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Al Jamia Mohammediyah Education Society's MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS

AUDIT REPORT 2021-22

ENVIRONMENTAL & CIVIL ENGINEERING SOLUTIONS
ISO 9001: 2015, IEC 17025: 2017

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

ENVIRONMENTAL & CIVIL
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ISO 9001: 2015, IEC 17025: 2017

CERTIFICATE

ENVIRONMENT AUDIT

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Al Jamia Mohammediyah Education Society's
MAULANA MUKHTAR AHMAD NADVI
TECHNICAL CAMPUS, MALEGAON

Our team of Environmental Engineers have analyzed Environment-friendly practices followed by the Institution

Nikhil N Kamble
CEO

Environmental & Civil Engineering Solutions ECS Sangli

Seema N Kamble
Director

ACADEMIC YEAR 2021-2022

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
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Editorial

In the Era of global warming and climate change every citizen has to reduce their own carbon foot prints to tackle with the adverse impacts of climate change. A green audit of any academic institution revels ways in which we can reduce energy consumption, water use and reduction in emission of carbon dioxide in the environment. It is a process to look into and ask ourselves whether we are also contributing to the degradation of the environment and if so, in what manner and how we can minimize this contribution and bring down to zero and preserve our environment for future generation.

Al Jamia Mohammediyah Education Society, Maulana Mukhtar Ahmad Nadvi Technical Campus administration has already taken a step towards the green approach and conducted green audit of campus in the year 2021-2022. As an outcome of this institute has taken green steps to reduce its carbon foot prints by several means in campus viz. sustainable fittings, tree plantation and green computing in the administration and examination. The responsibility of carrying out the scientific green audit was given to Environmental and Civil Engineering Solutions. The organization has followed the rules and regulation of Ministry of Environment and Forest, Govt. of India and Central Pollution Control Board, New Delhi.

A questionnaire was prepared based on the guidelines and format of CPCB, New Delhi to conduct green audit. The information related to consumption of resources like water, electricity and handling of solid and hazardous waste was collected in the formats from main building support services and departments. The data collected was grouped and was tabulated in Excel sheets and analysed. The graphs of the analysed data were prepared for getting quick idea of the status. Interpretation of the overall outcomes was made which incorporates primary and secondary data, references and interrelations within. Final report preparation was carried out using this interpretation to prepare environment management plan of institute for next two years.

During the preparation of the Audit Report Hon. Principal, Dean Academics, Dean Research and consultancy, Dean IQAC encouraged us with their full support and the audit team wants to mention a warm vote of thanks towards them.

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Nikhil N. Kamble
(C.E.O and Head)

Environmental and Civil Engineering Solutions

Acknowledgement

We express our gratitude for calling upon us for this audit, mainly the Principal and all other staff members, who were ever helpful and supported us with all the inputs needed for this audit. We thank all the teaching, non-teaching and students for helping us in conducting this audit.

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1. Introduction:

The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Considering the present environmental problems of pollution and excess use of natural resources, Hon. Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. Green audit can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through green audit one can get direction about how to improve the condition of environment.

1.1 Need of audit:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check

whether our processes are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

1.2 **Goals of audit:**

Institute has conducted a audit with specific goals as:

1. Identification and documentation of green practices followed by college.
2. Identify strength and weakness in green practices.
3. Conduct a survey to know the ground reality about green practices.
4. Analyse and suggest solution for problems identified from survey.
5. Assess facility of different types of waste management.
6. Increase environmental awareness throughout campus.
7. Identify and assess environmental risk.
8. Motivates staff for optimized sustainable use of available resources.
9. The long term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

1.3 **Objectives of Audit:**

1. To examine the current practices which can impact on environment such as of resource utilization, waste management etc.
2. To identify and analyse significant environmental issues.
3. Setup goal, vision and mission for Green practices in campus.
4. Establish and implement Environmental Management in various departments.
5. Continuous assessment for betterment in performance in green practices and its evaluation.
6. To prepare an Environmental Statement Report on green practices followed by different departments, support services and administration building.

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Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

1.4 NAAC criteria VII Environmental Consciousness:

Institutes are playing a key role in development of human resources worldwide. Higher education institutes campus run various activities with aim to percolate the knowledge along with practical dimension among the society. Likewise different technological problems higher education institutes also try to give solution for issues related to environment. Different types of evolutionary methods are used to assess the problem concerning environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit etc

National Assessment and Accreditation Council (NAAC) which is a self-governing organization that declares the institutions as Grade according to the scores assigned at the time of accreditation of the institution. Green Audit has become mandatory procedure for educational institutes under Criterion of NAAC. The intention of green audit is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring etc. for making the institution more eco-friendly.

Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, No vehicle day, Rain water harvesting, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

1.5 Benefits of Green Audit to an Educational Institute:

There are many advantages of green audit to an Educational Institute:

1. It would help to protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Find out the prevailing and forthcoming complications
4. Empower the organization to frame a better environmental performance.
5. It portrays good image of institution through its clean and green campus.

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2. Overview of Institute:

Al Jamia Mohammediyah Education Society's, Maulana Mukhtar Ahmad Nadvi Technical Campus was established in the year of 2012. Institute has huge area of 4.5 acres and has been serving the mankind in the field engineering and technology.

The landscaped grounds of college are widely admired for their beauty. The most valuable investment any educational institution can make is "Nurturing Future Leaders". With the continuous rise in expectation of essential leadership standards, the institute has torch bearers have taken a responsibility for this investment to nurture the NextGen leaders with a vision to bridge the existing skill gap. With a firm step forward to attain an academic excellence, computer labs, and industry-academia associations has been setup at the College in association with the top leaders. The College believes that its primary stakeholders are the students. All aspects of education focus on the core values of contributing to national development while fostering global competencies among students. The College admits students from all social milieus and empowers them through intensive mentoring and counselling to face the challenges of life and become responsible and sensitized citizens of the country.

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Institute Code 5411
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Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC) is a premier AICTE and DTE-approved institution located near the bank of Girma River, Malegaon district Nashik, since 2012. The campus offers technology offers degree courses affiliated with Savitribai Phule Pune University (SPPU) in Civil, Computer, Electrical, Electronics & Telecommunication, and Mechanical Engineering. MMANTC collaborated with Siemens India to form the Siemens Centre of Excellence, which constitutes advanced Industrial, Automation, IoT, and Mechatronics Laboratories with a unique experimental setup in Maharashtra state. MMANTC campus consists of world-class infrastructure including state of art laboratories, seminar halls, auditorium, separate girls' and boys' hostel & dining and playground etc.

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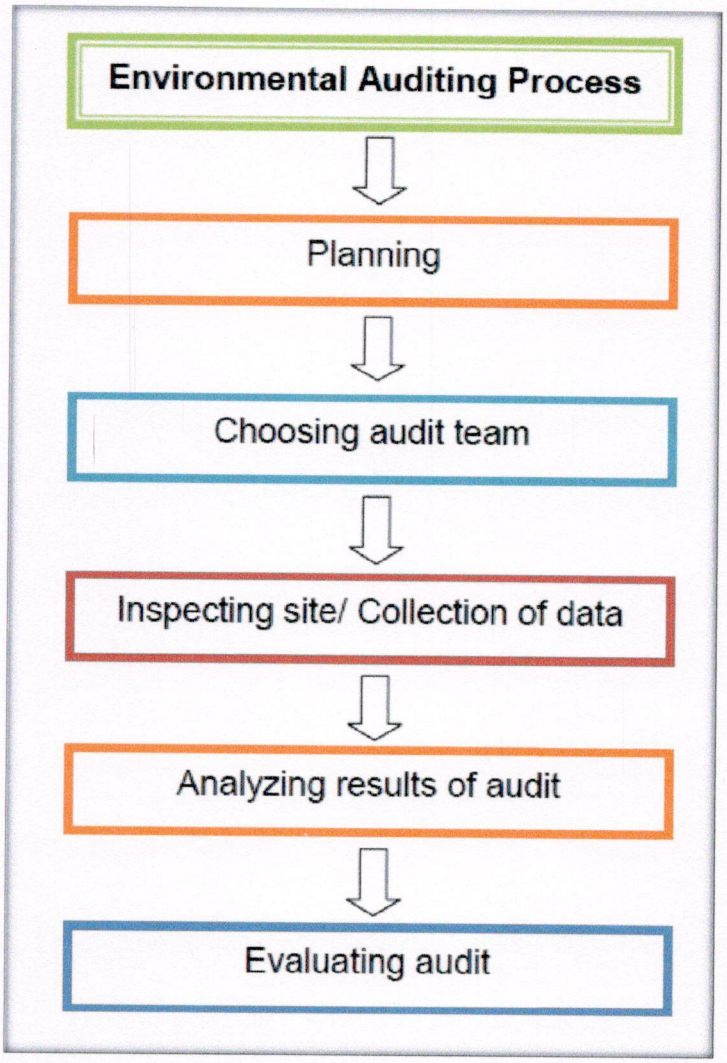
3. Methodology:



3.1 Audits to be carried out:

- Green and carbon footprint audit
- Energy audit
- Environmental audit
  - Water audit
  - Wastewater audit
  - Solid waste audit
  - Ambient noise audit
  - Ambient air audit

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Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

ENVIRONMENT AUDIT

5. Environmental Audit:

An environmental audit is a type of evaluation intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. ISO 14001 is a voluntary international standard for environmental management systems ("EMS"). ISO 14001:2004 provides the requirements for an EMS and ISO 14004 gives general EMS guidelines. An EMS meeting the requirements of ISO 14001:2004 is a management tool enabling an organization of any size or type to:

- Identify and control the environmental impact of its activities, products or services;
- Improve its environmental performance continually, and
- Implement a systematic approach to setting environmental objectives and targets, to achieving these and to demonstrating that they have been achieved.

