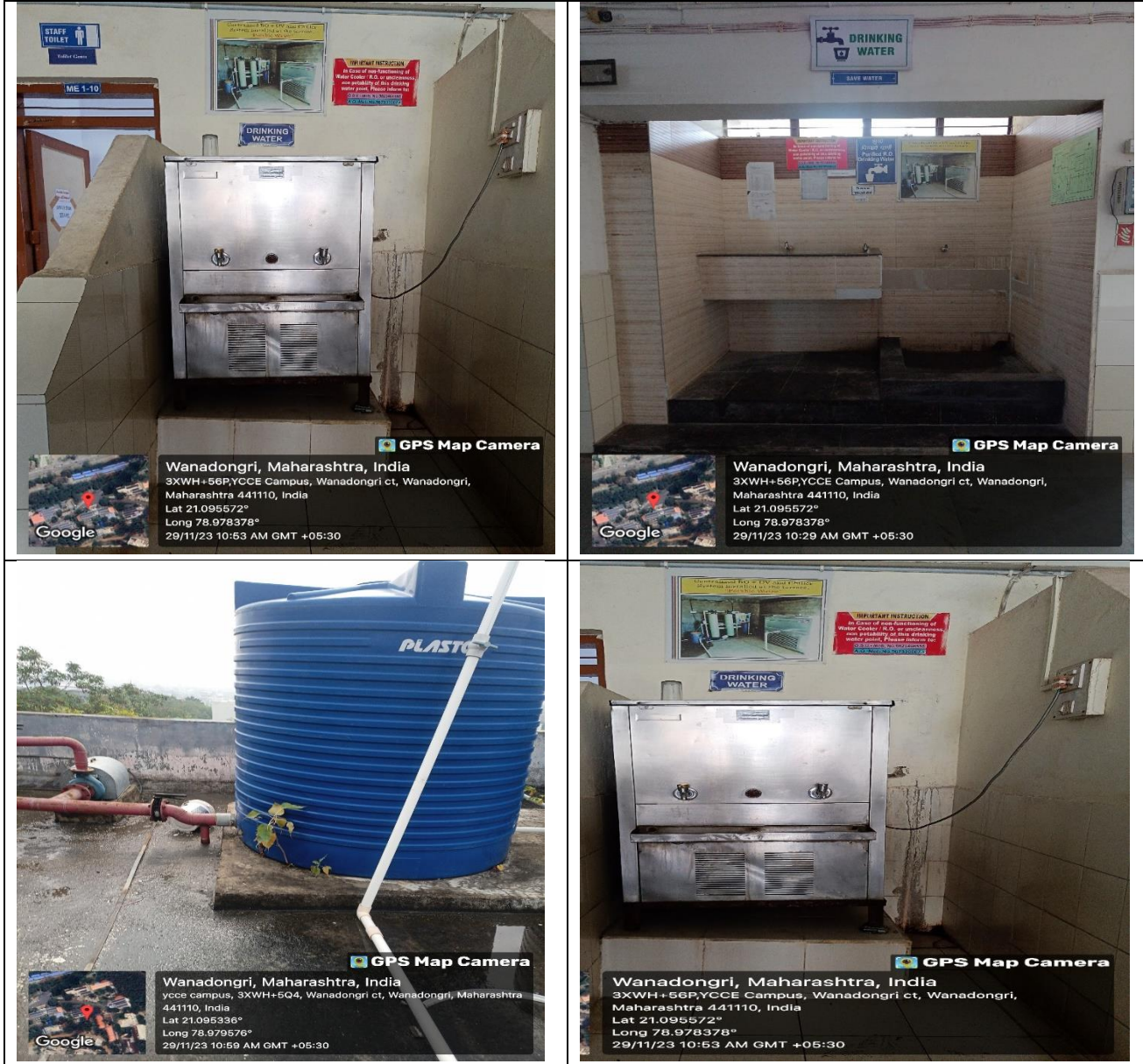
Table No. 14: Water Dispensing Connectivity

Sr. No.	Tap			Water Coolers	
	Department	Regular water	Drinking water		
1)	CSE Building	Ground Floor	3	0	1
		1 st Floor	5	0	1
		2 nd Floor	5	0	1
		3 rd Floor	0	0	1
2)	IT Building	Ground Floor	7	0	0
		1 st Floor	7	0	1
		2 nd Floor	7	2	1
		3 rd Floor	7	0	1
3)	Old Science Building	Ground Floor	40	0	1
		1 st Floor	11	0	1
		2 nd Floor	4	0	1
		3 rd Floor	6	0	0
4)	Civil Building	Ground Floor	14	2	1
		1 st Floor	9	2	0
		2 nd Floor	3	2	1
		3 rd Floor	6	2	0
5)	Mechanical Building	Ground Floor	4	2	0
		1 st Floor	4	0	1
		2 nd Floor	4	2	1
		3 rd Floor	5	2	0
6)	Administration Building	Ground Floor	13	0	1
		1 st Floor	5	2	0
		2 nd Floor	5	0	1
		3 rd Floor	6	0	0
7)	COE Building	Ground Floor	11	0	0
		1 st Floor	11	2	1
8)	Electronics Building	Ground Floor	23	9	0
		1 st Floor	18	0	2
		2 nd Floor	18	0	2
9)	Electrical Building	Ground Floor	6	2	1
		1 st Floor	8	3	0
		2 nd Floor	4	4	0
		3 rd Floor	4	3	0
10)	CCC Building	Ground Floor	7	0	1
		1 st Floor	5	0	1
11)	Workshop 1	Ground Floor	9	0	1

12)	Workshop 2	Ground Floor	8	0	1
13)	Swaragi Canteen	Ground Floor	2	0	1
Total			314	41	29

Following are the several pictures of Water Dispensing units in YCCE Campus

Image No. 11: Water Dispensing units in YCCE Campus



The Institute stores the water in overhead tank as well as underground sump above mentioned building in Table No.- 13 having storage capacity of 7.4 Lakh liters approximately. The organization does not have any automatic leak detection system and all the leakages are controlled by manual

observation hence leak quantum water is another issue which shall be considered in designing the water conservation scheme. No leakage of water from pipes is observed from pipes by auditor team but leakages in taps were observed in some urinals. There are almost 1200 taps in the college premises from which the water is used for different use. There is tap maintenance schedule with the maintenance department; the leakage problem will be solved by them only when they get any complaint.

3.2 Sewage Effluent Generation

The source waste water is categorized in two types (i) Laboratory Waste Water which can be said as Effluent and (ii) Domestic Waste Water i.e. Sewage Water. The effluent produced in this institute is about 5000 liters per week per laboratory and there are two such laboratories producing effluent is first year Chemistry Laboratory and the Environment Laboratory in Civil Engineering department. The effluent produced is released to the common drainage without any treatment which is damaging to the environment and have very big concerned with ground water contamination. The Sewage water mainly comes from Toilets in college, hostel, kitchen and canteen. The generated sewage is transferred to sewage treatment plant.

3.3 Rainwater Harvesting Potential at YCCE

The campus is situated at the western part of Nagpur city. The campus area is located at the Hingna Road which is surrounded by the residential as well as industrial areas. Total strength of campus including students and staffs people will be more than 6,000. The campus is fulfilling their domestic water requirement from Borewell, well and water procured from MJP & MIDC. A open well is situated in campus which can be serve as a source for additional water requirement. Water requirement in campus increases gradually due to heavy crowd students as well as staff. Now on days, water scarcity has become the most common problem in every parts of India. And, this problem is also being profoundly seen inside the YCCE campus. And, if it has not been dealt earlier with proper care then this problem will become a major hurdle in the development phase of campus. The average monthly rainfall data are being taken from the website Regional Meteorological Centre of India Meteorological department, Mumbai. Thus monthly rainfall data of the Nagpur city is given below in the table no.1 which is assumed to be same for the station of YCCE campus.

Table No.15: Monthly Rainfall Data of Nagpur City

Sr. No.	Month	Rainfall (mm)
1	January	12.5
2	February	20.7
3	March	17.6
4	April	14.3
5	May	19.2
6	June	190.1
7	July	341.7
8	August	280.5
9	September	183.1
10	October	56.8
11	November	16.6
12	December	13.2
Total		1166.3

(Source: <https://www.weather-ind.com/en/india/nagpur-climate#rainfall>)

Table No. 16: Calculation of Rooftop Area of All Building in YCCE Campus

Sr. No.	Building Name	Roof top Area (m ²)
1	Civil Engg. Building	886.304
2	Civil Engg. Shed	513.86
3	Science Building old	796.935
4	Mechanical Workshop	1403.56
5	Mech. Lab & New CCC	1253.736
6	New Science & IT Building	743.70
7	Architect College (Old Mahatma Gandhi)	763.03
8	Architect College (Main Building)	744.048
9	Swaragi Canteen	453.248
10	New Girls Hostel	511.107
Total		8070.00

Computation of Volume of Runoff per Year

As we know the formula for runoff discharge is

Total roof area of Wanadongari campus is = 8070.00 m²

Average annual rainfall at Nagpur=1166 mm/year = 1.16m³/year Total volume of surface runoff

water supposed to be collected=8070.00 x 1.1663 = 9412.05 m³/year

Table No. 17: Annual Rooftop Rainwater Harvesting Potential at YCCE

Sr. No.	Month	Rainfall (mm)	Discharge (m ³)/Year
1	January	12.5	100.875
2	February	20.7	167.049
3	March	17.6	142.032
4	April	14.3	115.401
5	May	19.2	154.944
6	June	190.1	1534.107
7	July	341.7	2757.519
8	August	280.5	2263.635
9	September	183.1	1477.617
10	October	56.8	458.376
11	November	16.6	133.962
12	December	13.2	106.524
Total		1166.3	9412.05

Table No. 18: Annual Water Budget of YCCE

Sr. No.	YCCE Water Source	Total Volume of Water	Purpose of Water Use			Wastewater Generated at STP	Treated Water & Disposed
			Domestic	Laboratory	Sanitation		
1	MJP	13080 Cu.m	Drinking, Irrigating Lawns	Distillation, Washing Glassware, Others	Flushing, Washing, Cleaning Toilets, etc	83435.2 Cu.m	83435.2 Cu.m
2	MIDC	91214 Cu.m	Drinking, Irrigating Lawns	Distillation, Washing Glassware, Others	Flushing, Washing, Cleaning Toilets, etc		

Observation & Recommendations

- 1) Institute authority should have any water management or water conservation plan.
- 2) At present waste water is recycled after treatment and reused in any form in the college premises
- 3) Drip irrigation and sprinklers should be preferred for watering the garden.
- 5) The rain water is drained by storm water drain and released to RWH well inside the campus

Recommendations

- 1) Establish and implement the Water Conservation and Management Plan as per Environment Protection Act 1986
- 2) The water Conservation Awareness Program to be conducted on World Water Day on 22nd March every year
- 3) Green Chemistry Methodology in laboratories to be considered viz. solvent extraction from Chemistry and Environment Laboratories of the college
- 4) Display boards for switching off the taps to be put on at appropriate place
- 5) To eliminate the spillage and over usage of water in washbasins, urinals and toiler push taps are highly recommended.
- 6) Automatic Leak detection systems for conservation of water.
- 7) Rain Water Harvesting as per the guidelines of Central Ground Water Board shall be done for rest of buildings.
- 8) 80 % of total quantum of ground water extracted shall be recharged to ground either by Artificial Recharge Structures within the college premises
- 9) Water discharge should be measure with water meters to be installed on Dug Well as well as Bore Well as per the guideline of CGWA
- 10) Special Internal Water Audit to be conducted yearly
- 11) Advance treatment systems should be upgrade in existing STP, so that reuse of treated water for flushing in toilets and also gardening purpose.

4.0 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.

It was observed and revealed from data that the only possible sources of pollution in the YCCE campus are as use of diesel / petrol vehicles, air-conditioners, power generator, kitchen waste and other biodegradable waste from canteen, use of electronic appliances and other.

Following Table No. 19 shows the data of Vehicle entered in the YCCE campus

Table No. 19: Vehicle data (Department wise)

SR. No.	Department	Four Wheeler	Two Wheeler
1	Civil Engineering	22	16
2	Mechanical Engineering	24	12
3	Computer Science Engineering	4	12
4	Computer Technology	19	15
5	Electrical Engineering	25	20
6	Electronics Engineering	15	16
7	Electronics and Telecommunication Engineering	18	6
8	Information Technology	9	23
9	Mathematics	6	15
10	Applied Physics	3	7
11	Applied Chemistry	2	9
12	Administrative Office + A/C	6	18
13	DAM	2	1
14	COE Office	3	7
15	Library	2	8
16	Maintenance	1	3
17	Store	0	1
Total		161	189

Every day there are 189 Two wheelers and 161 four wheelers of different staff and almost 500 to 600 two wheelers of students are coming in college premises but there is no system observed to check for PUC certificate, Vehicle Exhaust Gas Analysis and Vehicular movement noise and vibration pollution. The air pollution at the time of ignition off and on is more than it is in riding mode.

Image No. 12: Sampling Locations of Air Component



Table No. 20: 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 (SO ₂), µg/m ³	Annual	50	20
		24 hrs	80	80
2)	Nitrogen Dioxide (NO ₂), µg/m ³	Annual	40	30
		24 hrs	80	80
3)	Particulate matter (PM ₁₀), µg/m ³	Annual	60	60
		24 hrs	100	100
4)	Particulate matter (PM _{2.5}),	Annual	40	40

	$\mu\text{g}/\text{m}^3$	24 hrs	60	60
5)	Ozone (O_3), $\mu\text{g}/\text{m}^3$	8 hours	100	100
		1 hours	180	180
6)	Carbon monoxide (CO) mg/m^3	8 hours	02	02
		1 hours	04	04

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

Table No. 21: 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	57.11	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. 22: 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

Observation & Recommendations

- 1) World Environment Day to be celebrated in college premises every year on 5th June and whole college students and staff shall get involved and take Oath for Environment Conservation not only in college but also in every span of life.
- 2) Environment Division of Civil Engineering Department shall monitor the Ambient Air Quality as per the guidelines of “Air (Prevention and Control of Pollution) Act 1981, Water Quality as per IS 10500, Waste water from Laboratory and STP as per EPA 1986 in their Environment Laboratory
- 3) Exhaust gases shall be monitored, analyzed and check regularly
- 4) Parking zone of college shall be neat & clean.
- 5) Use of bicycle in campus to be promoted.

5.0 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.