The audit examines the potential hazards or risks posed by the institutes. Areas examined may include environmental policies and procedures, energy use practices, recycling, waste, conservation, and pollution. Then, the institute can use the results to determine what changes need to be made for compliance. In a broad sense, environmental auditing aims to help protect the environment and minimize the risks of business activities to the environment and human safety and health.

5.1 Water Audit and wastewater audit:

Water auditing is a method of quantifying water flows and quality in systems, with a view to reducing water usage and often saving money on otherwise unnecessary water use. Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water. Water audits trace water use from its point of entry into the facility/system to its discharge into the sewer/river/canal etc. Wastewater audit deals with effective management of wastewater in the system. It deals with proper generation, management, treatment, transfer and disposal of wastewater.

MMANTC has carried out its water and wastewater audit and has suggested many more ways for water conservation, reuse and recycle. The detail water and waste water report is mentioned below.

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MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

5.2 Water Audit report:

Water audit for the "MMANTC" was carried out. The purpose of the water audit is to provide a thorough understanding of the water uses by identifying and measuring all water using fixtures, appliances, and practices in order to recommend potential water saving efficiencies.

PRIMARY DATA

Sr. No.	Title	Information
1	**Name of Institute**	Al Jamia Mohammediyah Education Society's, Maulana Mukhtar Ahmad Nadvi Technical Campus
2	**Address**	Malegaon 423203
3	**Name of company under which water audit is carried out**	Environmental and Civil Engineering Solutions, Sangli
4	**Number of floors**	G + 2 (Variable)
5	**Category of building**	Educational Institute
6	**Nearest ESR location**	Campus
7	**Water supply hours**	6 hrs. daily
8	**Water meter present**	No

POPULATION DETAILS

Title	Information
Fixed population (Working staff and Students)	Gents: 511
	Ladies: 99
Variable population (Visiting persons)	Gents: 15
	Ladies: 12

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MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

SOURCE INFORMATION

Title	Information
Sources of water	River water pumping and bore-well
Connection details	1" PVC pipe inlet and 1" outlet distribution pipe

STORAGE DETAILS

Title	Information
Overhead tank type	PVC tank
Location	On terrace
Number of tanks	3 X 1000 lit PVC 1 X 1500 lit PVC
Motor connection details	2 Hp for Bore-well 1 1.5 Hp for Bore-well 2
Pumping period	4 hours daily
Underground sump	Yes
Capacity of underground sump	5500 Lit RCC

WATER USAGE

Toilet	Number of users	Water consumption
Gents toilet	511 users	511 X 10 lit = 5110
Washbasin	610 users	610 X 0.75 lit = 457
Ladies toilet	99 users	99 X 12 lit = 1188
Toilet cleaning	600 liters	600 liters
Floor cleaning	500 liters	500 liters
Gardening	1500 liters	1500 liters
Laboratories	1000 liters	1000 liters
Total		**10,355 lit**

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Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

WATER USED FOR DRINKING

There are coolers cum water purifiers present in the institute. Sample assessment for 3 months was done and average values are presented below for each section.

Potable water assessment:

RO at Electrical section

Sr. No.	Test	Results	Limit
1	pH	**6.6-7.1**	6.5-8.5
2	TDS	**111**	-
3	E.C	**96**	-
4	Hardness	**123**	200
5	Chlorides	**101**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-

RO at E&TC section

Sr. No.	Test	Results	Limit
1	pH	**6.6-7.0**	6.5-8.5
2	TDS	**123**	-
3	E.C	**101**	-
4	Hardness	**111**	200
5	Chlorides	**95**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-

RO at FF

Sr. No.	Test	Results	Limit
1	pH	**6.8-7.3**	6.5-8.5
2	TDS	**108**	-
3	E.C	**111**	-
4	Hardness	**126**	200
5	Chlorides	**99**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-

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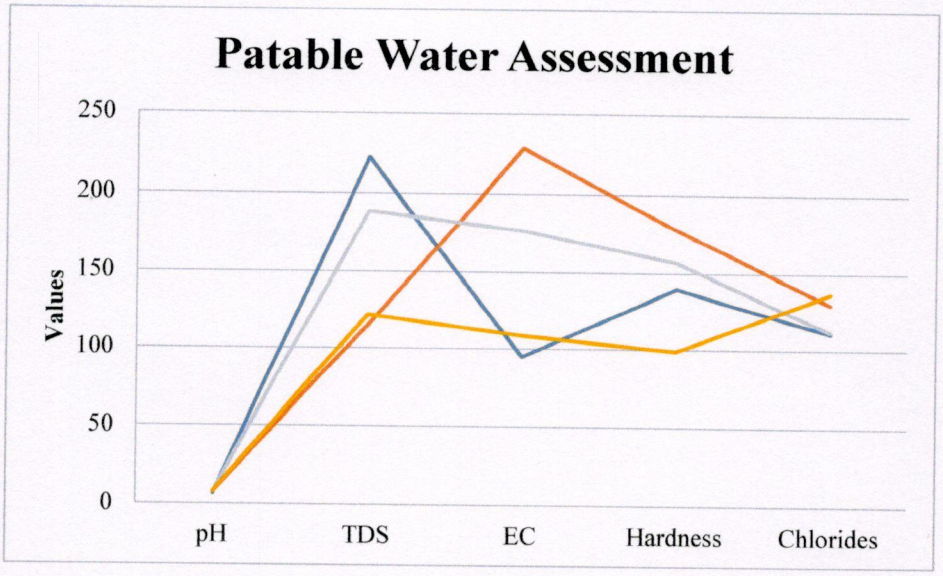
MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA", MALEGAON, Dist. Nashik

Municipal water and deep well water assessment:

Bore well assessment

Sr. No.	Test	Results	Limit
1	pH	**7.8**	6.5-8.5
2	TDS	**1277**	-
3	E.C	**2745**	-
4	Hardness	**188**	200
5	Chlorides	**121**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-



5.3 Waste water audit:

MMANTC campus generates huge amount of wastewater. The source for wastewater in the campus is hostels, institute, mess and the washrooms and urinals inside the campus. To estimate the amount of wastewater generated all the water that is used in the washrooms, quarters and hostels is considered as wastewater.

Sr. No.	Section	Wastewater generated in litres
1	Water usage generated in campus	**10,355**
Waste water generated		**7,766**

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA", MALEGAON, Dist. Nashik

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5.4 **Waste water treatment plant at MMANTC:**

Currently MMANTC lets all it waste water into sewers. Currently there is no any waste treatment facility. Sampling of waste water was done for 3 months for the parameters of COD, BOD, TKN and pH. Following table shows the characterization of wastewater.