Image No. 13: Sampling Locations of Weather & Climate Component



Table No. 23: Qualitative and Quantitative Characteristics of Weather and Climate at YCCE

Sr. No.	Location	Air Temp (°C)	Relative Humidity (%)	UV Index	Pressure KPa	Wind Speed Km/hr	Wind Chill (%)	Dew Point (°C)	Cloud Cover (%)
		Min.-max.							
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
	Mean	20.50-28.63	52.60	6.15	75.14	0.93	25.50	13.70	33.00
	Std. Dev.	3.87-5.96	12.41	1.05	0.011	0.18	0.85	1.16	3.33

Observation & Recommendations

- 1) Regularly audit and validate weather and climate data sources to ensure accuracy of different weather conditions.
- 2) Weather monitoring instruments like thermometer, humidity meter, should be maintain in the campus and are calibrated regularly to maintain accuracy.
- 3) Communicate with nearby public societies to enhance awareness of weather and climate data quality and reliability.
- 4) Continuously assess and update procedures to adapt to changing climate conditions.

6.0 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 mud balls were removed and the soil was sieved through the fine sieve and then was subjected for further qualitative and quantitative physico-chemical analysis.

Image No. 14: Sampling Locations of Soil Component



Table No. 24: 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

Table No. 25: 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	FAO Sec. III, 12-1; Page No. 157
5)	Phosphorus	Kg/ha (P)	34.87	
6)	Potassium	Kg/ha (K)	716.08	Manual of Soil Testing, Department of Agriculture & Co- operation, Ministry of Agriculture, Govt. India, Sec.4-17, Page No 89.
7)	Calcium Carbonate	(%)	4.12	
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	
16)	Water holding Capacity	(%)	38.32	
17)	Apparent Density	(gm/cc)	1.56	
18)	Specific Density	(gm/cc)	2.67	Manual of Soil Testing, Department of Agriculture & Co- operation, Ministry of Agriculture, Govt. India, Sec.4-17, Page No 89.
19)	Pore Space	(%)	59.11	
20)	Volume Expansion Percent	(%)	27.50	
21)	Texture		1.00	

Observation & Recommendations

- 1) Use organic or inorganic mulches to cover the soil surface and reduce water evaporation, erosion, and weed growth.
- 2) No-till practices to be adopted to minimize soil disturbance and maintain soil structure. Conservation tillage helps in preserving soil moisture, reducing erosion, and promoting organic matter retention.
- 3) Assess the current water management practices and suggest improvements to avoid waterlogging or excessive drainage. Proper irrigation scheduling and drainage systems can help maintain optimal soil moisture levels.
- 4) Recommend regular soil testing to assess nutrient levels and pH. Develop nutrient management plans to optimize fertilizer use and prevent over-application, reducing the risk of nutrient runoff.

7.0 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 neighbourhood, 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 to increasing property values, developing the local economy, and supporting tourism. 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. In a study, views of trees and shrubs at schools, as opposed to grass, were strongly related to future education plans and graduation rates 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. Trees can promote a quality education, which has innumerable advantages for society. Campus is located in the vicinity of approximately 155 types (species) trees. Various tree plantation programs are being organized during the month of July and August at college campus and surrounding villages. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various types of indigenous species of ornamental and medicinal. Instead of maintaining biodiversity the similar species planted is observed for example "NEEM". The dominant species in green belt are Neem, Pongam Tree, Amaltash, Copperpod and Sita Ashok. 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.

Image No. 15: Locations of Vegetation Component (Medicinal Species)



Image No. 16: Locations of Vegetation Component (Ornamental Species)

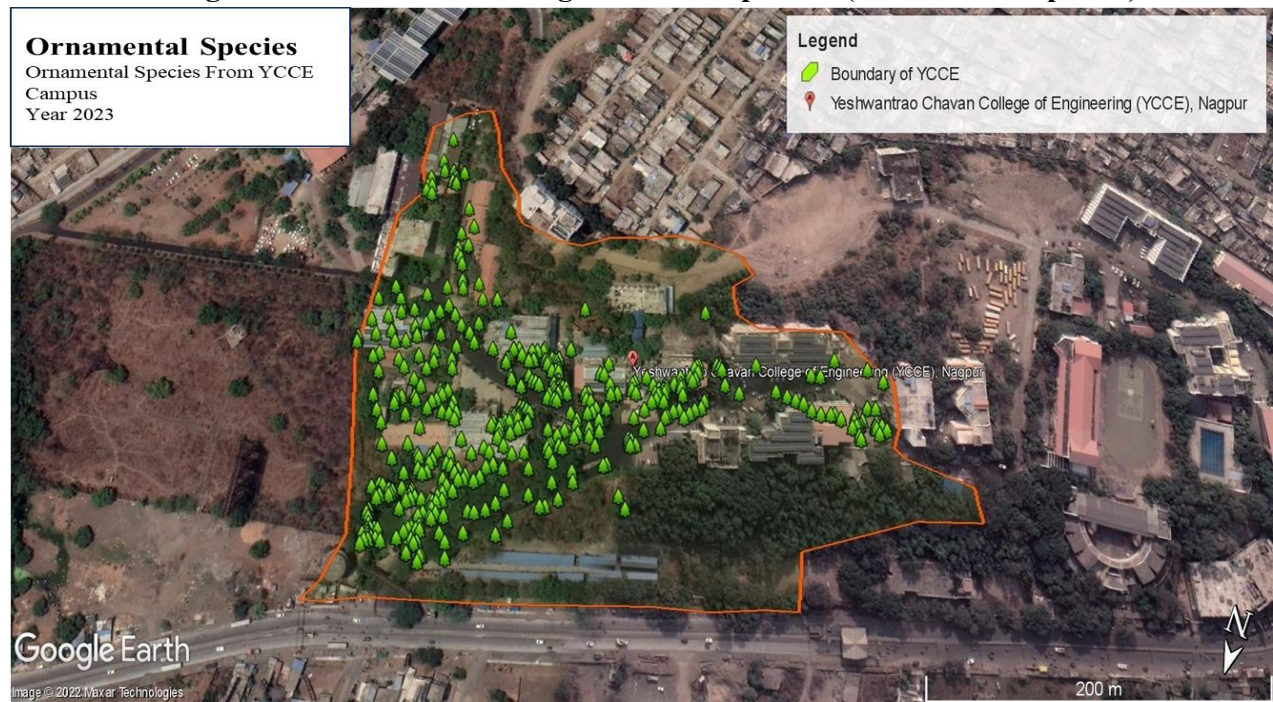


Image No. 17: Locations of Vegetation Component (Shrubs Species)



Image No. 18: Locations of Vegetation Component (Tree Species)



Image No. 19: Locations of All Vegetation in Campus

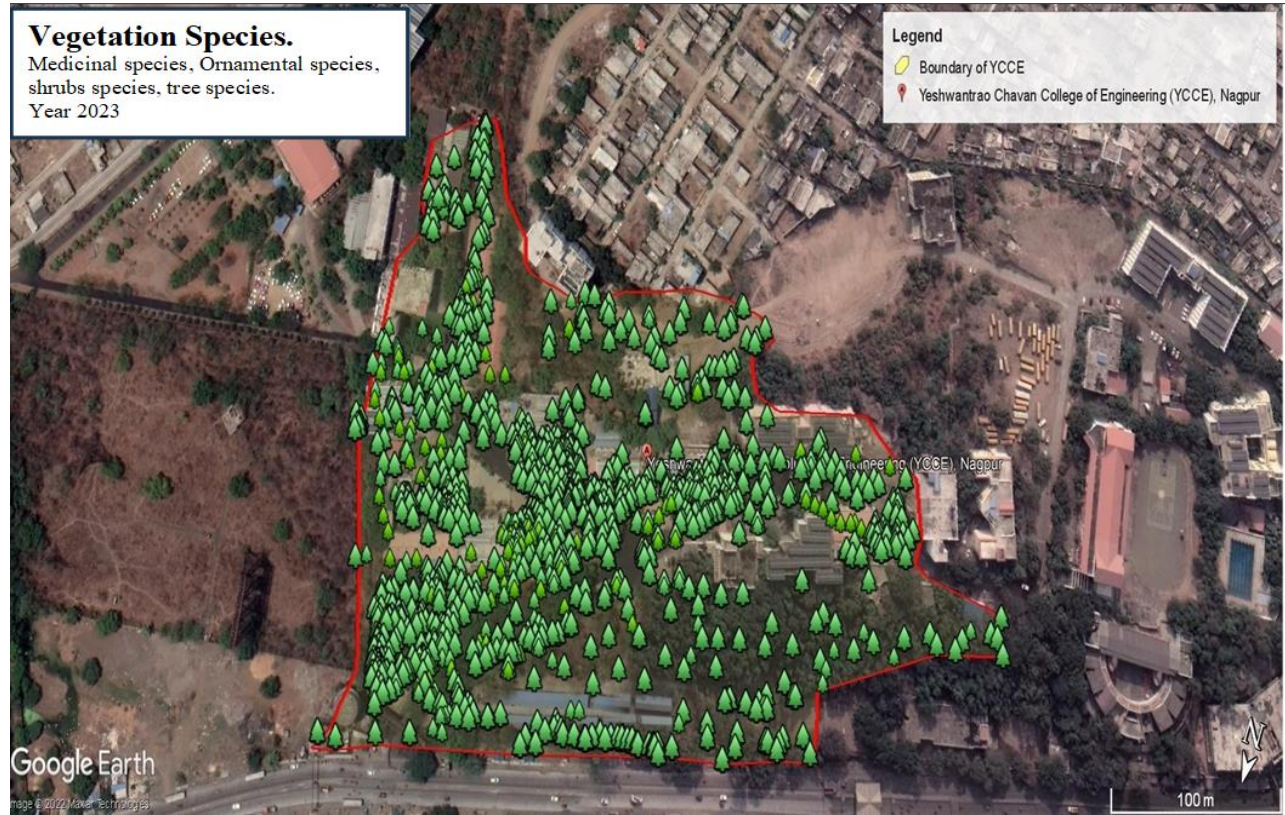
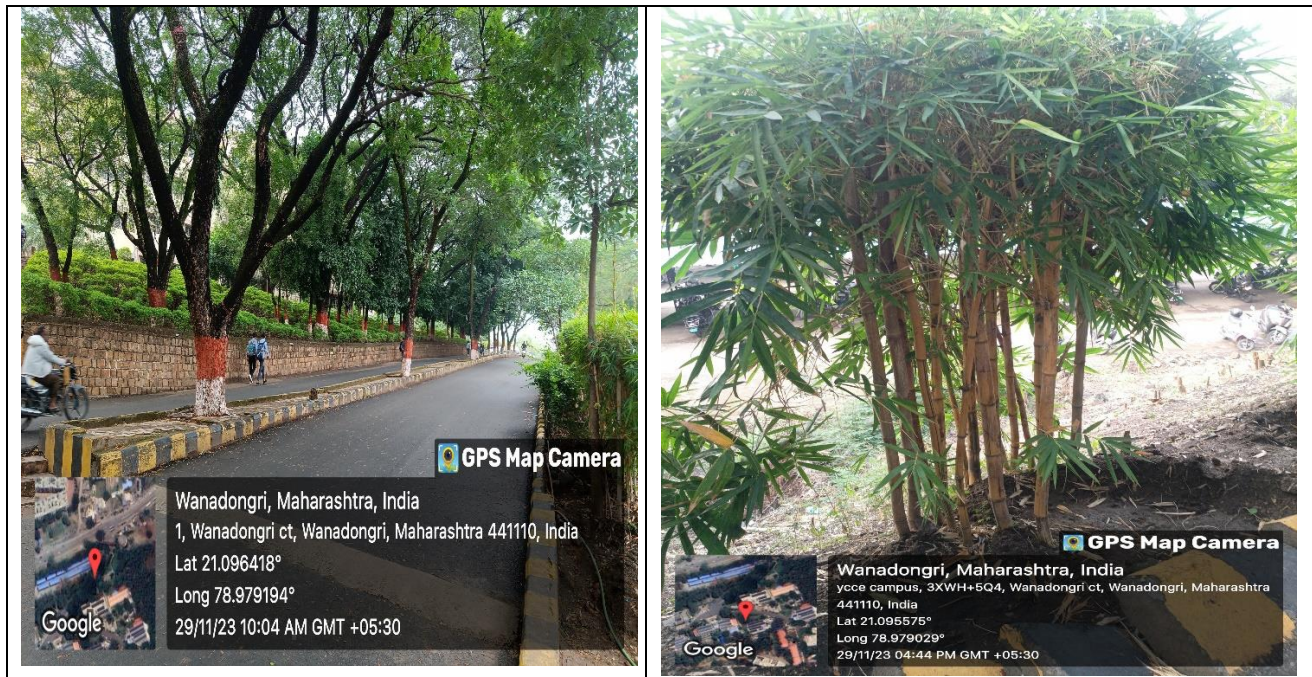
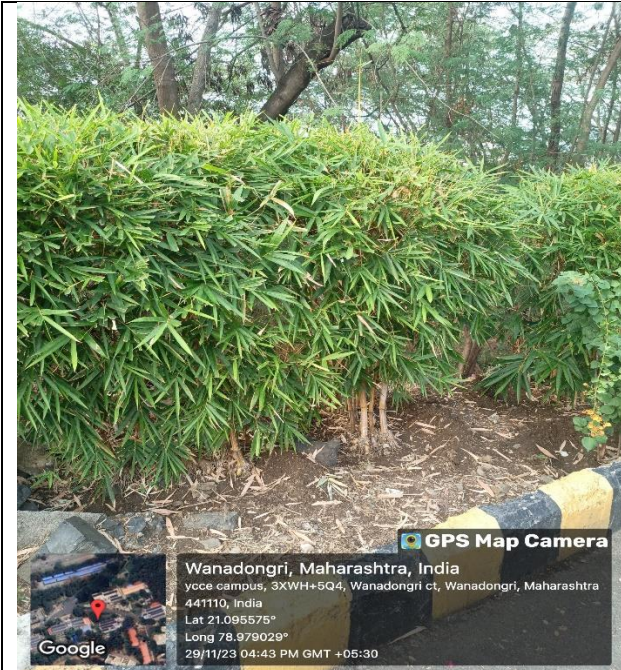