Sr. No.	Parameter	Reading
1	pH	7.11
2	COD	208
3	BOD	101
4	TKN	25

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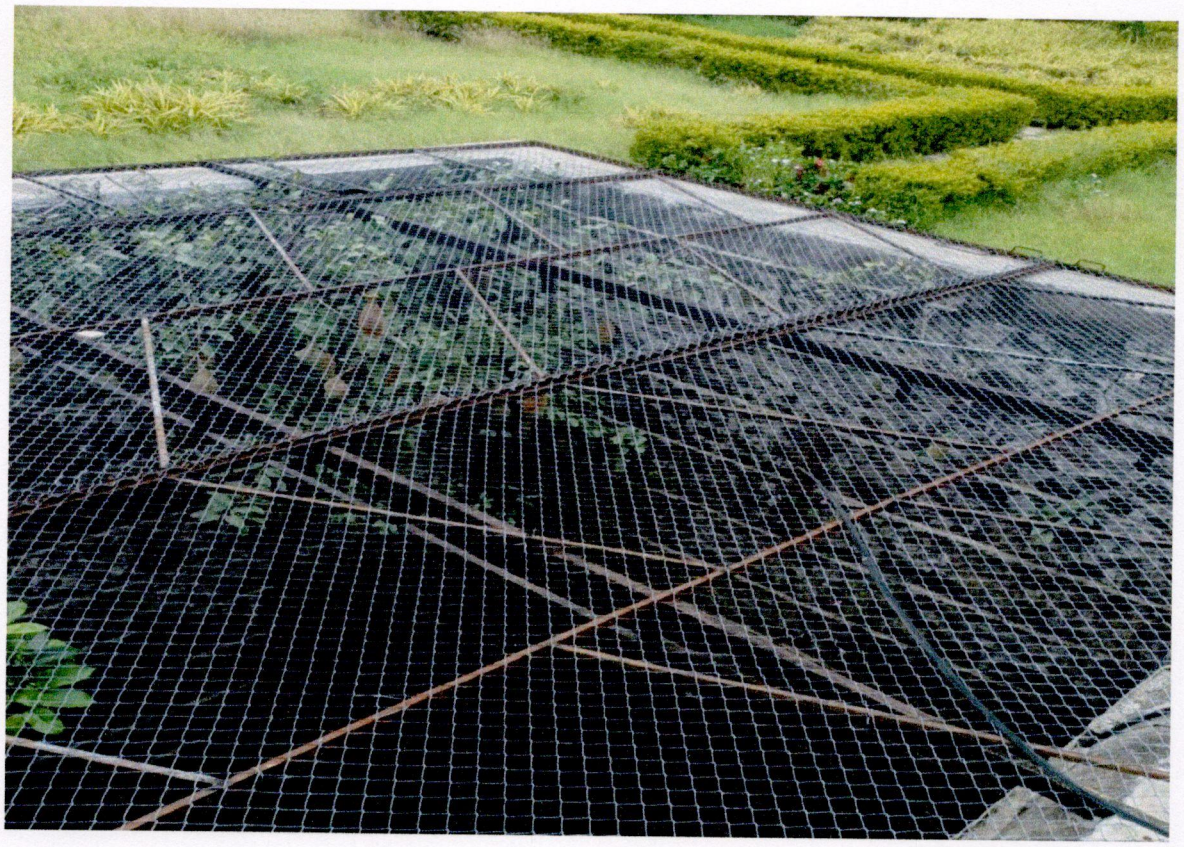

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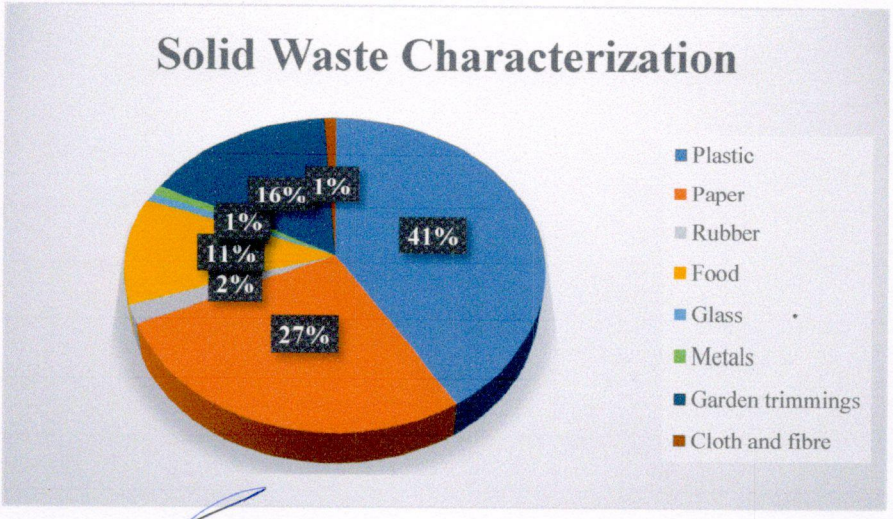
"MANSOORA", MALEGAON, Dist. Nashik

5.5 **Solid waste Audit:**

A waste audit is a physical analysis of waste composition to provide a detailed understanding of problems, identify potential opportunities, and give you a detailed analysis of your waste composition. A waste audit will help you clearly identify your waste generation to establish baseline or benchmark data, Characterize and quantify waste stream, Verify waste pathways, identify waste diversion opportunities and identify source reduction opportunities.

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduce or eliminates the adverse impact on the environment and human health. Solid waste audit for MMANTC was carried out. The entire premise was analysed for solid waste generation and waste characterization. Overall waste was observed and characterization was done. The below table shows the components of solid waste at MMANTC campus. Quartering method was used and 1 Kg of waste was selected.

Sr. No.	Type of waste	Composition %
1	Plastic	41
2	Paper	27
3	Rubber	2
4	Food	11
5	Glass	1
6	Metals	1
7	Garden trimmings	16
8	Cloth and fibre	1



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Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

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After analysing all the bins it was observed that plastic had highest contribution viz. 41% followed by the paper waste i.e. 27%. Mostly common observed plastic items were plastic wrappers of chips, soft drinks bottles and chocolate wrappers. The paper waste included paper wrappers, notebook pages, pamphlets and some pieces of cardboard. The third highest waste included garden trimmings. It included small grass, minute branches etc. The least contribution was of cloth, fibre, glass and metals.

5.6 **Observations and Conclusion:**

- There are separate bins for wet waste and dry waste. Hence, source segregation takes place.

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

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CAMPUS MALEGAON Dis Nashik

- Institute has taken steps towards paper recycling. The paper waste collected from the bins is send to vendors.
- Plastic ban in campus is implemented but due to lack of seriousness in the students plastic is used in campus. Institute should conduct plastic awareness seminars for both the staff and students.

Assessment of soil was done to determine the quality of soil:

Sr. No.	Test	Results
1	pH	**6.1**
2	NPK	**2:3:1**
3	Acidity	**137 mg/lit**
4	Hardness	**170 mg/lit**

5.7 Ambient Air Audit:

Ambient air quality refers to the condition or quality of air surrounding us and in the outdoors. National Ambient Air Quality Standards are the standards for ambient air quality set by the Central Pollution Control Board (CPCB) that is applicable nationwide. The CPCB has been conferred this power by the Air (Prevention and Control of Pollution) Act, 1981. Hence, auditing this ambient air quality is stated as ambient air audit.

MMANTC has carried out its ambient air audit at various locations in the premises. Air quality detector machine PS-21185 was used for air audit. Parameters viz. SOx, NOx, RSPM and Air quality were assessed.

Sr. No.	Point number	Location
1	Point No 1	Ground
2	Point No 2	Hall
3	Point No 3	Office
4	Point No 4	Classroom
5	Point No 5	Lab

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA", MALEGAON, Dist. Nashik

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Results of air quality monitoring:

Point No	Location	SOx	NOx	RSPM	Quality
	CPCB Limits	80 µg/m3	80 µg/m3	80 µg/m3	-
1	Ground	33	42	66	Good
2	Hall	10	11	38	Fresh
3	Office	11	8	31	Good
4	Classroom	8	12	27	Fresh
5	Lab	11	15	22	Fresh

5.8 Ambient Noise audit:

Ambient sound in relation to audio refers to the background noise present at a given scene or a location. This can include noises such as rain, traffic, crickets, birds, etc. Ambient sound levels are often measured in order to map sound conditions over a specific time to understand their variation with locale and various points. Ambient noise level is measured with a sound level meter. It is usually measured in Decibel (dB). 5 points were selected based on best suitable requirement for noise monitoring. RS-2250 instrument was used. Monitoring was carried out 3 times in a day for 3 months. Readings were collected in morning section, afternoon section and evening section. In addition to this monitoring was also carried out in library section, study room section, classrooms, tutorial rooms and laboratories.

Sr. No.	Point number	Location
1	Point No 1	Ground
2	Point No 2	Hall
3	Point No 3	Office
4	Point No 4	Classroom
5	Point No 5	Lab

Results of noise assessment:

All the values are in decibels. Assessment values present average of 3 months data and the last column present the final average of morning noon and evening.

Point No	Location	Morning	Noon	Evening	Average
1	Ground	65.23	80.67	60.45	68.78
2	Hall	53.93	63.40	50.50	55.94
3	Office	60.77	65.44	70.70	65.64
4	Classroom	40.02	46.23	39.45	41.90
5	Lab	31.34	39.04	31.45	33.94

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AUDIT REPORT

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2022-2023

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CAMPUS MALEGAON Dis Nashik

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Our team of Environmental Engineers have analyzed Environment-friendly practices followed by the Institution

Nikhil N Kamble
CEO

Environmental & Civil Engineering Solutions ECS Sangli

Seema N Kamble
Director

ACADEMIC YEAR 2022-2023

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

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MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS MALEGAON Dis Nashik

Editorial

In the Era of global warming and climate change every citizen has to reduce their own carbon foot prints to tackle with the adverse impacts of climate change. A green audit of any academic institution revels ways in which we can reduce energy consumption, water use and reduction in emission of carbon dioxide in the environment. It is a process to look into and ask ourselves whether we are also contributing to the degradation of the environment and if so, in what manner and how we can minimize this contribution and bring down to zero and preserve our environment for future generation.

Al Jamia Mohammediyah Education Society, Maulana Mukhtar Ahmad Nadvi Technical Campus administration has already taken a step towards the green approach and conducted green audit of campus in the year 2022-2023. As an outcome of this institute has taken green steps to reduce its carbon foot prints by several means in campus viz. sustainable fittings, tree plantation and green computing in the administration and examination. The responsibility of carrying out the scientific green audit was given to Environmental and Civil Engineering Solutions. The organization has followed the rules and regulation of Ministry of Environment and Forest, Govt. of India and Central Pollution Control Board, New Delhi.

A questionnaire was prepared based on the guidelines and format of CPCB, New Delhi to conduct green audit. The information related to consumption of resources like water, electricity and handling of solid and hazardous waste was collected in the formats from main building support services and departments. The data collected was grouped and was tabulated in Excel sheets and analysed. The graphs of the analysed data were prepared for getting quick idea of the status. Interpretation of the overall outcomes was made which incorporates primary and secondary data, references and interrelations within. Final report preparation was carried out using this interpretation to prepare environment management plan of institute for next two years.

During the preparation of the Audit Report Audit Report Hon. Principal, Dean Academics, Dean Research and consultancy, Dean IQAC encouraged us with their full support. IQAC and other officers of the institute also gave support to carry out this work. We also thank all Heads of the departments and the Co-ordinators gave full co-operation.

Environmental & Civil Engineering Solutions ECS Sangli

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Nikhil N. Kamble
(C.E.O and Head)
Environmental and Civil Engineering Solutions

Acknowledgement

We express our gratitude for calling upon us for this audit, mainly the Principal and all other staff members, who were ever helpful and supported us with all the inputs needed for this audit. We thank all the teaching, non-teaching and students for helping us in conducting this audit.

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1. Introduction:

The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Considering the present environmental problems of pollution and excess use of natural resources, Hon. Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. Green audit can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through green audit one can get direction about how to improve the condition of environment.

1.1 Need of audit:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check

whether our processes are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it in to green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

1.2 **Goals of audit:**

Institute has conducted a audit with specific goals as:

1. Identification and documentation of green practices followed by college.
2. Identify strength and weakness in green practices.
3. Conduct a survey to know the ground reality about green practices.
4. Analyse and suggest solution for problems identified from survey.
5. Assess facility of different types of waste management.
6. Increase environmental awareness throughout campus.
7. Identify and assess environmental risk.
8. Motivates staff for optimized sustainable use of available resources.
9. The long term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

1.3 **Objectives of Audit:**

1. To examine the current practices which can impact on environment such as of resource utilization, waste management etc.
2. To identify and analyse significant environmental issues.
3. Setup goal, vision and mission for Green practices in campus.
4. Establish and implement Environmental Management in various departments.
5. Continuous assessment for betterment in performance in green practices and its evaluation.
6. To prepare an Environmental Statement Report on green practices followed by different departments, support services and administration building.

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA", MALEGAON, Dist. Nashik

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MAULANA MUKHTAR AHMAD NADVI TECHINICAL CAMPUS MALEGAON Dis Nashik

1.4 NAAC criteria VII Environmental Consciousness:

Institutes are playing a key role in development of human resources worldwide. Higher education institutes campus run various activities with aim to percolate the knowledge along with practical dimension among the society. Likewise different technological problems higher education institutes also try to give solution for issues related to environment. Different types of evolutionary methods are used to assess the problem concerning environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit etc

National Assessment and Accreditation Council (NAAC) which is a self-governing organization that declares the institutions as Grade according to the scores assigned at the time of accreditation of the institution. The intention of green audit is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring etc. for making the institution more eco-friendly.

Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, No vehicle day, Rain water harvesting, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

1.5 Benefits of Green Audit to an Educational Institute:

There are many advantages of green audit to an Educational Institute:

1. It would help to protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Find out the prevailing and forthcoming complications
4. Empower the organization to frame a better environmental performance.
5. It portrays good image of institution through its clean and green campus.

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA" MALEGAON, Dist. Nashik

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS MALEGAON Dis Nashik

2. Overview of Institute:

Al Jamia Mohammediyah Education Society's, Maulana Mukhtar Ahmad Nadvi Technical Campus Malegaon was established in the year of 2012. Institute has huge area of 4.5 acres and has been serving the mankind in the field engineering and technology.

The landscaped grounds of college are widely admired for their beauty. The most valuable investment any educational institution can make is "Nurturing Future Leaders". With the continuous rise in expectation of essential leadership standards, the institute has torch bearers have taken a responsibility for this investment to nurture the NextGen leaders with a vision to bridge the existing skill gap. With a firm step forward to attain an academic excellence, several Centres of Excellence, computer labs, and industry-academia associations have been setup at the College in association with the top leaders. The College believes that its primary stakeholders are the students. All aspects of education focus on the core values of contributing to national development while fostering global competencies among students. The College admits students from all social milieus and empowers them through intensive mentoring and counselling to face the challenges of life and become responsible and sensitized citizens of the country.

Maulana Mukhtar Ahmad Nadvi Technical Campus (MMANTC) is a premier AICTE and DTE-approved institution located near the bank of Girma River, Malegaon district Nashik, since 2012. MMANTC technology offers degree courses affiliated with Savitribai Phule Pune

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 MANSOORA MALEGAON Dist. Nashik

University (SPPU) in Civil, Computer, Electrical, Electronics & Telecommunication, and Mechanical Engineering. MMANTC collaborated with Siemens India to form the Siemens Centre of Excellence, which constitutes advanced Industrial, Automation, IoT, and Mechatronics Laboratories with a unique experimental setup in Maharashtra state. MMANTC campus consists of world-class infrastructure including state of art laboratories, seminar halls, auditorium, separate girls' and boys' hostel & dining and playground etc.

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

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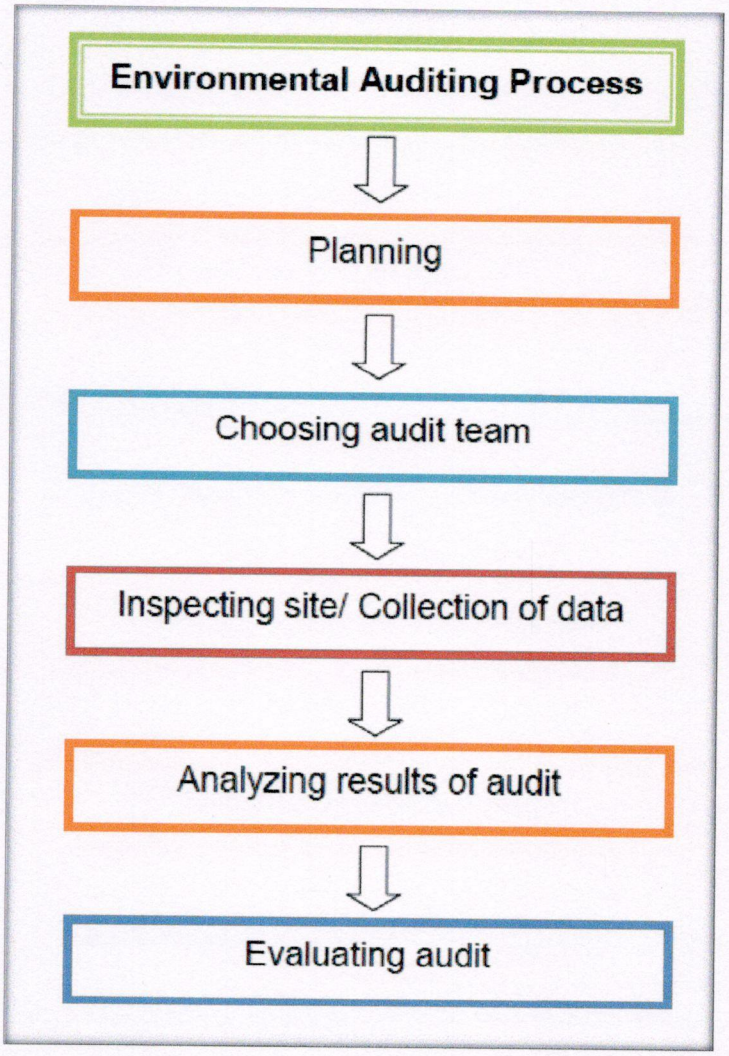
3. Methodology:



3.1 Audits to be carried out:

- Green and carbon footprint audit
- Energy audit
- Environmental audit
    - Water audit
    - Wastewater audit
    - Solid waste audit
    - Ambient noise audit
    - Ambient air audit