Image No. 20: Vegetation Pics in the Campus





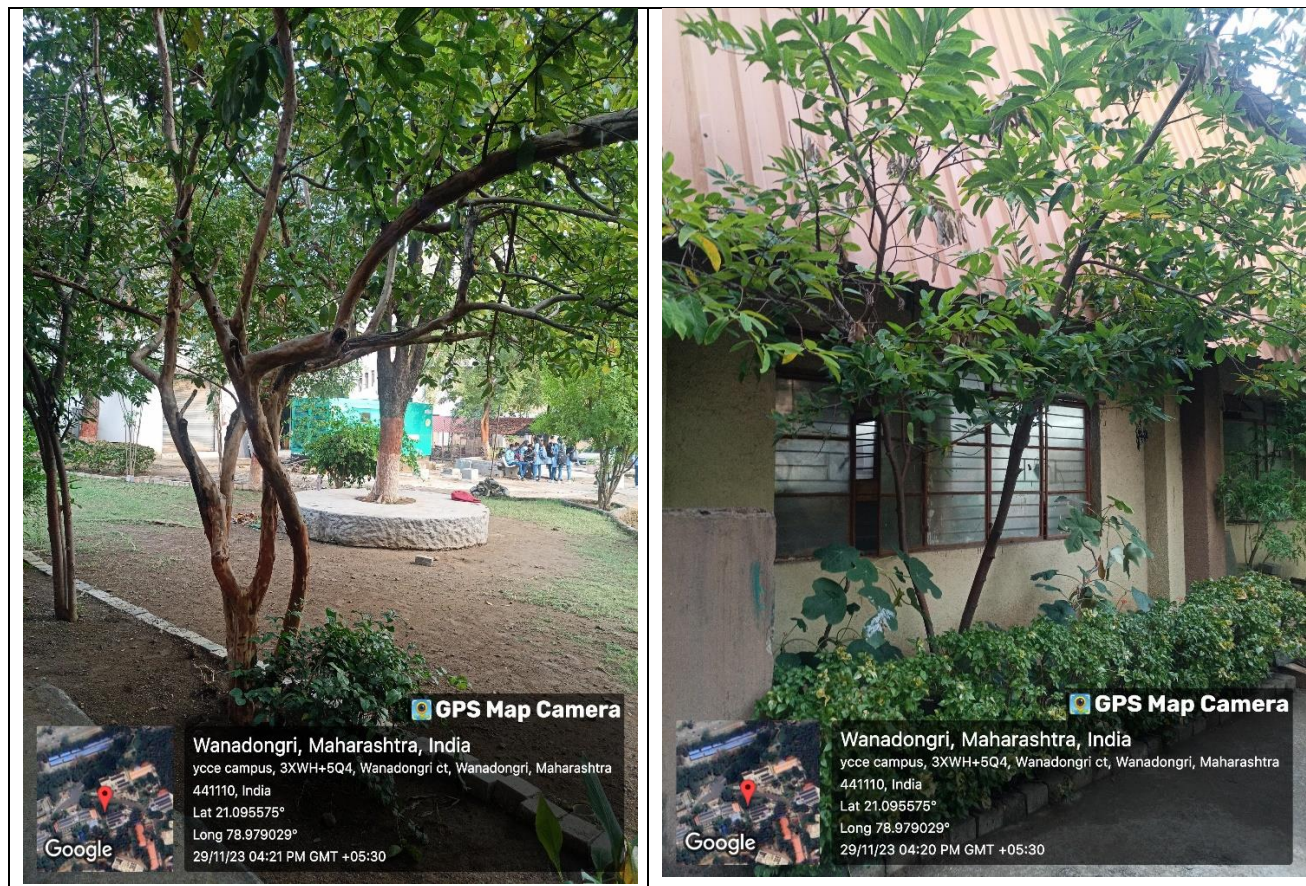


Table No. 26: Vegetation at YCCE: Ij Medicinal Species

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

Table No. 27: Relative Density of Medicinal Species

Sr. No.	Scientific Name	Common Name	No. of Individual	Relative Density
1)	<i>Celastrus orbiculatus</i> Thunb	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

Table No. 28: Vegetation at YCCE: IIj 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</i> Jacobi	Dwarf century plant	11
9)	<i>Agave sisalana</i> Perrine	Mescal	3
10)	<i>Bougainvillea spectabilis</i> Wild	Great bougainvillea	32
11)	<i>Duranta erecta</i> L.	Golden dewdrops	25
12)	<i>Euphorbia characias</i> L.	Mediterranean spurge	13
13)	<i>Hibiscus rosa-sinensis</i> L.	Hawaiian hibiscus	5
14)	<i>Phymosia umbellata</i>	Mexican Bush Mallow	3
15)	<i>Tecoma stans</i> (L.) juss. Ex Kunth	Yellow-bells	2
16)	<i>Acalypha wilkesiana</i>	Copperleaf	11
17)	<i>Agave sisalana</i> perrine	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</i> Booty	Japanese sedge	1
26)	<i>Cascabela thevetia</i>	Yellow oleander	25
27)	<i>Catharanthus roseus</i>	Periwinkle	16
28)	<i>Cestrum nocturnum</i>	Night jasmine	1
29)	<i>Chlorophytum comosum</i>	Spider plant	3
30)	<i>Codiaeum variegatum</i>	Croton	4
31)	<i>Cordyline fruticosa</i>	Broadleaf palm lily	1
32)	<i>Cycas revoluta</i>	Sago palm	2
33)	<i>Duranta erecta</i>	Golden dewdrop	147
34)	<i>Furcraea foetida</i>	Mauritius hemp	17
35)	<i>Heliconia rostrata</i>	Lobster claw	3
36)	<i>Hibiscus rosa sinensis</i>	Hawaiian hibiscus	19
37)	<i>Ixora coccinea</i>	Ixora	14
38)	<i>Jacaranda mimosifolia</i>	Blue jacaranda	1
39)	<i>Lagerstroemia indica</i>	Crapemyrtle	1
40)	<i>Lantana .montevidensis</i>	Purple lantana	2
41)	<i>Lantana camara</i>	Lantana	2
42)	<i>Murraya paniculata</i>	Orange jasmine	9

43)	<i>Neomarica gracilis</i>	Brazilian walking iris	9
44)	<i>Peltophorum pterocarpum</i>	Copper Rod	1
45)	<i>Pereskia grandifolia</i>	Rose Cactus	2
46)	<i>Rosa chinensis</i>	Bengal rose	2
47)	<i>Rosa gallica</i>	Hungarian rose	3
48)	<i>Rosmarinus officinalis</i>	Rosemary	1
49)	<i>Sphagneticola trilobata</i>	Wedelia	6
50)	<i>Tecoma stans</i>	Yellow bells	18
51)	<i>Thunbergia grandiflora</i>	Blue skyflower	1
52)	<i>Yucca filamentosa</i>	Adams needle	1
53)	<i>Yucca gloriosa</i>	Spanish dagger	1
Total			617

Table No. 29: Relative Density of Ornamental Species

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

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

Table No. 30: Vegetation at YCCE: III] Shrubs Species

Sr. No.	Scientific Name	Common Name	Total Species
1)	<i>Coffea arabica</i> L.	Arabian coffee	11
2)	<i>Comoclinium coelestinum</i>	Blue mist flower	29
3)	<i>Jasminium sambac</i>	Arabian jasmin	49
4)	<i>Leucaena leucocephala</i>	Coffeebush	6
5)	<i>Pseuderanthemum carruthersii</i>	Purple false erranthemum	5
6)	<i>Acalypha indica</i>	Indian Copperleaf	6
7)	<i>Buglossoides purpuro caerulea</i>	Purple gromwell	8
8)	<i>Cardiospermum halicacabum</i>	Ballon vine	11
9)	<i>Carissa carandas</i>	Karandang	4
10)	<i>Cordia myxa</i>	Sebesten plum	2
11)	<i>Cyanthillium cinereum</i>	Little ironweed	5
12)	<i>Desmodium paniculatum</i>	Panicked tick clover	9
13)	<i>Galphimia glauca</i>	Gold shower	13
14)	<i>Hamelia patens</i>	Redhead	8
15)	<i>Iris foetidissima</i>	Stinking Iris	5
16)	<i>Lactuca virosa</i>	Bitter lettuce	6
17)	<i>Leucaena leucocephala</i>	Coffee bush	14
18)	<i>Ligustrum vulgare</i>	Common privet	25
19)	<i>Mirabilis jalapa</i>	Four o' clock flower	2
20)	<i>Myoporum tenuifolium</i>	Manatoka	4
21)	<i>Nerium oleander</i>	Oleander	1
22)	<i>Nerium oleander</i>	Oleander	8
23)	<i>Plumbago auriculata</i>	Plumbago	5
24)	<i>Podranea ricasoliana</i>	Queen of sheba vine	3
25)	<i>Pseuderanthemum carruthersii</i>	Purple False Eranthemum	2
26)	<i>Ruscus aculeatus</i>	Box holly	5
27)	<i>Senna occidentalis</i>	Antbush	3
28)	<i>Syringa vulgaris</i>	Lilac	4
29)	<i>Tabernaemontana 92orficate92</i>	Crape jasmine	9
30)	<i>Tridax procumbens</i>	Coatbuttons	12
Total			274

Table No. 31: Relative Density of Shrub Species

Sr. No.	Scientific Name	Common Name	No. of Individual	Relative Density
1)	<i>Coffea arabica</i> L.	Arabian coffee	11	4.015
2)	<i>Comoclinium coelestinum</i>	Blue mist flower	29	10.584
3)	<i>Jasminium sambac</i>	Arabian jasmin	49	17.883
4)	<i>Leucaena leucocephala</i>	Coffeebush	6	2.190
5)	<i>Pseuderanthemum carruthersii</i>	Purple false erranthemum	5	1.825
6)	<i>Acalypha indica</i>	Indian Copperleaf	6	2.190
7)	<i>Buglossoides purpureo caerulea</i>	Purple gromwell	8	2.920
8)	<i>Cardiospermum halicacabum</i>	Ballon vine	11	4.015
9)	<i>Carissa carandas</i>	Karandang	4	1.460
10)	<i>Cordia myxa</i>	Sebesten plum	2	0.730
11)	<i>Cyanthillium cinereum</i>	Little ironweed	5	1.825
12)	<i>Desmodium paniculatum</i>	Panicled tick clover	9	3.285
13)	<i>Galphimia glauca</i>	Gold shower	13	4.745
14)	<i>Hamelia patens</i>	Redhead	8	2.920
15)	<i>Iris foetidissima</i>	Stinking Iris	5	1.825
16)	<i>Lactuca virosa</i>	Bitter lettuce	6	2.190
17)	<i>Leucaena leucocephala</i>	Coffee bush	14	5.109
18)	<i>Ligustrum vulgare</i>	Common privet	25	9.124
19)	<i>Mirabilis jalapa</i>	Four o' clock flower	2	0.730
20)	<i>Myoporum tenuifolium</i>	Manatoka	4	1.460
21)	<i>Nerium oleander</i>	Oleander	1	0.365
22)	<i>Nerium oleander</i>	Oleander	8	2.920
23)	<i>Plumbago auriculata</i>	Plumbago	5	1.825
24)	<i>Podranea ricasoliana</i>	Queen of sheba vine	3	1.095
25)	<i>Pseuderanthemum carruthersii</i>	Purple False Eranthemum	2	0.730
26)	<i>Ruscus aculeatus</i>	Box holly	5	1.825
27)	<i>Senna occidentalis</i>	Antbush	3	1.095
28)	<i>Syringa vulgaris</i>	Lilac	4	1.460
29)	<i>Tabernaemontana orficata</i>	Crape jasmine	9	3.285
30)	<i>Tridax procumbens</i>	Coatbuttons	12	4.380

Table No. 32: 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 coriacea</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>Platycladus 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 lebbeck</i>	Frywood	2
36)	<i>Alstonia scholaris</i>	Devil tree	3
37)	<i>Plumeria obtusa</i>	Singapore graveyard	10

38)	<i>Ficus benamina</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>Platycladus orientalis</i>	Chinese arborvitae	9
47)	<i>Platycladus 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</i> L.	Southern magnolia	19
57)	<i>Juniperus thurifera</i> L.	Incense Juniper	7
58)	<i>Citrus sinensis</i> (L.)	Valencia orange	3
59)	<i>Ravenala madagascariensis</i>	Traveler's palm	13
60)	<i>Ficus benamina</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</i> Sond.	Quininetree	15
65)	<i>Psidium guajava</i> L.	Common guava	6
66)	<i>Roystonea regia</i> (Kunth)	Cuban royal palm	18
67)	<i>Tipuana tipu</i> (benth.) Kuntze	Tiputree	35
68)	<i>Theobroma cacao</i> L.	cocoa	39
69)	<i>Caesalpinia pulcherrima</i> (L.)Sw.	Pride-of-Barbados	14
70)	<i>Prosopis pallida</i> (wild.) Kunth	Kiawe	6
71)	<i>Ficus hispida</i> L.f.	Hairy fig	2
72)	<i>Dalbergia latifolia</i> Roxb.	East Indian rosewood	1
Total			718

Table No. 33: 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)	<i>Roystonea regia</i>	Cuban royal palm	5	0.696
11)	<i>Murraya koenigii</i>	Curry leaf	8	1.114
12)	<i>Alstonia scholaris</i>	Dita bark	41	5.710
13)	<i>Hyphene coriaceae</i>	Doum palm	4	0.557
14)	<i>Plumeria rubra</i>	Frangipani	4	0.557
15)	<i>Plumeria pudica</i>	Golden arrow	4	0.557
16)	<i>Lonicera japonica</i>	Honeysuckle	4	0.557
17)	<i>Washingtonia robusta</i>	Mexican fan palm	4	0.557
18)	<i>Bauhinia orficata</i>	Orchid tree	4	0.557
19)	<i>Ficus religiosa</i>	Sacred fig	4	0.557
20)	<i>Cycus revoluta</i>	Sago palm	4	0.557
21)	<i>Phoenix reclinata</i>	Senegal date palm	4	0.557
22)	<i>Annona squamosa</i>	Sugar apple	4	0.557
23)	<i>Citrus sinensis</i>	Sweet orange	4	0.557
24)	<i>Terminalia catappa</i>	Tropical almond	4	0.557
25)	<i>Schotia brachypetale</i>	Weeping boer bean	4	0.557
26)	<i>Platycladus orientalis</i>	Chinese arborvitae	4	0.557
27)	<i>Juniperus chinensis</i>	Chinese juniper	4	0.557
28)	<i>Thuja occidentalis</i>	Northern white cedar	4	0.557
29)	<i>Cupressus sempervirens</i>	Mediterranean cypress	4	0.557
30)	<i>Carica papaya</i>	Papaya	4	0.557
31)	<i>Alstonia scholaris</i>	Ditabark	4	0.557
32)	<i>Roystonea regia</i>	Cuban royal palm	4	0.557
33)	<i>Senna siamea</i>	Siamese cassia	6	0.836

34)	<i>Caesalpinia echinata</i>	Brazil wood	15	2.089
35)	<i>Albizia lebbek</i>	Frywood	2	0.279
36)	<i>Alstonia scholaris</i>	Devil tree	3	0.418
37)	<i>Plumeria obtusa</i>	Singapore graveyard	10	1.393
38)	<i>Ficus benjamina</i>	weeping fig	3	0.418
39)	<i>Citrus aurantifolia</i>	Sweet orange	4	0.557
40)	<i>Campsis radican</i>	Trumpet vine	7	0.975
41)	<i>Terminalia catappa</i>	Indian almond	5	0.696
42)	<i>Bambusa vulgaris</i>	Common bamboo	59	8.217
43)	<i>Alstonia scholaris</i>	Devil tree	6	0.836
44)	<i>Caesalpinia pulcherrima</i>	Peacock flower	19	2.646
45)	<i>Caryota urens</i>	Jaggery palm	11	1.532
46)	<i>Platycladus orientalis</i>	Chinese arborvitae	9	1.253
47)	<i>Platycladus orientalis</i>	Chinese arborvitae	26	3.621
48)	<i>Ficus cyanthistipula</i>	African fig tree	29	4.039
49)	<i>Bismarckia nobilis</i>	Silver Bismarck Palm	6	0.836
50)	<i>Duranta erecta</i>	golden dewdrop	19	2.646
51)	<i>Bombax ceiba</i>	Cotton tree	5	0.696
52)	<i>Ficus sycomorus</i>	Sycamore fig	9	1.253
53)	<i>Pongamia pinnata</i>	Indian beech	2	0.279
54)	<i>Ficus religiosa</i>	Sacred fig	9	1.253
55)	<i>Alstonia scholaris</i>	Ditabark	8	1.114
56)	<i>Magnolia grandiflora</i> L.	Southern magnolia	19	2.646
57)	<i>Juniperus thurifera</i> L.	Incense Juniper	7	0.975
58)	<i>Citrus sinensis</i> (L.)	Valencia orange	3	0.418
59)	<i>Ravenala madagascariensis</i>	Traveler's palm	13	1.811
60)	<i>Ficus benjamina</i>	Weeping fig	10	1.393
61)	<i>Terminalia catappa</i>	Tropical almond	5	0.696
62)	<i>Gleditsia triacanthos</i>	Honey locust	3	0.418
63)	<i>Senna siamea</i>	Ironwood Cassia	4	0.557
64)	<i>Rauvolfia caffra</i> Sond.	Quininetree	15	2.089
65)	<i>Psidium guajava</i> L.	Common guava	6	0.836
66)	<i>Roystonea regia</i> (Kunth)	Cuban royal palm	18	2.507
67)	<i>Tipuana tipu</i> (benth.)	Tiputree	35	4.875
68)	<i>Theobroma cacao</i> L.	cocoa	39	5.432

69)	<i>Caesalpinia pulcherrima</i>	Pride-of-Barbados	14	1.950
70)	<i>Prosopis pallida</i> (wild.)	Kiawe	6	0.836
71)	<i>Ficus hispida</i> L.f.	Hairy fig	2	0.279
72)	<i>Dalbergia latifolia</i> Roxb.	East Indian rosewood	1	0.139

8.0 Vegetation Audit: Fauna Diversity

The 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. Increase in bird densities may be the result of high food density, low predation pressure or combination of both. Birds are an essential animal group of an ecosystem that maintains a trophic level. Therefore, a detailed study on avifauna and their ecology is important to protect them.

Birds are considered 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. Comparative studies on avian community structure in different habitats can improve our knowledge of the general patterns and processes that characterize bird species and communities.

The fauna species were documented by observation and identification method during the field excursion. The observed species are photographed as 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.

Image No. 21: Sampling Area for Fauna Audit



Table No. 34: Bird Species at YCCE

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

Table No. 35: 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>	African 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>Anisoptera</u>	Dragonfly
9)	<u><i>Appia libythea</i></u>	Stripped Albatross
10)	<u><i>Euploea core</i></u>	Common crow

Table No. 36: Reptile Species at YCCE

List of Reptile Species		
Sr. No.	Scientific Name	Common Name
1)	<i>Eutropis multifasciata</i>	Many striped skink
2)	<i>Anoplodesmus saussurii</i>	Millipedes

3)	Sitana ponticeriana	Pondichery fan throated lizard
4)	Takydromus tachy deomoides	Grass lizard
5)	Achatina fulica	Giant African snail

Table No. 37: Amphibian Species at YCCE

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

Table No. 38: Rodent Species at YCCE

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

Observation & Recommendations

- 1) The Green Belt is to be developed in the campus as the guidelines of NGT.
- 2) Total 33% area is to be reserved for plantation and to be planted in the area as per the guidelines of the CPCB.
- 3) The biodiversity is to be maintained while considering the plantation in future.
- 4) The selection of trees species to be based on environmental conservation and carbon sequestration value.
- 5) Artificial nests and water ponds are recommended to attract different birds in their migrating and breeding season.
- 6) Plant survival rate is to be maintained.
- 7) Watering schedule to be planned according to the season.
- 8) Drip irrigation is strongly recommended to conserve the water.
- 9) Reuse of the water shall be done instead of use of fresh water.
- 10) The car case of the plant is to be maintained to enhance the aesthetic value of premises.
- 11) Special Tree Plantation shall be celebrated every year on environment day and also competitions for bird species identification and knowing the tree values in terms of medicinal and environment conservation.

9.0 Energy Audit: 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 analysed with due details about no. of units utilized daily/monthly and also department wise all the electrical equipment's utilizing electrical energy were enlisted with the amount of energy they utilize.

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

Aim and objective:

- 1) To save conventionally produce electric energy
- 2) Use of non- conventional source of energy
- 3) Use carbon neutral electricity
- 4) Minimization of electric expenses

Observations

Following Energy Sources are used in the college:

- Solar
- Electrical
- Diesel
- Petrol
- LPG

Energy conservation is the decision and practice of using less energy. Turning off the light when you leave the room, unplugging appliances when they are not in use and walking instead of driving are all examples of energy conservation. The two main reasons people conserve energy are to gain more control over their energy bill and reduce the demand on the earth's natural resources. Energy conservation and efficiency may be related, but they have distinct definitions in the energy world. Energy conservation involves using less energy by adjusting your behaviours and habits. Energy efficiency, on the other hand, involves using technology that requires less energy to perform the same function. Energy-saving light bulbs, large household appliances, smart thermostats, and smart home hubs like Constellation Connect are all examples of technology that can be energy efficient.

Energy resources utilized by all the departments, support services, and the administrative buildings of Yeshwantrao Chavan College of Engineering Nagpur, include Electricity, Solar Roof Top Systems, and Diesel Generators installed on the campus. Every time the Energy Audit is carried out it rekindles the interest in Energy Conservation as an important function.

Department wise details

Table No. 39: List of Electrical Equipment's at Department of Civil Engg.

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				1	1											
3	3 & 4 Office	2	1	2	1	5	1		1	2				1																	
4	5 Office	2	1	5				1	1																						
5	Passage			4									1																		
6	Gents Toilet panel			2										1																	
7	Transportation Engg	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					1				
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																											
15	Strength of Material	4	1	2			2	2																							
16	Geotechnical Lab	6		4			5	1																			1				
17	Concrete Lab	10	7	1			10																4		2				1	1	
18	Sarve Lab	3	2	2			5	1																							
19	First Floor																														
20	Staff Room	2	1	2				2																							
21	Computer Lab 102	8			15			40																							
22	Computer Lab 103	8			15			25	2	1	3																				
23	Computer Lab 104	4		2			6																								
24	Computer Lab 105	4				24		30																							
25	Water supply Lab 106	4		2			4	1														4	1								
26	Survey Lab	4					6	1																							
	CE 110	1		2																											
	Structural Dynamics 109	7	7	1				2							1																
27	CE 108	1		2				1	1																						
28	Passage			3			1																								
29	Toilet			1																											
30	CE 111	7	5	1				2																							
31	Second Floor																														
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																								
39	Third Floor																														
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										2															
48	Passage			3	4																								
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	3	2	2	1	1
50	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	1200	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 day Hrs	7	7	7	7	7	7	7	1	1	24	24	2	12	7	7	7	7	2	2	2	2	2	1	1	1	2	2	1
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	179	768	134.4	358.1	4.32	134.28	48	35.808	177.6	0

Table No. 40: List of Electrical Equipment's at Department of Electronics Engg.

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	Zerox M/C	Calibration M/c	Naplin 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			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																
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																										
15																										
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									
19	Gents Toilet			1												1										
20	Passage Right					3		19																		
21	Passage Left					2		14														1				
22	Workshop Lab	6	2	4						12			1									4				
23	Electronics Device 007B	11	6	5				4		11												8				
Second Floor																										
24																										
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																										
36																										
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															
44	Issue Counter	2		3								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 MonthKWH	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. 41: List of Electrical Equipment's at Department of Electronics and Telecommunication Engg.

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 x 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								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. 42: List of Electrical Equipment's at Department of Information Technology Engg.

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 Month KWH	1280	132	124	505	21	4561	14	33.6	173	768	9.6	86.4	70.6	1344	24

Table No. 43: List of Electrical Equipment's 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	Room310	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. 44: List of Electrical Equipment’s at Department of Mechanical Engg.

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	ray M/C
			T5	36	36x 2	20												
																		1000
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			
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							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							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												
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
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Table No. 45: List of Electrical Equipment's at Department of Electrical Engg.

Sr no.	Name of Lab	Fan 60 w	Tube light		LED	LED 15 w	LED 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																
	Ground Floor				20															
1	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	EI 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	EI 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
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Table No. 46: List of Electrical Equipment’s at Admin Building

Sr no.	Name of Lab	Fan 60 w	Tube light			LED	LED	LED	LED	CF	LED	LED	CFL	CFL	PC	Printer	Projector	Monitor	Wall Fan	Table Fan	Water Cooler	RO	Exhaust Fan	AC Split	Zero x M/C	Ducting Cooler	Scanner	Freezer	Table AC	TV
			LED	LED	LED		L	D	D	36x2	18x2	2x3																		
			T5	36	2x3	20																			2 HP					
1	AD 105		1																	1	1									
2	Principal Office	2	3				9	1						1	1								1							
3	AD 115					1								1	1															
4	AD 103	1							4									1												
5	AD 104	1	1	1																		1								
6	AD 102	1		4					6					2	1								1							
7	AD 101	1											6	1	1								1							
8	Passage	2	3			3	2					10	3																	
9	Porch					2									8															
10	Information Res	4		9											4															
11	Wankhede mad	1		2										2	1								1							
12	AD 120	16		5		34							11	41				2	1											
13	Library	14		8		24																								
14	AD 014	2		2		1																								
15	Thakre Sir	1				1								4	1															
16	AD 013	9		15		9												1				1		1						
17	AD 222	1											4	1	1								1							
18	Passage	2				2							4																	
19	AD 212	1											4	1	1								1							
20	AD 213																		1											
21	AD 213 B																	1												
22	AD 214	1											4	1	1								1							
23	AD 215	1											4	1	1								1							
24	AD 216	1											4	1	1								1							
25	AD 217	1											4	1	1								1							
26	AD 218	1		1																										
27	Passage						1						5																	
28	AD 211					2																1								
29	AD 221	11		12																										
30	Stear Case Library			3																										
31	AD 118		1																											
32	Porch			2																										
33	AD 201	2										2	1	1									1							
34	Students Placem	2										2											1							
35	AD 202	4										6	3	1																
36	Electrical Engg	9			12								11						4											
37	Inovetion Galler	6										63	15										4							
38	Passage			2									3						2											
39	Main Passage	2											9																	
40	Admin Office	11				2	12						16	16	13				4	1										
41	Passage	3					1	3					4	1										1						
42	Toilet					2																1								
43	A O Office	1											5	1	1								1							
44	AD 005	1				1							4																	
45	Record Room	2				2																								
46	ERP 006	2		2		2								6	2									1						
47	Scholarship Sec	2						1					2	2	1															
48	Admission Roo	4	9				1						6	4										1						
49	Board Room	6					26																							
50	Total	132	18	68	12	88	52	5	10	4	73	30	10	110	92	31	1	1	16	2	1	1	4	20	3					

51	Watts	60	28	36	72	20	15	20	12	18	5	9	72	36	150	100	100	100	60	60	1500	100	300	2000	500	149	10	50	200	20
52	Total Watts	7920	504	2448	864	1760	780	100	120	72	36	270	720	3960	13800	3100	100	100	960	120	1500	100	1200	40000	1500	895	10	100	400	40
53	Per day Hrs	7	7	7	7	7	7	7	7	7	7	7	7	7	7	1	1	24	2	2	7	7	12	7	7					
54	Per MonthKWH	1331	85	411.3	145	296	131	17	20	12	61	45	121	665	2318	74.4	2.4	57.6	46.1	5.76	252	16.8	345.6	6720	252	859.	2.	16	38	1

Table No. 47: Monthly utilization of Electricity at YCCE

Sr. No.	Months /Year	Units	Bill Demand (KVA)	Amount (Rs)
1)	Apr-23	74555	455	1165260
2)	May-23	89584	559	1391790
3)	Jun-23	126768	481	1906550
4)	Jul-23	113780	455	1682600
5)	Aug-23	92648	455	1436070
6)	Sep-23	98253	455	1583360
7)	Oct-23	77862	455	1271480
8)	Nov-23	44751	455	869050
9)	Dec-23	53619	455	981780
10)	Jan-24	51293	455	950260
11)	Feb-24	57754	423	1033150
12)	Mar-24	73063	423	1227040
13)	Apr-24	95366	455	1664250
14)	May-24	96100	455	1669720
15)	Jun-24	111315	455	1901590
16)	Jul-24	114767	455	1964720
17)	Aug-24	115483	455	2013230
18)	Sep-24	100824	455	1779510
19)	Oct-24	84884	455	1561730
20)	Nov-24	37746	455	1013640

Table No. 48: Carbon Footprint based on Electrical Consumption

Sr. No.	Months /Year	Total Units (kWh)	Amount	CO ₂ Emission (kgCO ₂ e)
1)	Apr-23	74555	1165260	63372
2)	May-23	89584	1391790	76146
3)	Jun-23	126768	1906550	107753
4)	Jul-23	113780	1682600	96713
5)	Aug-23	92648	1436070	78751
6)	Sep-23	98253	1583360	83515
7)	Oct-23	77862	1271480	66183
8)	Nov-23	44751	869050	38038
9)	Dec-23	53619	981780	45576
10)	Jan-24	51293	950260	43599
11)	Feb-24	57754	1033150	49091

12)	Mar-24	73063	1227040	62104
13)	Apr-24	95366	1664250	81061
14)	May-24	96100	1669720	81685
15)	Jun-24	111315	1901590	94618
16)	Jul-24	114767	1964720	97552
17)	Aug-24	115483	2013230	98161
18)	Sep-24	100824	1779510	85700
19)	Oct-24	84884	1561730	72151
20)	Nov-24	37746	1013640	32084

Emission factor – 0.85

10.0 Energy Audit: 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 power grid. The data regarding Solar energy generation was measured to understand the solar energy potential at YCCE campus.