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

PRINCIPAL
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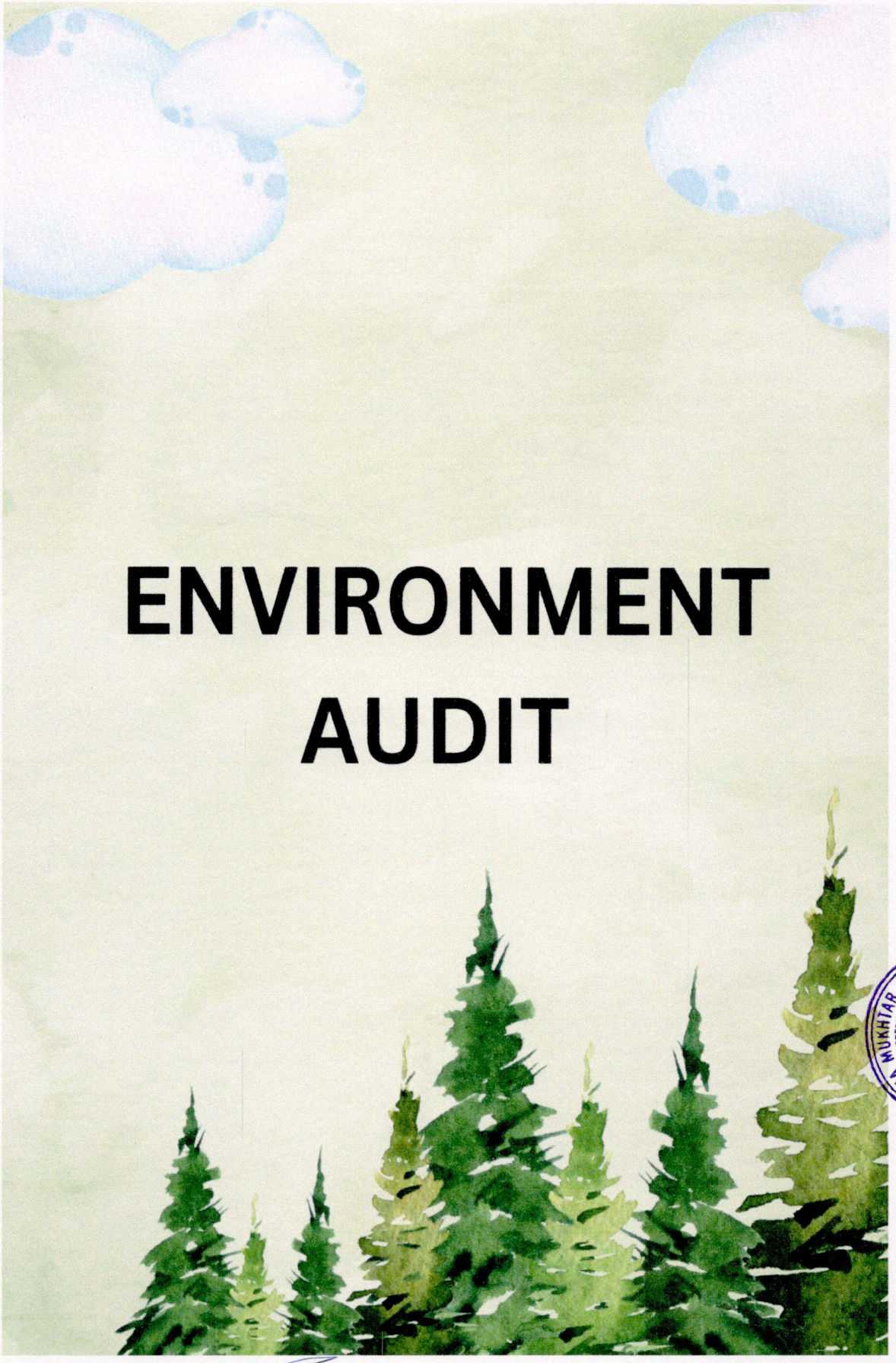


ENVIRONMENT AUDIT

5. Environmental Audit:

An environmental audit is a type of evaluation intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. ISO 14001 is a voluntary international standard for environmental management systems ("EMS"). ISO 14001:2004 provides the requirements for an EMS and ISO 14004 gives general EMS guidelines. An EMS meeting the requirements of ISO 14001:2004 is a management tool enabling an organization of any size or type to:

- Identify and control the environmental impact of its activities, products or services;
- Improve its environmental performance continually, and
- Implement a systematic approach to setting environmental objectives and targets, to achieving these and to demonstrating that they have been achieved.

The audit examines the potential hazards or risks posed by the institutes. Areas examined may include environmental policies and procedures, energy use practices, recycling, waste, conservation, and pollution. Then, the institute can use the results to determine what changes need to be made for compliance. In a broad sense, environmental auditing aims to help protect the environment and minimize the risks of business activities to the environment and human safety and health.

5.1 Water Audit and wastewater audit:

Water auditing is a method of quantifying water flows and quality in systems, with a view to reducing water usage and often saving money on otherwise unnecessary water use. Water audit is an effective management tool for minimizing losses, optimizing various uses and thus enabling considerable conservation of water. Water audits trace water use from its point of entry into the facility/system to its discharge into the sewer/river/canal etc. Wastewater audit deals with effective management of wastewater in the system. It deals with proper generation, management, treatment, transfer and disposal of wastewater.

MMANTC has carried out its water and wastewater audit and has suggested many more ways for water conservation, reuse and recycle. The detail water and waste water report is mentioned below.

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL
CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

5.2 Water Audit report:

Water audit for the "MMANTC" was carried out. The purpose of the water audit is to provide a thorough understanding of the water uses by identifying and measuring all water using fixtures, appliances, and practices in order to recommend potential water saving efficiencies.

PRIMARY DATA

Sr. No.	Title	Information
1	**Name of Institute**	Al Jamia Mohammediyah Education Society's, Maulana Mukhtar Ahmad Nadvi Technical Campus
2	**Address**	Malegaon, 423203
3	**Name of company under which water audit is carried out**	Environmental and Civil Engineering Solutions, Sangli
4	**Number of floors**	G + 2 (Variable)
5	**Category of building**	Educational Institute
6	**Nearest ESR location**	Campus
7	**Water supply hours**	6 hrs. daily
8	**Water meter present**	No

POPULATION DETAILS

Title	Information
Fixed population (Working staff and Students)	Gents: 514
	Ladies: 116
Variable population (Visiting persons)	Gents: 18
	Ladies: 9

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA", MALEGAON, Dist. Nashik

SOURCE INFORMATION

Title	Information
Sources of water	River water pumping and bore-well
Connection details	1" PVC pipe inlet and 1" outlet distribution pipe

STORAGE DETAILS

Title	Information
Overhead tank type	PVC tank
Location	On terrace
Number of tanks	3 X 1000 lit PVC 1 X 1500 lit PVC
Motor connection details	2 Hp for Bore-well 1 1.5 Hp for Bore-well 2
Pumping period	4.5 hours daily
Underground sump	Yes
Capacity of underground sump	5500 Lit RCC

WATER USAGE

Toilet	Number of users	Water consumption
Gents toilet	514 users	514 X 10 lit = 5140
Washbasin	630 users	630 X 0.75 lit = 473
Ladies toilet	116 users	116 X 12 lit = 1392
Toilet cleaning	650 liters	650 liters
Floor cleaning	500 liters	500 liters
Gardening	1500 liters	1500 liters
Laboratories	1500 liters	1500 liters
Total		**11,154 lit**

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

WATER USED FOR DRINKING

There are coolers cum water purifiers present in the institute. Sample assessment for 3 months was done and average values are presented below for each section.

Potable water assessment:

RO at Electrical section

Sr. No.	Test	Results	Limit
1	pH	**6.5-7.7**	6.5-8.5
2	TDS	**123**	-
3	E.C	**101**	-
4	Hardness	**128**	200
5	Chlorides	**100**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-

RO at E&TC section

Sr. No.	Test	Results	Limit
1	pH	**6.6-7.0**	6.5-8.5
2	TDS	**128**	-
3	E.C	**104**	-
4	Hardness	**119**	200
5	Chlorides	**99**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-

RO at FF

Sr. No.	Test	Results	Limit
1	pH	**6.7-7.3**	6.5-8.5
2	TDS	**118**	-
3	E.C	**123**	-
4	Hardness	**133**	200
5	Chlorides	**107**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-

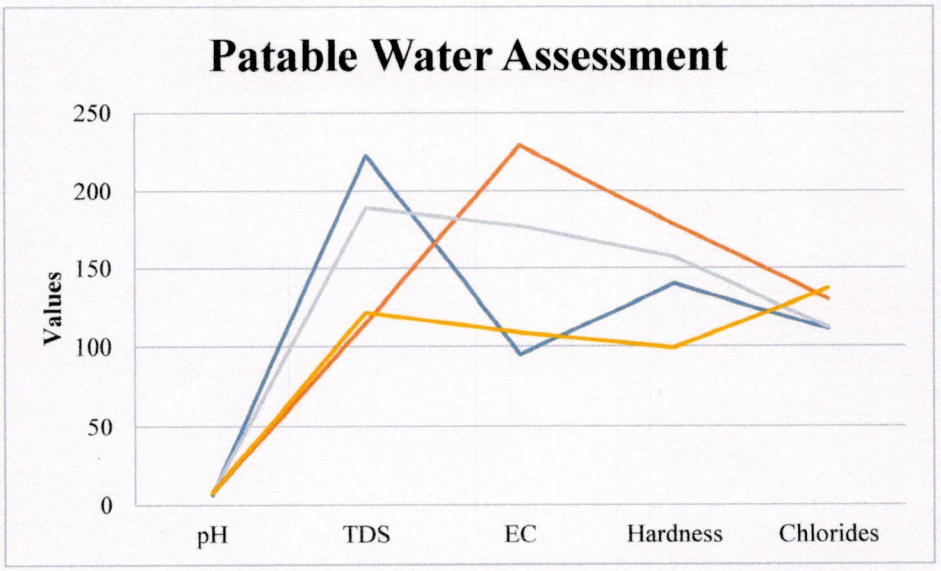
PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL
CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