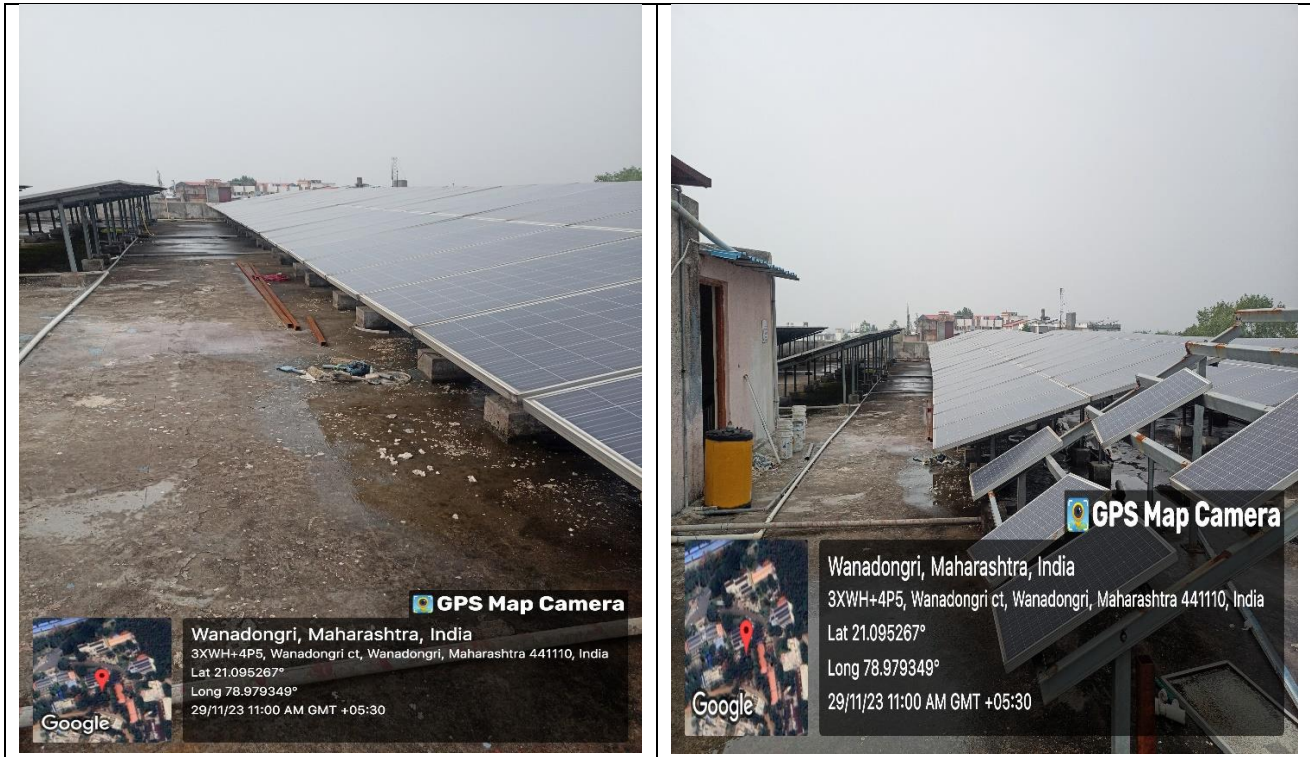
Table No. 49: Solar Energy Potential and CO₂ Emission at YCCE

Sr. No.	Bill Month	Roof top solar net metering capacity (kW)	Total Solar Energy Generation	CO ₂ Emission (kgCO ₂ e)
1)	Apr-23	400	73694	62640
2)	May-23	400	89116	75749
3)	Jun-23	400	73984	62886
4)	Jul-23	400	49924	42435
5)	Aug-23	400	63028	53574
6)	Sep-23	400	56043	47637
7)	Oct-23	400	75672	64321
8)	Nov-23	400	59918	50930
9)	Dec-23	400	57528	48899
10)	Jan-24	400	57119	48551
11)	Feb-24	400	65304	55508
12)	Mar-24	400	80677	68575
13)	Apr-24	400	67705	57549
14)	May-24	400	79395	67486
15)	Jun-24	400	64842	55116
16)	Jul-24	400	43970	37375
17)	Aug-24	400	52186	44358
18)	Sep-24	400	59375	50469
19)	Oct-24	400	70780	60163
20)	Nov-24	400	59592	50653

* kW – Kilo Watts

Emission factor – 0.85

Image No. 22: Solar Rooftop setup at YCCE



11.0 Vehicle Audit

A vehicle audit is defined as a systematic procedure that obtains an adequate knowledge of existing energy consumption in vehicles. It helps to identify the factors that have an effect on the energy / power consumption by vehicles. The performance of an vehicle audit is the essential step to the energy efficiency and improvements. It is a procedure that helps to analyse the use of different types of fuels and its implication on environment. Following are the details of vehicle owned by YCCE and vehicle managed by staff and students.

Table No. 50: 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

Table No. 51: Vehicle Details

SR. No.	Department	Four Wheeler	Two Wheeler
1	Civil Engineering	22	16
2	Mechanical Engineering	24	12
3	Computer Science Engineering	4	12
4	Computer Technology	19	15
5	Electrical Engineering	25	20
6	Electronics Engineering	15	16
7	Electronics and Telecommunication Engineering	18	6
8	Information Technology	9	23
9	Mathematics	6	15
10	Applied Physics	3	7
11	Applied Chemistry	2	9
12	Administrative Office + A/C	6	18
13	DAM	2	1
14	COE Office	3	7

15	Library	2	8
16	Maintenance	1	3
17	Store	0	1
Total		161	189

Table No. 52: CO₂ emission of single bike

Size of bike	kg of CO ₂ e, per km	kg of CO ₂ e, per mile
Small	0.08277kg	0.13321kg
Medium	0.10086kg	0.16230kg
Large	0.13237kg	0.21302kg
Average	0.11337kg	0.18245kg

12.0 Sound Audit

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.

Image No. 23: Locations of Sound Component



Table No. 53: 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. 54: Noise Quality Standards

Noise level in Leq dB (A)			
S.N.	Area	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. 55: WHO Guidelines for Sound Level

Specific Environment	Time Base (hours)	Standards limits as per WHO guidelines	
		L _{Aeq} (dB)	L _{Amax, 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 L _{Amax, fast} , measured 100 mm from the car)
Outdoor in parkland and conversation areas	-	Exiting quiet outdoor areas should be preserved and	

		the of intruding noise to natural background sound should be kept low	-
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Table No. 56: 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

Observation & Recommendations

- 1) Encourage the staff and students to use Common or public Vehicle instead individual vehicle to conserve fossil fuel
- 2) Maximum Solar energy is recommended to use in mess and canteen
- 3) Carbon Sequestration study shall be carried out before plantation of Green Belt.
- 2) Energy Consumption for each building should be estimated to design the energy conservation plan.
- 4) Energy saving awareness shall be done by displaying the boards at appropriate place
- 5) Encourage natural ventilation and illumination by alteration in the building structures whenever going for new constructions
- 6) Prioritize energy-saving recommendations based on their cost-effectiveness and potential for energy savings. Identify quick wins and long-term strategies.
- 7) Explore the feasibility of alternative fuels (e.g., electric, hybrid, compressed natural gas) and advanced vehicle technologies. Consider transitioning to more fuel-efficient or environmentally friendly options.

- 8) Evaluate the cost-effectiveness of replacing older, less fuel-efficient vehicles with newer, more efficient models. Consider the total cost of ownership, including fuel, maintenance, and depreciation.
- 9) Determine critical areas where noise has the most significant impact on occupants or operations. Focus on mitigating noise in these priority zones.
- 10) Implement administrative controls, such as scheduling noisy activities during less sensitive times or creating designated quiet zones.
- 11) Educate occupants and staff about noise-related issues, the importance of adhering to noise control measures, and the benefits of a quieter environment.

13.0 Waste Audit: 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

Image No. 24: Institutional Municipal Solid Waste Pit



Image No. 25: Solid Waste pit at YCCE



Table No. 57: 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 2022-2023 = 714.126 kg*365 days = 260655.99 kgs/yr

13.1 Institutional Municipal Solid Waste Management Plan

Developing an effective Institutional Municipal Solid Waste (MSW) Management Plan requires a comprehensive approach that considers waste generation, collection, transportation, processing, and disposal. Below are some key components and suggestions for creating such a plan:

a. Waste Characterization:

Conduct a thorough waste characterization study to understand the composition and quantity of different types of waste generated in the municipality.

b. Legal and Regulatory Framework:

Identify and comply with local, regional, and national regulations related to waste management.

Develop policies and guidelines for waste management in accordance with the regulatory framework.

c. Institutional Structure:

Establish a dedicated municipal solid waste management department or division responsible for planning, implementing, and monitoring waste management activities.

d. Public Awareness and Education:

Launch public awareness campaigns to educate residents about proper waste disposal practices, recycling, and the importance of reducing waste.

e. Waste Collection:

Design an efficient waste collection system, considering the frequency, routes, and types of collection (e.g., curbside pickup, drop-off points).

Implement separate collection for recyclables, organic waste, and non-recyclables.

f. Waste Transportation:

Develop a transportation plan to ensure timely and efficient movement of waste from collection points to processing facilities or disposal sites. Consider environmentally friendly transportation options.

g. Waste Processing and Treatment:

Establish or upgrade waste processing facilities, such as composting plants, recycling centers, and waste-to-energy facilities. Encourage the private sector to invest in innovative waste processing technologies.

h. Landfill Management:

Develop and implement measures to minimize the environmental impact of landfills, such as leachate control and gas collection systems. Explore options for landfill site remediation and closure.

i. Waste Reduction and Recycling Programs:

Promote and incentivize waste reduction at the source. Implement comprehensive recycling programs and provide facilities for residents and businesses to recycle.

j. Monitoring and Reporting:

Establish a robust monitoring and reporting system to track waste generation, collection efficiency, recycling rates, and other key performance indicators.

k. Technology Integration:

Explore the use of technology, such as smart bins, GPS tracking for waste collection vehicles, and mobile apps for citizen engagement.

l. Collaboration and Partnerships:

Collaborate with local businesses, NGOs, and community groups to enhance waste management efforts. Explore public-private partnerships for waste management services.

m. Emergency Response Plan:

Develop an emergency response plan for managing unexpected events, such as natural disasters or sudden increases in waste generation.

n. Budget and Funding:

Develop a sustainable funding model for waste management activities, considering user fees, grants, and partnerships.

o. Periodic Review and Updating:

Regularly review and update the waste management plan to adapt to changing circumstances, technologies, and regulations.

13.2 E-Waste Management

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more

hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

E-waste generated in the campus is very less in quantity. The cartridges of laser printers are refilled outside the college campus. Administration conducts the awareness programmes regarding E-waste Management with the help of various departments. The E- waste and defective item from computer laboratory is being stored properly. The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

14.0 Waste Audit- 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. 26: Location of Sewage Treatment Plant

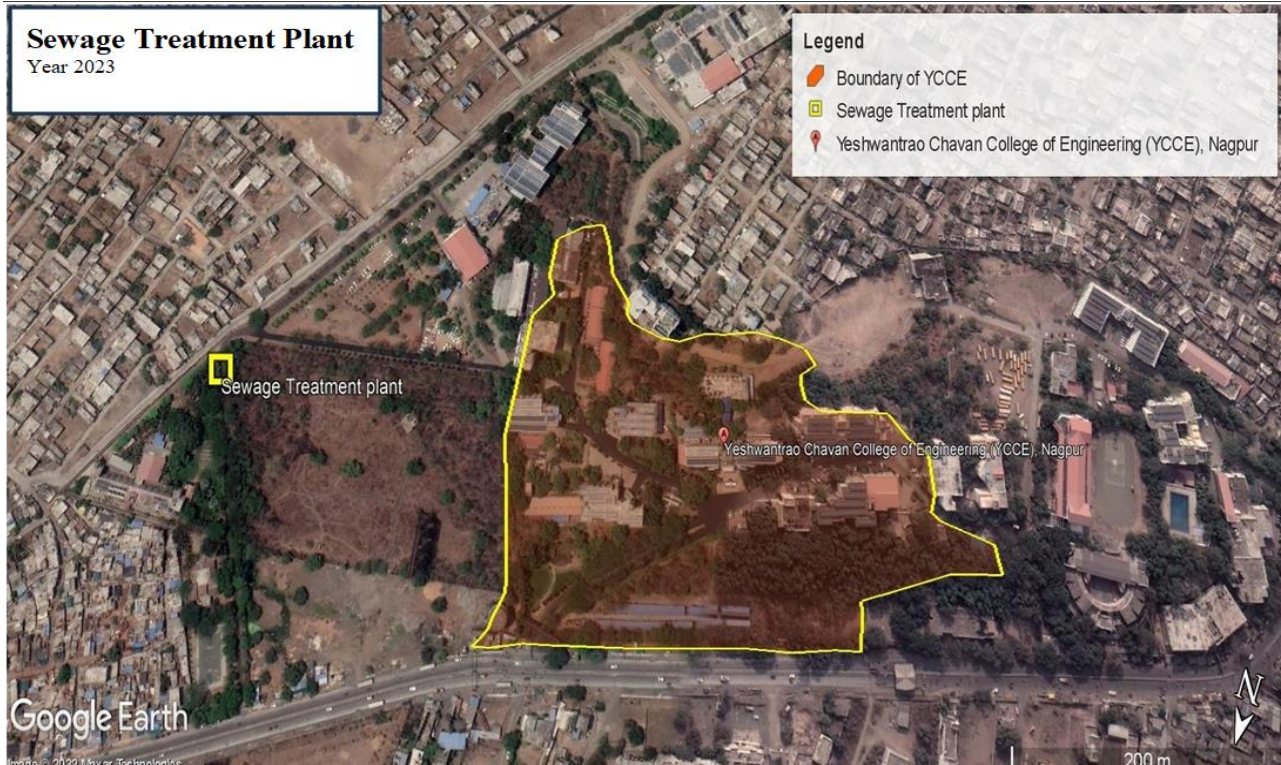


Image No. 27: Sewage Treatment Plant Design and Description

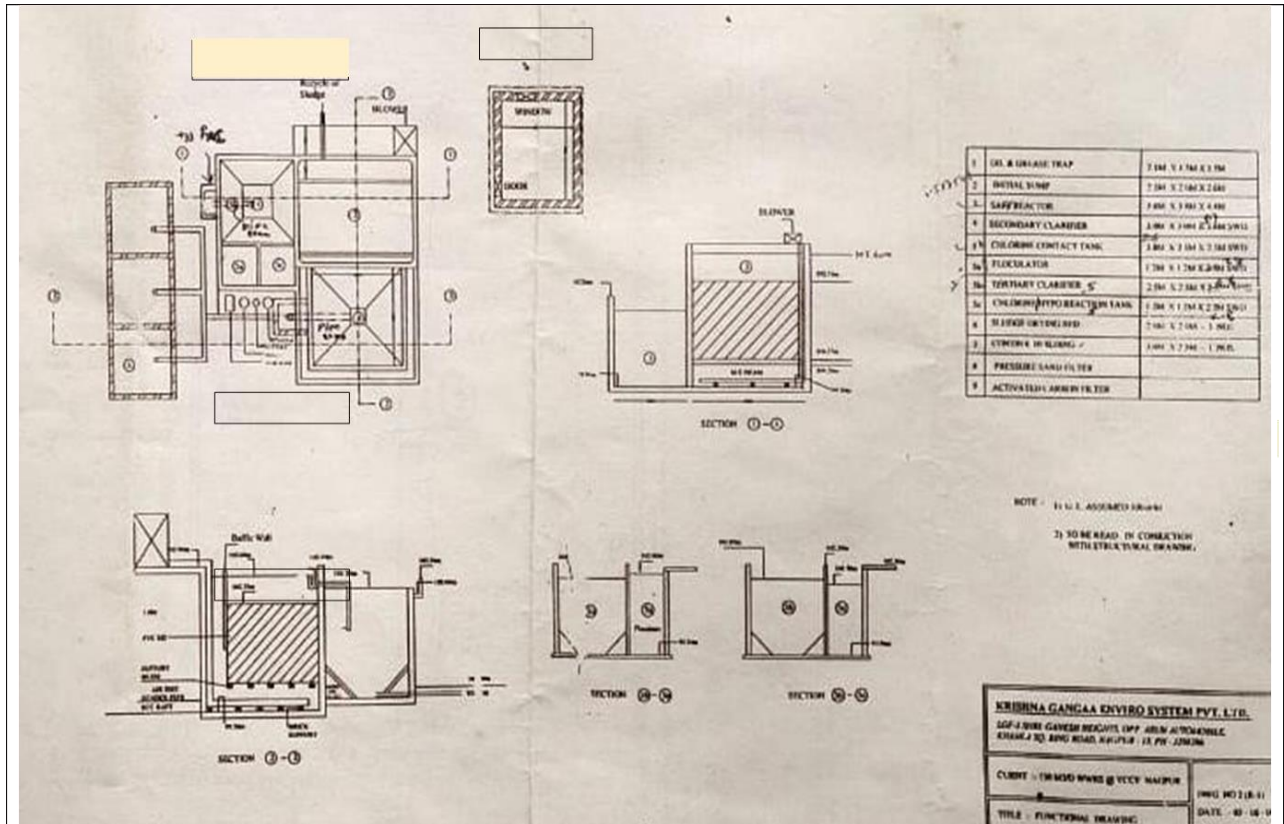


Image No. 28: Sewer Line Drainage Map

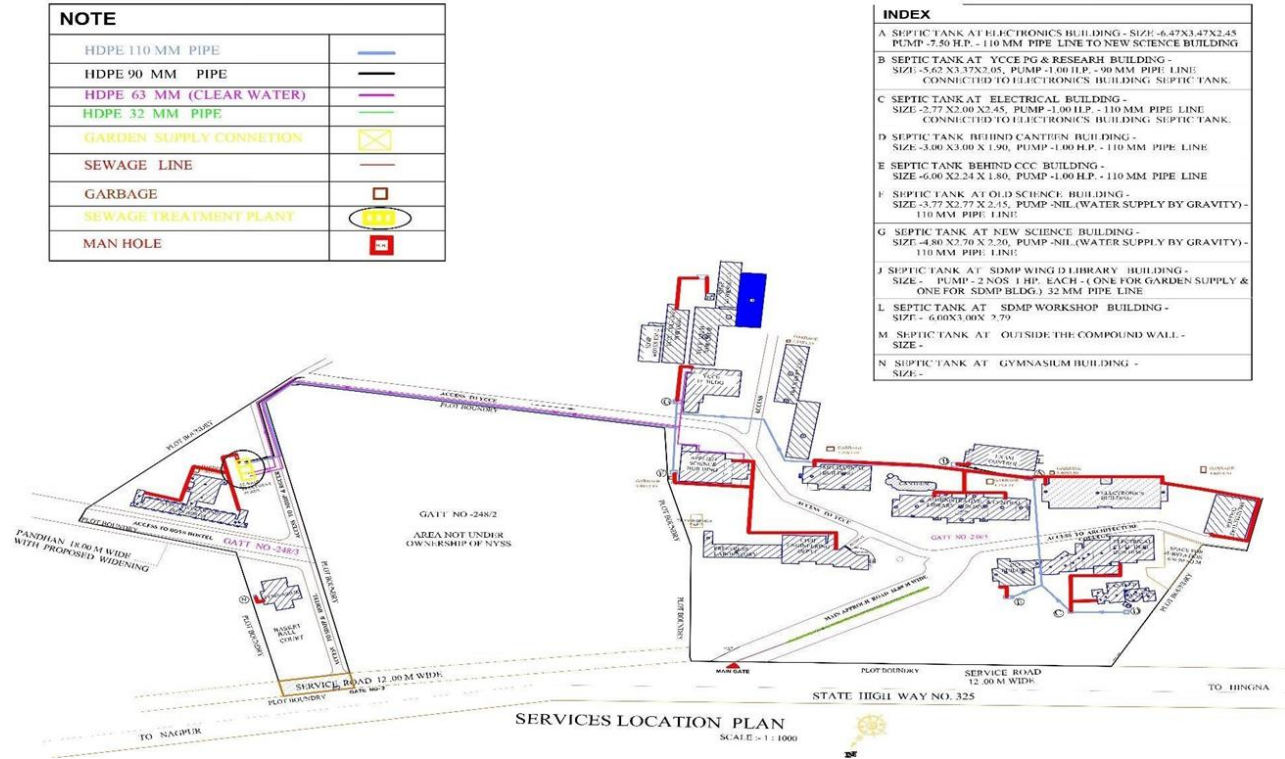


Image No. 29: Layout Plan of Sewage Treatment Plant

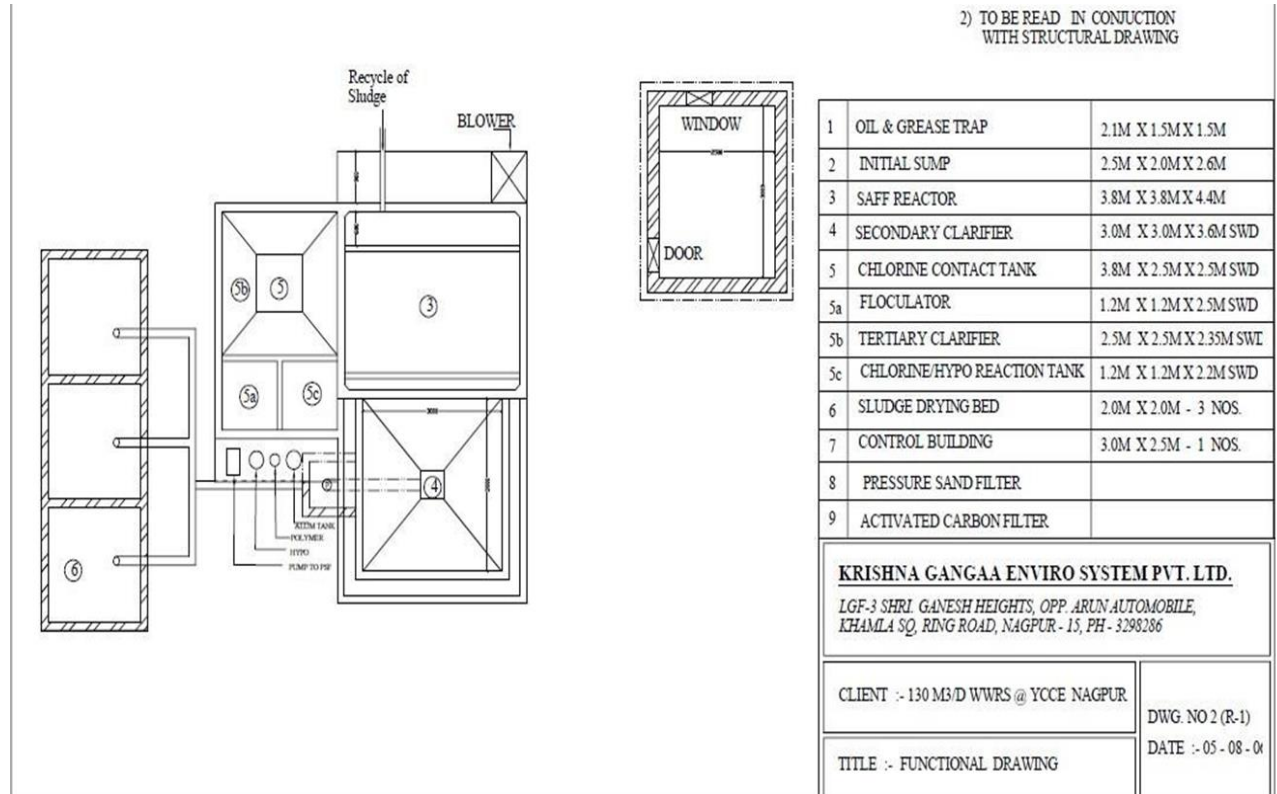


Table No. 58: Sewage Standards

Sr. No.	Parameters	Standards	
		Effluent discharge standards (applicable to all mode of disposal)	
		Location	Concentration
			not to exceed
		(a)	(b)
1)	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	20-30
		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	
3)	Total Suspended Solids (TSS)	Same as above [(2)-BOD]	50-100
4)	Fecal Coliform (FC) (Most Probable Number	Anywhere in the country	<1000
	per 100ml, MPN/100ml		

Table No. 59: 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-SO4-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. 30: STP at YCCE



Table No. 60: 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 (HCO ₃)	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

Image No. 31: Sample Report of Waste water testing



QUALICHEM LABORATORIES

"Swami Samartha Commercial Complex", 4, North Bazar Road, Gokulpeth Market,
Dharampeth Extn., Nagpur -440 010. Telefax : 0712 - 2564452 Tel : 2532482
Email : ql@qualichemlabs.com Web : www.qualichemlabs.com

Approved by Food & Drug Administration (MS) & AGMARK
ISO1EC17025 Accredited Testing Laboratory by NABL vide Certificate Number TC-7067
Recognised by Bureau of Indian Standards (BIS) & Accredited by ISO 9001:2015




Chemical & Biological Analysis of Pharmaceuticals, Food Products, Water, Effluent, Soil, Fertilizer, Coal, Mineral & Ores.

TEST REPORT

Name of Customer	VIVEKANAND BOYS HOSTEL		
Address	YCC COLLAGE WANADONGRI HINGNA ROAD NAGPUR 441110	Contact No	: 8668982040
Name of Sample & Description	STP WATER		
Manufactured by	:-		
Supplied by	:-		
Customer Reference	TEF, DT. 27/10/2023		
Date of Manufacture	:-	Batch No	:-
Date of Expiry	:-	Batch Size	:-
Date of Receipt	: 27-Oct-23	Start Date of Analysis	: 28-Oct-23
		Quantity submitted	: APP.5 LTR
		Completion Date of Analysis	: 3-Nov-23
Discipline	: CHEN-BIO	Group	: POLLUTION & ENVIRONMENT
Description	: Water with suspended matter filled in a plastic bottle.		

Not sampled By Qualichem Report no : **WW/86/23-24-A** ULR-TC706723000003108F

No.	Test	UOM	Result
1	CHEMICAL OXYGEN DEMAND Method : IS 3025 (part 58) (L.L.Q. : 1mg/l)	mg/l	41.2
2	BIOCHEMICAL OXYGEN DEMAND (3 days) at 27 °C Method : IS 3025 (part 44) (L.L.Q. : 1mg/l)	mg/l	14.42

Environmental Condition : Maintained as per the requirements of the samples and the test methods.			
			

Note : Sample submitted is analyzed as per the procedure mentioned in the test method.


Date of Report: 3 Nov 23 NLT Not Less Than | NMT Not More Than | B.Q.L. Below Quantification Limit
L.L.Q. Lower Limit of Quantification | UOM Unit Of Measurement

- Above test result/s relate only to the sample submitted.
- Report should not be published or used in full or in part without the permission of Qualichem Laboratories.
- Any dispute arising out of this report or in connection will be subject to


Shital Rhora
Shital Rhora

Ashwini Goda
Ashwini Goda

Image No. 32: Sample Report of Waste water testing



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 "Swami Samartha Commercial Complex" 4 North Bazar Road, Gokulpeth Market,
 Dharampeth Extn., Nagpur-440 010. Telefax: 0712 - 2564452 Tel: 2532482
 Email: ql@qualichemlabs.com Web: www.qualichemlabs.com
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 Recognised by Bureau of Indian Standards (BIS)



Chemical & Biological Analysis of Pharmaceuticals, Food Products, Water, Effluent, Soil, Fertilizer, Coal, Mineral & Ores.