Municipal water and deep well water assessment:

Bore well assessment

Sr. No.	Test	Results	Limit
1	pH	**7.7**	6.5-8.5
2	TDS	**1326**	-
3	E.C	**2844**	-
4	Hardness	**181**	200
5	Chlorides	**112**	200
6	MPN	**Ab**	1.0
7	Odor and Color	**Ab**	-



5.3 Waste water audit:

MMANTC campus generates huge amount of wastewater. The source for wastewater in the campus is hostels, institute, mess and the washrooms and urinals inside the campus. To estimate the amount of wastewater generated all the water that is used in the washrooms, quarters and hostels is considered as wastewater.

Sr. No.	Section	Wastewater generated in litres
1	Water usage generated in campus	**11,154**
Waste water generated		**8,365**

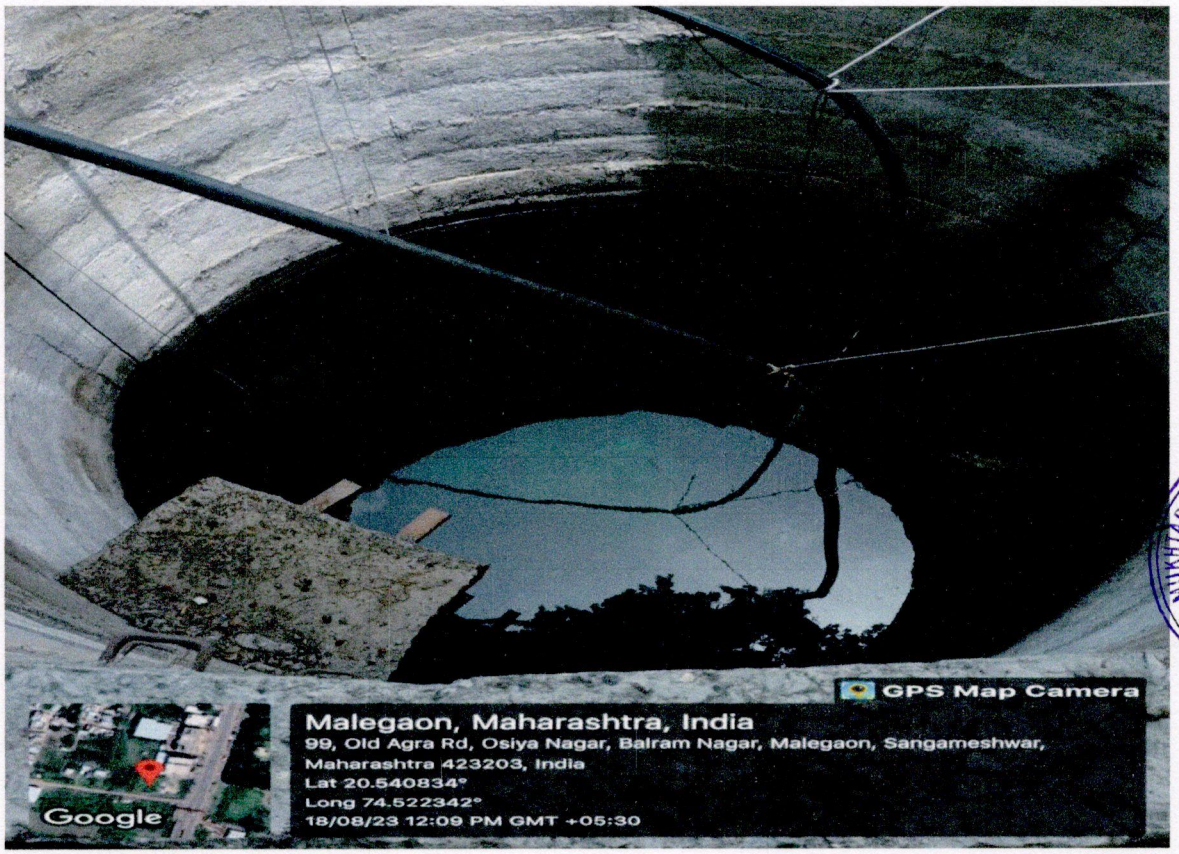
5.4 **Waste water treatment plant at MMANTC:**

Currently MMANTC lets all it waste water into sewers. Currently there is no any waste treatment facility. Sampling of waste water was done for 3 months for the parameters of COD, BOD, TKN and pH. Following table shows the characterization of wastewater.

Sr. No.	Parameter	Reading
1	pH	7.14
2	COD	211
3	BOD	108
4	TKN	22

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL
CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik



MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

PRINCIPAL
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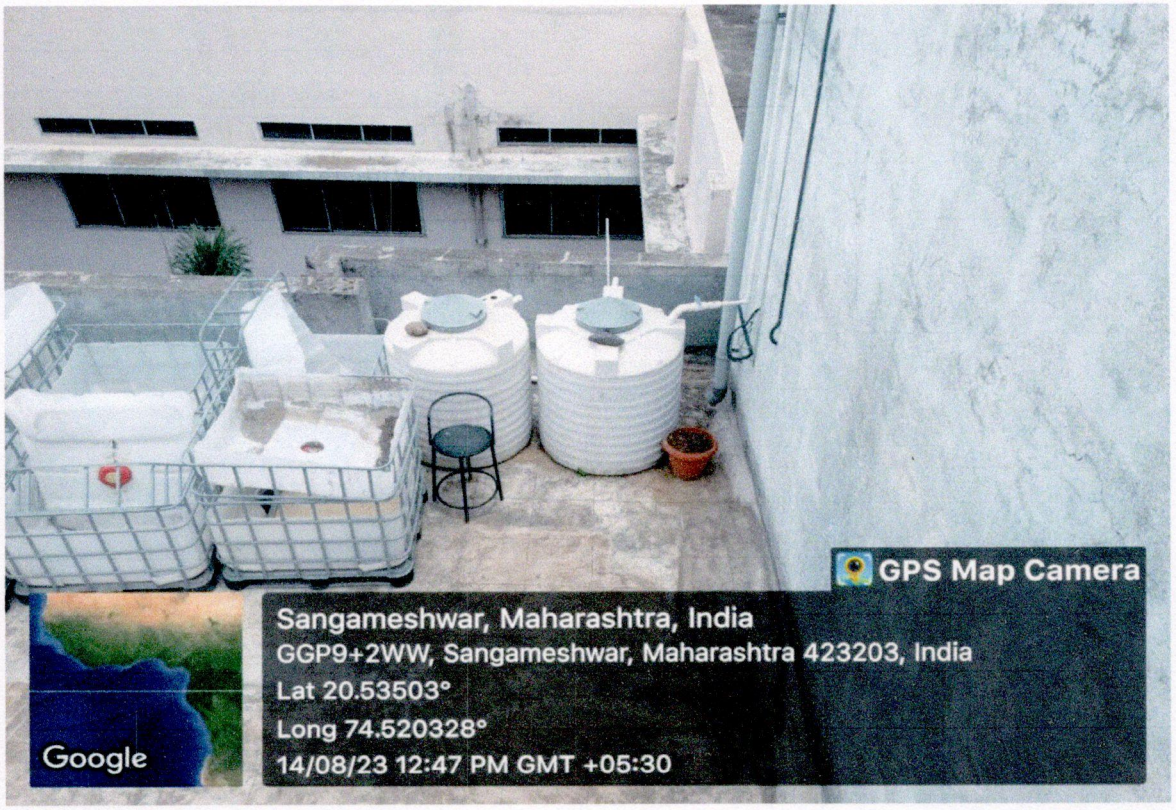