TEST REPORT

Name of Customer	VIVEKANAND BOYS HOSTEL		
Address	YCC COLLEGE WANADONGRI HINGNA ROAD NAGPUR 441110		
Name of Sample & Description	STP WATER	Contact No	8668992040
Manufactured by	:-		
Supplied by	:-		
Customer Reference	TEF, DT. 27/10/2023		
Date of Manufacture	:-		
Date of Expiry	Batch No	:-	
Date of receipt	Batch Size	:-	
	Start Date of Analysis	28-Oct-23	Quantity submitted : APP.5 LTR
			Completion Date of Analysis : 3-Nov-23
Discipline	CHEM-BIO	Group	POLLUTION & ENVIRONMENT
Description			

Not sampled By Qualichem Report no. : **WW/86/23-24-B**

No.	Test	UOM	Result
1	DESCRIPTION Water with suspended matter filled in a plastic bottle.		-
2	DISSOLVED OXYGEN Method : IS 3025 Part 38	mg/l	2.5
3	TOTAL KJELDAHL NITROGEN Method : IS 3025 (Part 34) (L.L.Q : 0.1mg/l)	mg/L	25.75
4	TOTAL SUSPENDED SOLID Method : IS 3025 (Part 17) (L.L.Q : 1.0mg/l)	mg/l	2.0
5	TOTAL DISSOLVED SOLIDS Method : IS 3025 (Part 16)	mg/l	600.0
6	FACAL COLIFORMS Method : APHA	/100ml	Present

Date of Report: 3-Nov-23 NLT - Not Less Than | NMT - Not More Than | BQL : Below Quantification Limit
 LLQ - Lower Limit of Quantification | UOM - Unit Of Measurement

- Above test results relate only to the sample submitted.
- Report should not be published or used in full or in part without the permission of Qualichem Laboratories.
- Any dispute arising out of this report or in connection will be subject to

Shital Bhore
 Shital Bhore

Ashwini Gode
 Ashwini Gode

15.0 Waste Audit- 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. 61: 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)	Administration 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)	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

Observation & Recommendations

Following observations were found in YCCE campus

A- Solid waste

- 1) Types of waste - paper, plastic, waste books, e waste etc.
- 2) Data for each type for last 3 years is required to be documented.
- 3) Paper consumption - collected at separate stores at hostel.
- 4) Reuse of paper – system is evident. Paper recycling is done by both side usage.
- 5) Garbage - segregated into wet and dry, monitored by security.
- 6) Garbage – plastic black bags are sent to dumping yard of Nagar Parishad Wanadongari.
- 7) Canteen wet garbage is given to collection system of Nagar Parishad Wanadongari.
- 8) Book recycling is evident by library.
- 9) Old magazines – from 2010 are evident.
- 10) Waste collected quantity: Average 100Kg -125Kg.
- 11) Waste segregation in various dustbins at place.
- 12) College have composting of about 200 Sq.Ft. capacity which is not in technically appropriate and sufficient

B- E-waste

E-waste is given to the authorized vendor of Nagar Parishad Wanadongari.

Waste generated in YCCE:

1. Plastic Waste: - Poly-ethylene bags and packaging, Containers, Disposables, Bottles etc.
2. Hazardous Waste: - Florescent Tubes and CFL Bulbs, Electrical waste, Laboratory Waste, etc.
3. Wooden Waste: - Damaged Furniture, Wooden Packaging
4. Metal Waste: - Scrap Metal, broken utensils, Damaged machinery from Laboratory
5. Food Waste:- Unused food from Canteen and Mess
6. Non-Biodegradable Waste: - Papers, Plastic Coated Papers,
7. Biodegradable Waste: - Tree Leaves and biomass produced in garden, uncooked vegetable remaining from Kitchen of Mess and Canteen
8. Municipal Solid Waste: - All the waste generated in gardens, collected during sweeping & Housekeeping of the College and Hostel Premises
9. Bio-Medical Waste: - Sanitary Napkins from Ladies Toilets and Ladies common rooms
10. Backup Batteries in Computer Departments and in all the departments where battery Backup is required.
11. E-Waste: - Computer and Electronics Department

Following recommendations has suggested to YCCE.

- 1) The solid waste generated in the collage premises to be collected in scrap Yard (Notified Area) and segregated as per the category of solid waste management and stored in the well labelled area
- 2) Plastic waste to be given to either recycler vender registered with Maharashtra State Pollution Control Board as per “The Plastics Manufacture, sale, and Usage Rules, 1999 and all its Amendments

- 3) Hazardous Waste to be disposed by identified disposal pathway within 90 days from its generation as per the guidelines of “Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules 2008 with all the Amendments
- 4) To avoid wooden waste generation the furniture to be transferred from wooden to metallic in future and today’s wooden waste shall be reused in the college through carpentry shop of workshop in mechanical engineering department
- 5) Metal Waste to be reused in the college and workshop department shall be engaged for it, if they prove that the waste cannot be reused will be sale out to the venders who will recycle and reuse the same
- 6) Unused food waste to be used as cattle feed, as on today some unregistered persons take away this waste, the one who uses it shall come regularly and should be registered with the college concern department and its record shall be maintained
- 7) Non- Biodegradable waste shall be disposed to the registered vender with Maharashtra State Pollution Control Board
- 8) Biodegradable waste to be compost in the college premises in technical manner, it is observed that the vermin culture pans are present in the college but in technical institute it is expected that the composting shall be done in perfect technical manner
- 9) Municipal Solid Waste to be disposed as per the guidelines “The Municipal Solid Wastes (Management and Handling) Rules, 2000 with its all Amendments
- 10) Bio- Medical Waste is generated in very large amount and this waste to be disposed within 48 hours from the generation as per the guidelines of “The Bio-Medical Waste (Management and Handling) Rules 1998 and its all Amendments
- 11) The replaced or used batteries which could not be recharge as the life get exhausted shall be disposed as per the guidelines of “The Batteries (Management and Handling) Rules, 2001 and all its Amendments
- 12) The E-Waste Produced in the collage to be disposed off as per the guidelines in “E-Waste Management and Handling Rules, 2011 and all its Amendments.
- 13) The records of proper disposal of all the solid wastes to be maintained with its manifests at one central place.

16.0 Fire and Safety Audit

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. 62: 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 Hydrant, Fire Alarm, 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 Hydrant, Fire Extinguishers
10)	Mechanical Building	Fire Hydrant, Fire Alarm, Fire Extinguishers
11)	Mechanical Lab	Fire Hydrant, Fire Alarm, Fire Extinguishers
12)	Electrical & Computer Building	Fire Hydrant, Fire Alarm, Fire Extinguishers

Image No. 33: Fire system at YCCE

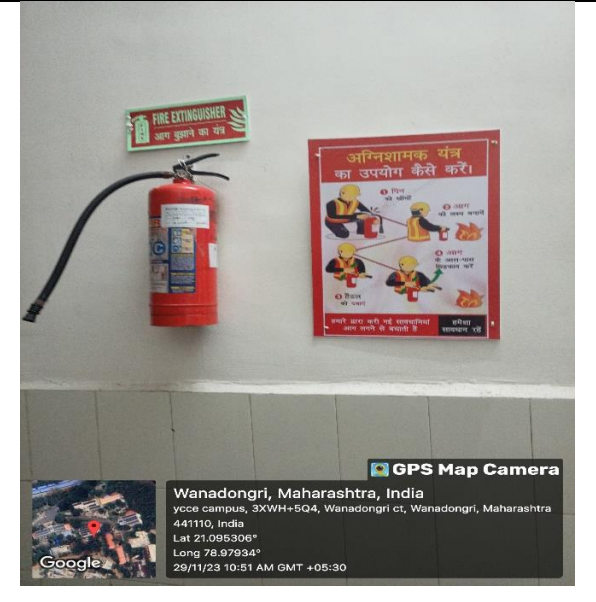
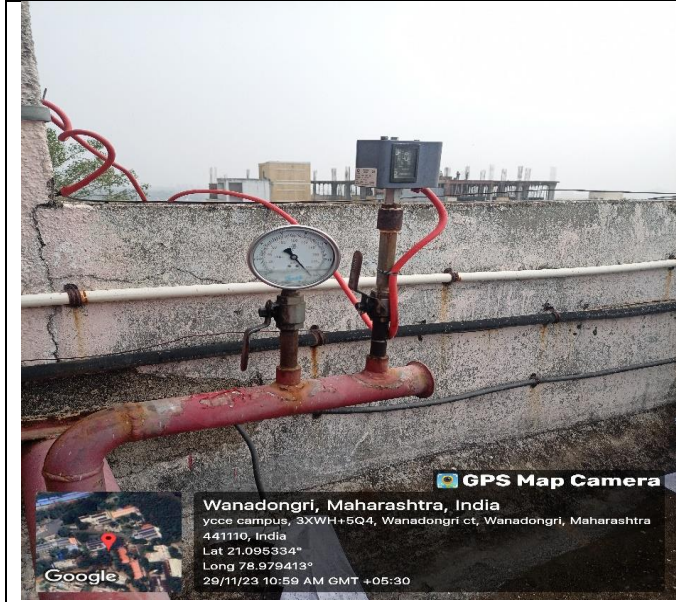
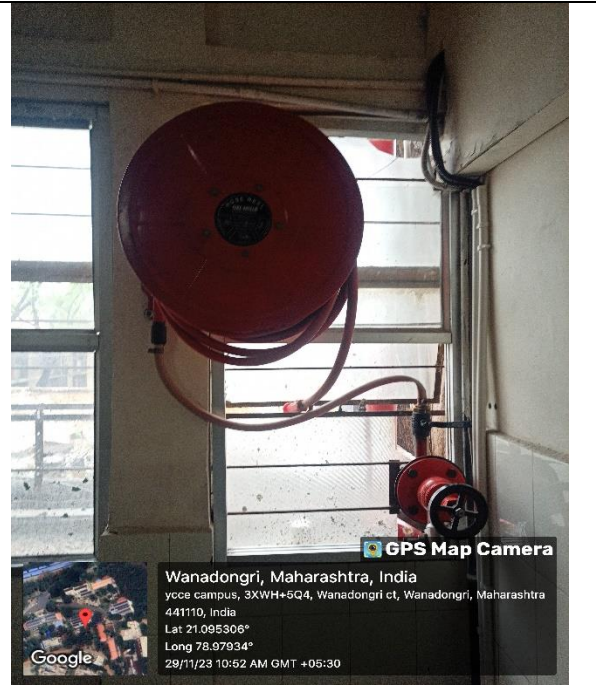
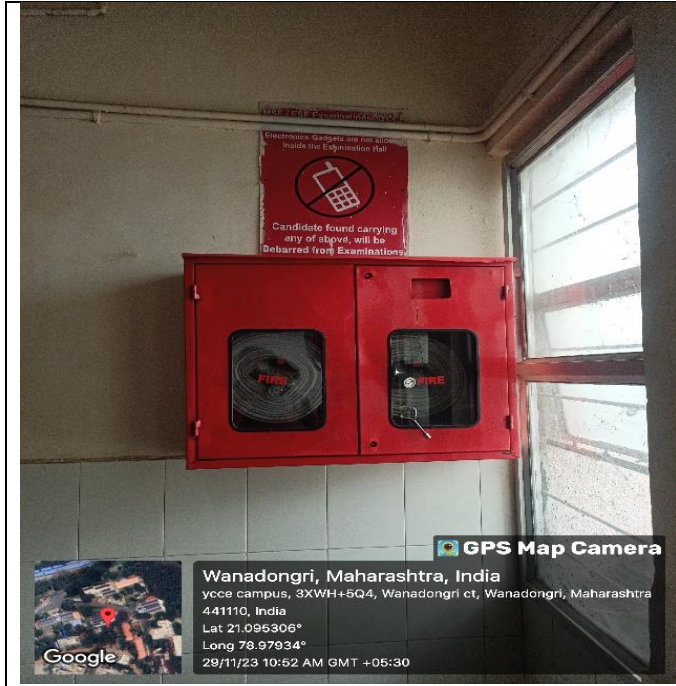


Table No. 63: Fire Safety Details of CCC Building

Name of Building & Nos. of floor		YCCE-CCC Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	5000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	Yes	20000 Ltr.	NA	Ok
2	Electrical Back Up	Whether Electric Backup Available or Not in Term of DG Set	Yes	NA	NA	DG Supply Connected
3	Fire Hydrant & Sprinkler System	Hydrant pump	Yes	7.5 HP	Yes	Working & Oiling greasing
		Sprinkler pump	No	NA	NA	NA
		Diesel pump	No	NA	NA	NA
		Jockey pump	No	NA	NA	NA
		Booster pump	No	NA	NA	NA

		Fire pump Panel	Yes	1 Nos.	Yes	Working
		Hydrant valve	Yes	3 Nos.	Yes	Working & Oiling greasing
		Hose Reel	Yes	2 Nos.	Yes	Working
		Hose Box	Yes	3 Nos.	Yes	Present
		Sprinklers	No	No	No	NA
		RRL Hose Pipe	Yes	06 Nos.	Yes	Present in hose Box
		Branch pipe	Yes	03 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	Yes	NA	Yes	Working
		Heat Detector	No	NA	NA	NA
		Manual call Point (MCP)	Yes	2 Nos.	Yes	Working
		Sounder	Yes	2 Nos.	Yes	Working
		Fire Alarm Panel	Yes	1 Nos.	Yes	Working
5	Fire Extinguisher	ABC type	Yes	6 Nos.	Yes	Working
		Co2type	Yes	05 Nos.	Yes	Ok(Due18/09/2024&(02/10/2024)
		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. 64: Fire Safety Details of Admin Building

Name of Building & Nos. of floor		YCCE- Admin Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	15000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	Yes	20000 Ltr.	Yes	Ok
2	Electrical Back Up	Whether Electric Backup Available or Not in Term of DG Set	Yes			DG Supply Connected
3	Fire Hydrant & Sprinkler System	Hydrant pump	Yes	15 HP	Yes	Working, Oiling & greasing
		Sprinkler pump	No	NA	NA	NA
		Diesel pump	No	NA	NA	NA
		Jockey pump	No	NA	NA	NA

		Booster pump	No	NA	NA	NA
		Fire pump Panel	Yes	1 Nos.	Yes	Working
		Hydrant valve	Yes	5 Nos.	Yes	Working, Oiling & greasing
		Hose Reel	Yes	4 Nos.	Yes	Working
		Hose Box	Yes	5 Nos.	Yes	Present
		Sprinklers	No		No	NA
		RRL Hose Pipe	Yes	10 Nos.	Yes	Present in Hose Box
		Branch pipe	Yes	05 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	12 Nos.	Yes	Ok
		Sounder	Yes	12 Nos.	Yes	Ok
		Fire Alarm Panel	Yes	1 Nos.	Yes	Working
5	Fire Extinguisher	ABC type	Yes	16 Nos.	Yes	Ok(Due 18/09/2024)&(02/10/2024)
		Co2 type	Yes	5 Nos.	Yes	
		Foam type	Yes	1 Nos.	Yes	
		Water type	NA	NA	NA	
6	Fire Bucket		NA	NA	NA	NA
7	Evacuation Plan & Signages		Yes		Yes	Ok

Table No. 65: Fire Safety Details of Electronics Building

Name of Building & Nos. of floor		YCCE- Electronics Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	1000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	No	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup 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
		Fire pump Panel	Yes	1 Nos.	Yes	Working
		Hydrant valve	Yes	4 Nos.	Yes	Working, Oiling & greasing

		Hose Reel	Yes	3 Nos.	Yes	Working
		Hose Box	Yes	4 Nos.	Yes	Present
		Sprinklers	No	NA	No	NA
		RRL Hose Pipe	Yes	4 Nos.	Yes	Present in Hose Box
		Branch pipe	Yes	04 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	4 Nos.	Yes	Working
		Sounder	Yes	4 Nos.	Yes	Working
		Fire Alarm Panel	Yes	1 Nos.	Yes	Working
5	Fire Extinguisher	ABC type	Yes	27 Nos.	Yes	Ok (Due 18/09/2024)& (02/10/2024)
		Co2type	Yes	03 Nos.	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 Exam Control Building

Name of Building & Nos. of floor		YCCE- Exam Control Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	20000 Ltr.	Yes	Working
		Underground water tank (only Sprinkler system)	No	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup 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	10 HP	Yes	Working
		Fire pump Panel	Yes	1 Nos.	Yes	Working
		Hydrant valve	Yes	5 Nos.	Yes	Working
Hose Reel	Yes	4 Nos.	Yes	Working		

		Hose Box	Yes	5 Nos.	Yes	Present
		Sprinklers	No	NA	No	NA
		RRL Hose Pipe	Yes	10 Nos.	Yes	Present in Hose Box
		Branch pipe	Yes	5 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	Yes	NA	Yes	Working
		Heat Detector	No	NA	NA	NA
		Manual call Point (MCP)	Yes	4 Nos.	Yes	Working
		Sounder	Yes	4 Nos.	Yes	Working
		Fire Alarm Panel	Yes	1 Nos.	Yes	Working
5	Fire Extinguisher	ABC type	Yes	3 Nos.	Yes	Ok (Due 18/09/2024) & (02/10/2023)
		Co2type	Yes	4 Nos.	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. 67: Fire Safety Details of IT Building

Name of Building & Nos. of floor		YCCE- IT Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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 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	Overhead water tank (only hydrant system)	Yes	20000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	No	No	NA	NA
2	Electrical Back Up	Whether Electric Backup 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	7.5 HP	Yes	Working, Oiling & greasing
		Fire pump Panel	Yes	1 Nos.	Yes	Working
		Hydrant valve	Yes	4 Nos.	Yes	Working, Oiling &

					greasing
		Hose Reel	Yes	3 Nos.	Yes Working
		Hose Box	Yes	4 Nos.	Yes present
		Sprinklers	No	No	No NA
		RRL Hose Pipe	Yes	08 Nos.	Yes Present in Hose Box
		Branch pipe	Yes	04 Nos.	Yes Present in Hose Box
		Two Way	Yes	1 Nos.	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	4 Nos.	Yes Working
		Sounder	Yes	4 Nos.	Yes Working
		Fire Alarm Panel	Yes	1 Nos.	Yes Working
5	Fire Extinguisher	ABC type	Yes	12 Nos.	Yes Ok (Due 18/09/24)&(02/10/2024)
		Co2type	Yes	4 Nos.	Yes
		Foam type	No	NA	NA
		Water type	No	No	NA
6	Fire Bucket		No	No	NA NA
7	Evacuation Plan & Signages		Yes	No	Yes Ok

Table No. 68: Fire Safety Details of Mechanical Workshop Building

Name of Building & Nos. of floor		YCCE- Mechanical Workshop Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	20000 ltr	Yes	oK
		Underground water tank (only Sprinkler system)	No	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup 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	7.5 HP	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	11 Nos.	Yes	Ok (Due 18/09/24)&(02/10/2024)
		Co2type	Yes	01 Nos.	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. 69: Fire Safety Details of Old Science Building

Name of Building & Nos. of floor		YCCE- Old Science Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	10000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	No	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup 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	11/15 HP	Yes	Working, Oiling & greasing
		Fire pump Panel	Yes	1 Nos.	Yes	Working
		Hydrant valve	Yes	4 Nos.	Yes	Working, Oiling &

					greasing
		Hose Reel	Yes	3 Nos.	Yes Working
		Hose Box	Yes	4 Nos.	Yes Present
		Sprinklers	No	No	No NA
		RRL Hose Pipe	Yes	08 Nos.	Yes Present in Hose Box
		Branch pipe	Yes	03 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	4 Nos.	Yes Working
		Sounder	Yes	4 Nos.	Yes Working
		Fire Alarm Panel	Yes	1 Nos.	Yes Working
5	Fire Extinguisher	ABC type	Yes	12 Nos.	Yes Ok(Due 18/09/24)&(02/10/2024)
		Co2type	Yes	02 Nos.	Yes
		Foam type	Yes	1 Nos.	Yes
		Water type	No	NA	NA
6	Fire Bucket		No	NA	NA NA
7	Evacuation Plan & Signages		Yes		Yes Ok

Table No. 70: Fire Safety Details of Civil Engg. Building

Name of Building & Nos. of floor		YCCE- Civil Engg. Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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 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	Overhead water tank (only hydrant system)	Yes	5000 Ltr.	NA	Ok
		Underground water tank (only Sprinkler system)	Yes	15000 Ltr.	Yes	Ok
2	Electrical Back Up	Whether Electric Backup 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	1 Nos.	Yes	Working
		Hydrant valve	Yes	5 Nos.	Yes	Working, Oiling &

					greasing
		Hose Reel	Yes	4 Nos.	Yes Working
		Hose Box	Yes	5 Nos.	Yes Present
		Sprinklers	No	No	No NA
		RRL Hose Pipe	Yes	10 Nos.	Yes Present in Hose Box
		Branch pipe	Yes	04 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	4 Nos.	Yes Working
		Sounder	Yes	4 Nos.	Yes Working
		Fire Alarm Panel	Yes	1 Nos.	Yes Working
5	Fire Extinguisher	ABC type	Yes	16 Nos.	Yes Ok (Due 18/09/24)&(02/10/2024)
		Co2type	Yes	02 Nos.	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. 71: Fire Safety Details of Civil Lab Shed

Name of Building & Nos. of floor		YCCE- Civil Lab Shed. Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	No	NA	NA	NA
		Underground water tank (only Sprinkler system)	No	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup Available or Not in Term of DG Set	No	NA	NA	NA
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	No	NA	NA	NA
		Fire pump Panel	No	NA	NA	Working, Oiling & greasing

		Hydrant valve	Yes	1 Nos.	Yes	Working, Oiling & greasing
		Hose Reel	Yes	1 Nos.	Yes	Present
		Hose Box	Yes	1 Nos.	Yes	NA
		Sprinklers	No	NA	NA	NA
		RRL Hose Pipe	Yes	2 Nos.	Yes	Present in Hose Box
		Branch pipe	Yes	1 Nos.	Yes	Present in Hose Box
		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	4 Nos.	Yes	Ok (Due 18/09/24) & (02/10/2024)
		Co2 type	No	NA	NA	
		Foam type	No	NA	NA	
		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. 72: Fire Safety Details of Mechanical Engg Building

Name of Building & Nos. of floor		YCCE- Mechanical Engg Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	10000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	No	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup 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	1 Nos.	Yes	Working
		Hydrant valve	Yes	5 Nos.	Yes	Working, Oiling &

					greasing
		Hose Reel	Yes	4 Nos.	Yes Working
		Hose Box	Yes	5 Nos.	Yes Present
		Sprinklers	No	No	No NA
		RRL Hose Pipe	Yes	10 Nos.	Yes Present
		Branch pipe	Yes	05 Nos.	Yes Present
		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	4 Nos.	Yes Working
		Sounder	Yes	4 Nos.	Yes Working
		Fire Alarm Panel	Yes	1 Nos.	Yes Working
5	Fire Extinguisher	ABC type	Yes	12 Nos.	Yes Ok (Due 18/09/24)&(02/10/2024)
		Co2type	Yes	2Nos	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. 73: Fire Safety Details of Mechanical Lab. Building

Name of Building & Nos. of floor		YCCE- Mechanical Lab Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	No	NA	NA	NA
		Underground water tank (only Sprinkler system)	Yes	20000 Ltr.	Yes	Working
2	Electrical Back Up	Whether Electric Backup Available or Not in Term of DG Set	No	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	7.5/10 HP	Yes	Working
		Fire pump Panel	Yes	1 Nos.	Yes	Working

		Hydrant valve	Yes	3 Nos.	Yes	Working
		Hose Reel	Yes	3 Nos.	Yes	Working
		Hose Box	Yes	3 Nos.	Yes	Present
		Sprinklers	No	No	No	NA
		RRL Hose Pipe	Yes	6 Nos.	Yes	Present in Hose Box
		Branch pipe	Yes	3 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	No	No	NA
		Heat Detector	No	No	No	NA
		Manual call Point (MCP)	Yes	3 Nos.	Yes	Working
		Sounder	Yes	3 Nos.	Yes	Working
		Fire Alarm Panel	Yes	1 Nos.	Yes	Working
5	Fire Extinguisher	ABC type	Yes	07 Nos.	Yes	Ok (Due 18/09/24) & (02/10/2024)
		Co2 type	Yes	1 Nos.	Yes	
		Foam type	Yes	01 Nos.	Yes	
		Water type	No	NA	NA	
6	Fire Bucket		No	NA	NA	NA
7	Evacuation Plan & Signages		Yes		Yes	Ok

Table No. 74: Fire Safety Details of Electrical Engg. Building

Name of Building & Nos. of floor		YCCE- Electrical Engg Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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	Overhead water tank (only hydrant system)	Yes	10000 Ltr.	Yes	Ok
		Underground water tank (only Sprinkler system)	Yes	20000 Ltr.	Yes	Ok
2	Electrical Back Up	Whether Electric Backup 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	1 Nos.	Yes	Working
		Hydrant valve	Yes	7 Nos.	Yes	Working, Oiling &

					greasing
		Hose Reel	Yes	6 Nos.	Yes Working
		Hose Box	Yes	7 Nos.	Yes Present
		Sprinklers	No	No	No NA
		RRL Hose Pipe	Yes	14N0S	Yes Present in Hose Box
		Branch pipe	Yes	7 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	No	No NA
		Heat Detector	No	No	No NA
		Manual call Point (MCP)	Yes	8 Nos.	Yes Working
		Sounder	Yes	8 Nos.	Yes Working
		Fire Alarm Panel	Yes	1 Nos.	Yes Working
5	Fire Extinguisher	ABC type	Yes	19 Nos.	Yes Ok (Due 18/09/24)&(02/10/2024)
		Co2type	Yes	05 Nos.	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. 75: Fire Safety Details of CSE Building

Name of Building & Nos. of floor		YCCE- CSE Building			Date:-29-11-2023	
Address		YCCE Wanadongri, Nagpur				
Building In-charge (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)		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	Overhead water tank (only hydrant system)	Yes	20000 Ltr.	Yes	Working
		Underground water tank (only Sprinkler system)	NA	NA	NA	NA
2	Electrical Back Up	Whether Electric Backup 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	10 HP	Yes	Working
		Fire pump Panel	Yes	1 Nos.	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	1 Nos.	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	1 Nos.	Yes	Working
5	Fire Extinguisher	ABC type	Yes	08 Nos.	Yes	Refilling Date- 19/09/2024 & 02/10/24
		Co2type	Yes	03 Nos.	Yes	
		Foam type	NA	NA	NA	
		Water type	NA	NA	NA	
6	Fire Bucket		NA	NA	NA	NA
7	Evacuation Plan & Signages		Yes		Yes	Ok.

Observation & Recommendations

Conducting a fire audit is crucial for ensuring the safety of people and property. Here are some recommendations for a fire audit:

- 1) Ensure compliance with building codes, fire prevention laws, and industry standards.
- 2) Ensure that employees are familiar with evacuation procedures and emergency exits.
- 3) Ensure that fire extinguishers are regularly inspected, maintained, and properly charged.
- 4) Ensure that storage areas are well-ventilated and have adequate fire protection.
- 5) Checking of availability and condition of first aid kits and fire safety equipment.
- 6) Consider external factors such as the proximity of fire hydrants, accessibility for fire trucks, and the availability of water sources.

17.0 Green Initiatives/ Activities in Campus

1. Feedofest

On the occasion of World Environment Day, NSS unit of YCCE has organized Feedofest 2.0 - Avio-fest. Under this event, volunteers had taken initiative to feed and to take care of the stray animals and birds living nearby them even in the prevailing situation. This is not only to protect those creatures but also to encourage volunteers to spread a word of love and awareness towards them.



2. Tree Plantation Drive

NSS unit of YCCE under Unnat Bharat Abhiyan organized Tree plantation Drive every year. The main purpose of drive was to make people aware of the importance of trees, their need and

encourage them to plant more trees and take proper care of their growth. The Drive was initiated from Raipur village followed by Degma Budruk Village and Degma khurd Village. The Drive was inaugurated by planting a sapling by the hands of Sarpanch of villages along with the faculties of YCCE. NSS unit of YCCE successfully planted over 100 saplings. The event was a grand success with appreciation from Villagers and Sarpanch of the village. Core committee thanked all the volunteers for their active participation and dedication they showed for the event.





3. Cleanliness Drive

The Cleanliness Drive was successfully organized by NSS unit of YCCE at Variety Square, Sitabuldi, Nagpur. The main purpose of drive was to clean the surrounding area which brings the occurrence of diseases and to raise awareness on the importance of cleanliness in one's surrounding. NSS unit of YCCE has collected over 80kg garbage in the presence of faculties along with 100+ volunteers.



18.0 Overall Recommendations

- The quantity and quality of laboratory wastewater should be measured and directed to an appropriate treatment system.
- Solid waste segregation should be conducted prior to final disposal to enhance waste management efficiency.
- Green chemistry methods, such as solvent extraction, should be adopted to minimize environmental impact.
- Regular calibration of laboratory instruments must be performed to ensure accuracy and reliability.
- Biodegradable waste should be composted using either aerobic or anaerobic digestion processes.
- A comprehensive plan for green belt development should be formulated and implemented.
- Rainwater harvesting (RWH) systems should be installed at all campus buildings to conserve water.
- Annual monitoring of department-wise electrical load consumption should be carried out to optimize energy usage.
- Awareness about energy and water conservation should be promoted among students and staff by displaying informational boards.
- Water usage reduction techniques, such as automation or sensor-based appliances, should be implemented.
- Proper methods for the disposal of sanitary napkins must be adopted in compliance with the Biomedical Waste Disposal Act.
- Tree plantation initiatives should be undertaken to maintain biodiversity, and artificial nesting should be installed to support wildlife.
- Monitoring of diesel generator (D.G.) stack emissions and exhaust gas analysis should be conducted regularly.
- Awareness sessions on the importance of a green environment should be organized for students and staff to encourage eco-friendly practices.