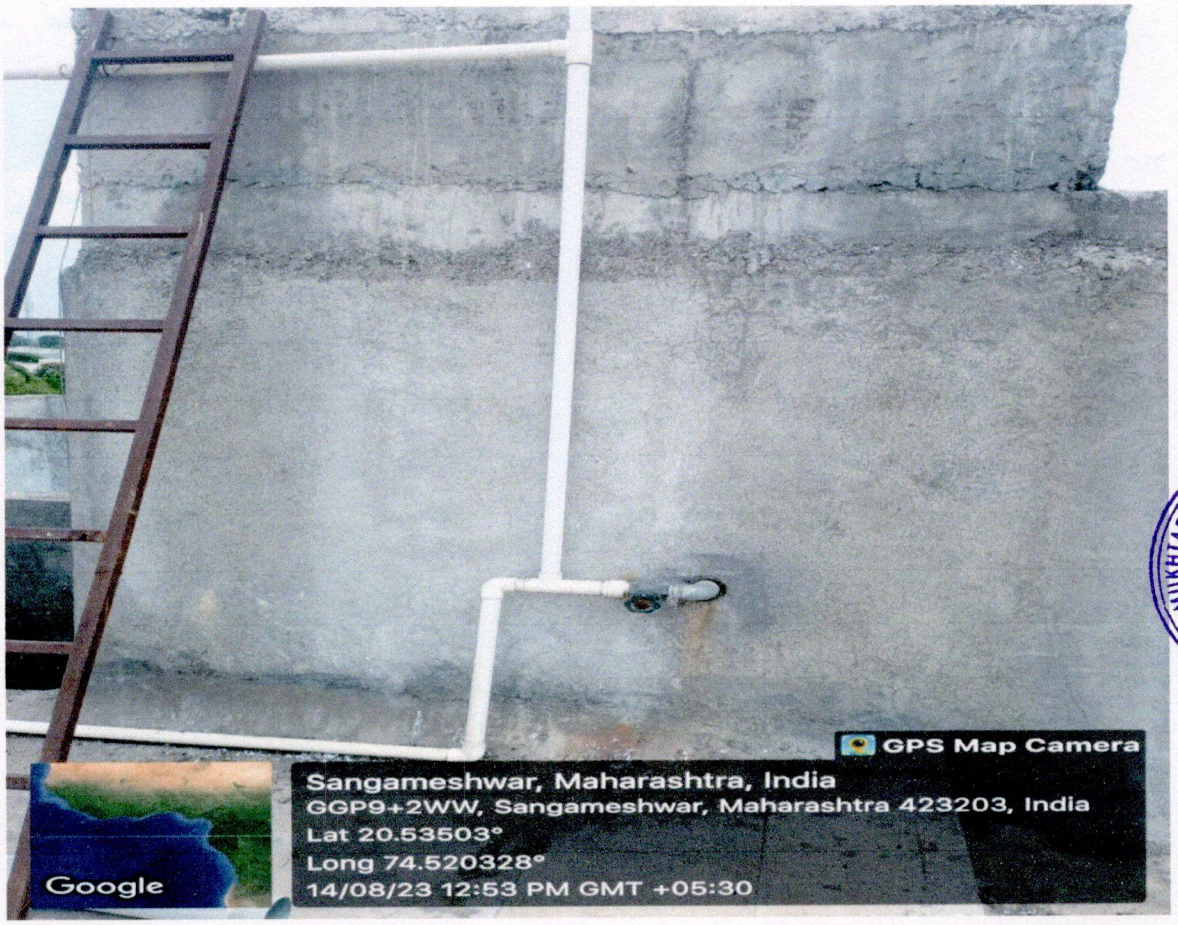

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA", MALEGAON, Dist. Nashik

PRINCIPAL
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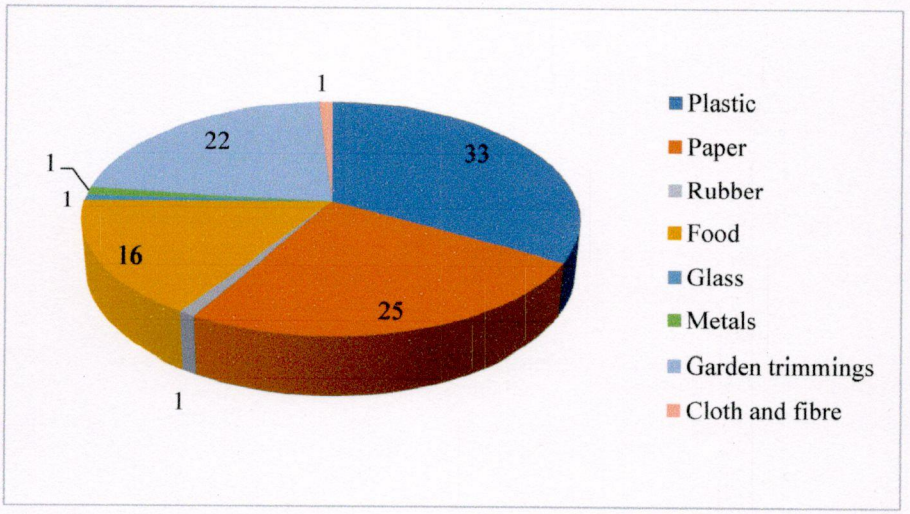
5.5 **Solid waste Audit:**

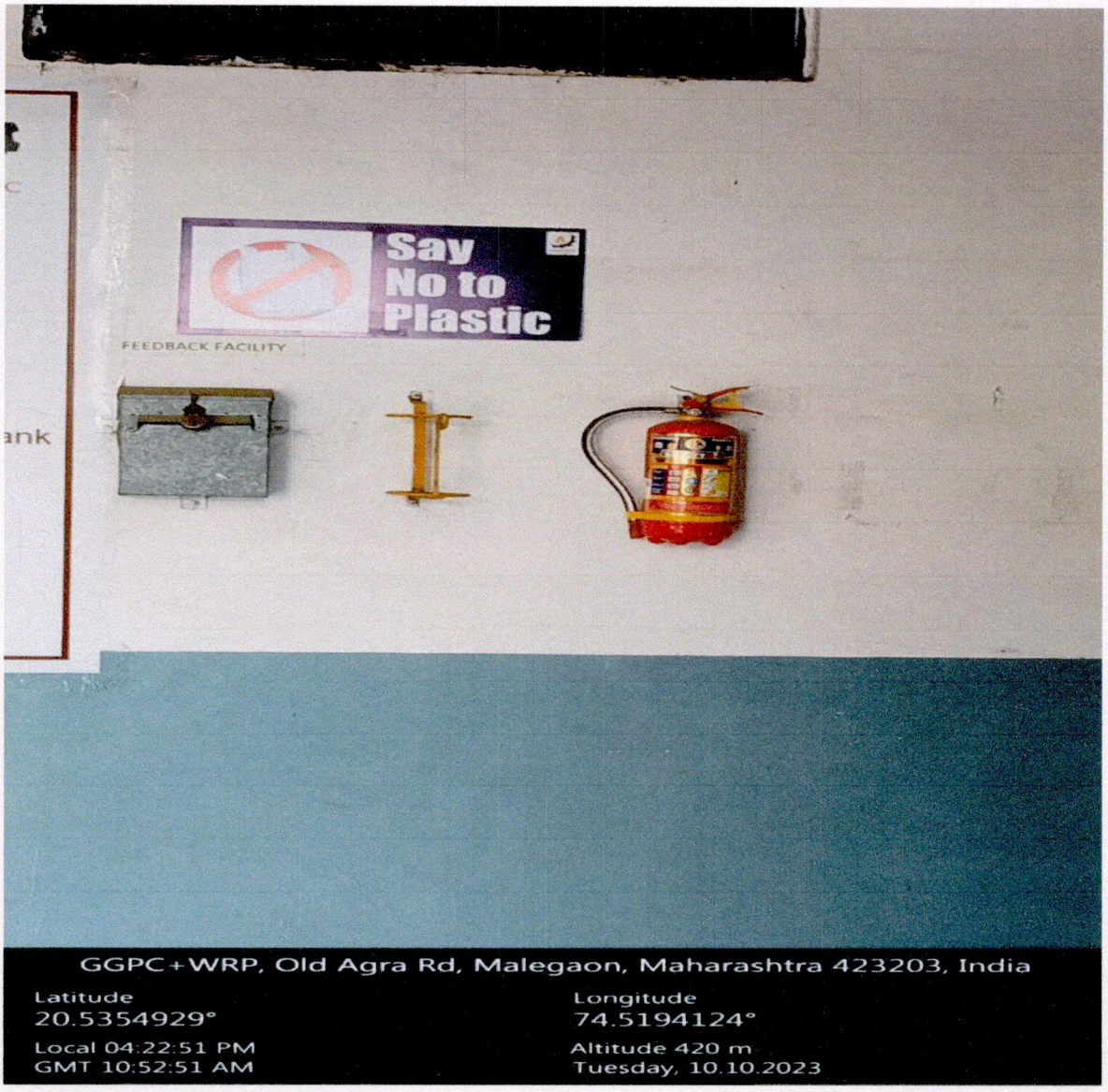
A waste audit is a physical analysis of waste composition to provide a detailed understanding of problems, identify potential opportunities, and give you a detailed analysis of your waste composition. A waste audit will help you clearly identify your waste generation to establish baseline or benchmark data, Characterize and quantify waste stream, Verify waste pathways, identify waste diversion opportunities and identify source reduction opportunities.

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduce or eliminates the adverse impact on the environment and human health. Solid waste audit for MMANTC was carried out. The entire premise was analysed for solid waste generation and waste characterization. Overall waste was observed and characterization was done. The below table shows the components of solid waste at MMANTC campus. Quartering method was used and 1 Kg of waste was selected.

Sr. No.	Type of waste	Composition %
1	Plastic	33
2	Paper	25
3	Rubber	1
4	Food	16
5	Glass	1
6	Metals	1
7	Garden trimmings	22
8	Cloth and fibre	1



After analysing all the bins it was observed that plastic had highest contribution viz. 33% followed by the paper waste i.e. 25%. Mostly common observed plastic items were plastic wrappers of chips, soft drinks bottles and chocolate wrappers. The paper waste included paper wrappers, notebook pages, pamphlets and some pieces of cardboard. The third highest waste included garden trimmings. It included small grass, minute branches etc. The least contribution was of cloth, fibre, glass and metals.



PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL
CAMPUS MALEGAON Dis Nashik

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA"
MALEGAON,
Dist. Nashik

5.6 Observations and Conclusion:

- There are separate bins for wet waste and dry waste. Hence, source segregation takes place.
- Institute has taken steps towards paper recycling. The paper waste collected from the bins is send to vendors.
- Plastic ban in campus is implemented but due to lack of seriousness in the students plastic is used in campus. Institute should conduct plastic awareness seminars for both the staff and students.

Assessment of soil was done to determine the quality of soil:

Sr. No.	Test	Results
1	pH	**6.1**
2	NPK	**2:3:1**
3	Acidity	**144 mg/lit**
4	Hardness	**162 mg/lit**

5.7 Ambient Air Audit:

Ambient air quality refers to the condition or quality of air surrounding us and in the outdoors. National Ambient Air Quality Standards are the standards for ambient air quality set by the Central Pollution Control Board (CPCB) that is applicable nationwide. The CPCB has been conferred this power by the Air (Prevention and Control of Pollution) Act, 1981. Hence, auditing this ambient air quality is stated as ambient air audit.

MMANTC has carried out its ambient air audit at various locations in the premises. Air quality detector machine PS-21185 was used for air audit. Parameters viz. SOx, NOx, RSPM and Air quality were assessed.

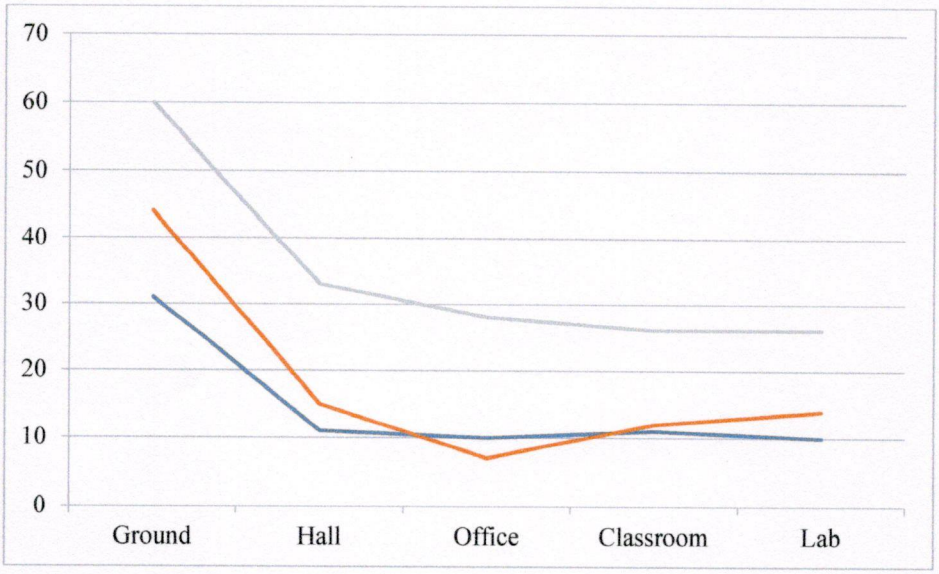
Sr. No.	Point number	Location
1	Point No 1	Ground
2	Point No 2	Hall
3	Point No 3	Office
4	Point No 4	Classroom
5	Point No 5	Lab

MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS Institute Code 5411 "MANSOORA", MALEGAON, Dist. Nashik

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL
CAMPUS MALEGAON Dis Nashik

Results of air quality monitoring:

Point No	Location	SOx	NOx	RSPM	Quality
	CPCB Limits	80 µg/m3	80 µg/m3	80 µg/m3	-
1	Ground	31	44	60	Good
2	Hall	11	15	33	Fresh
3	Office	10	7	28	Good
4	Classroom	11	12	26	Fresh
5	Lab	10	14	26	Fresh



5.8 Ambient Noise audit:

Ambient sound in relation to audio refers to the background noise present at a given scene or a location. This can include noises such as rain, traffic, crickets, birds, etc. Ambient sound levels are often measured in order to map sound conditions over a specific time to understand their variation with locale and various points. Ambient noise level is measured with a sound level meter. It is usually measured in Decibel (dB). 5 points were selected based on best suitable requirement for noise monitoring. RS-2250 instrument was used. Monitoring was carried out 3 times in a day for 3 months. Readings were collected in morning section, afternoon section and evening section. In addition to this monitoring was also carried out in library section, study room section, classrooms, tutorial rooms and laboratories.

PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHINICAL CAMPUS MALEGAON Dis Nashik

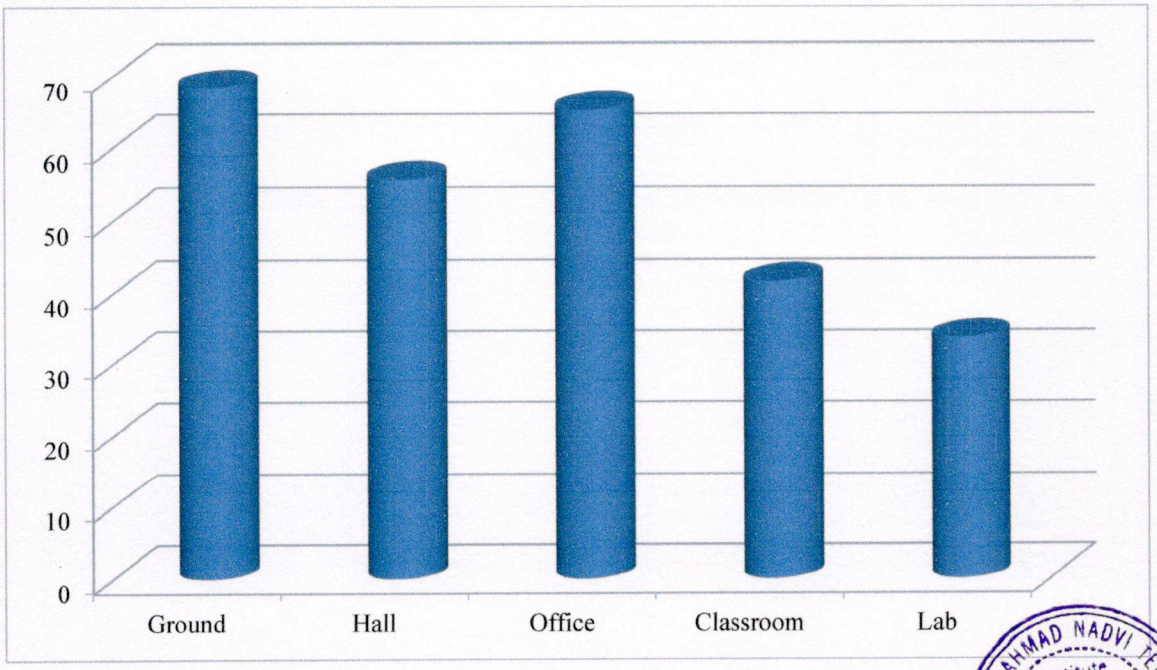
MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS
Institute Code 5411
"MANSOORA" MALEGAON, Dist. Nashik

Sr. No.	Point number	Location
1	Point No 1	Ground
2	Point No 2	Hall
3	Point No 3	Office
4	Point No 4	Classroom
5	Point No 5	Lab

Results of noise assessment:

All the values are in decibels. Assessment values present average of 3 months data and the last column present the final average of morning noon and evening.

Point No	Location	Morning	Noon	Evening	Average
1	Ground	65.48	79.91	60.10	68.50
2	Hall	54.18	62.64	50.15	55.66
3	Office	61.02	64.68	70.35	65.35
4	Classroom	40.27	45.47	39.10	41.61
5	Lab	31.59	38.28	31.10	33.66



PRINCIPAL
MAULANA MUKHTAR AHMAD NADVI TECHNICAL CAMPUS MALEGAON Dis Nashik