ENVIRONMENTAL AUDIT REPORT

SHRI VILE PARLE KELAVANI MANDAL'S,
INSTITUTE OF PHARMACY, DHULE

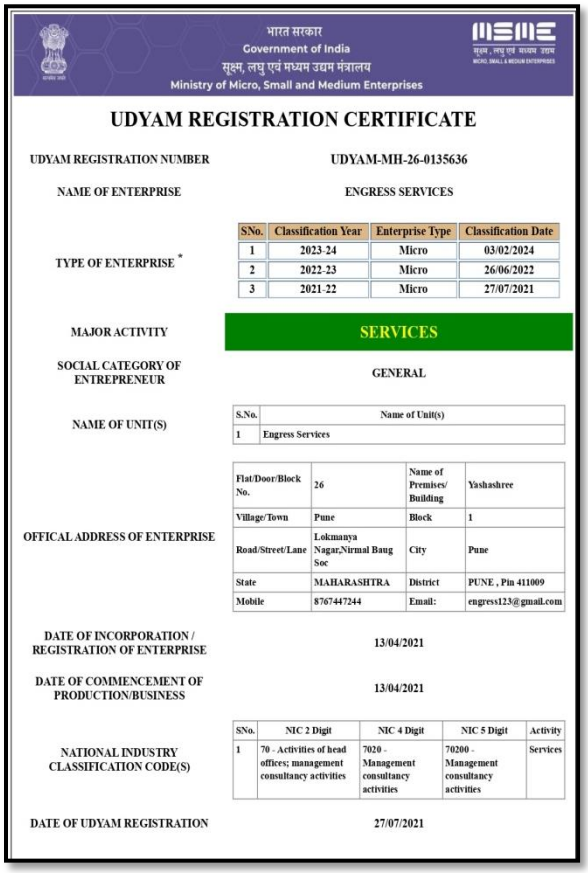
Year: 2023-24

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:



भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-MH-26-0135636
NAME OF ENTERPRISE	ENGRESS SERVICES

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	Engress Services

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION: 27/07/2021

ASSOCHAM

GEM Certificate

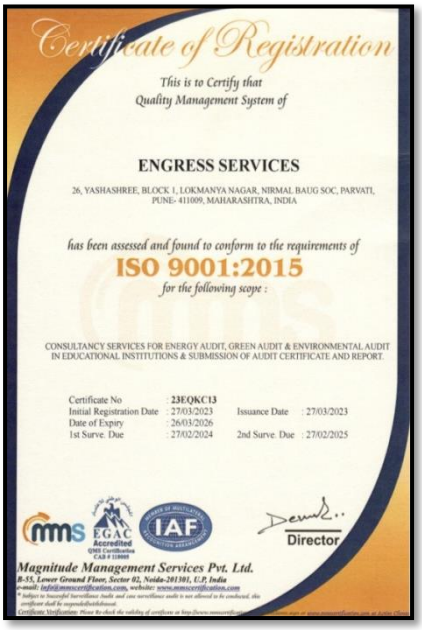
ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects. ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar, Chairman, GEM
GEM CP 22/788
Deepak Sood, Secretary General, ASSOCHAM



Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EQKC13
Initial Registration Date : 27/03/2023 Issuance Date : 27/03/2023
Date of Expiry : 26/03/2026
1st Surve. Due : 27/02/2024 2nd Surve. Due : 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with *MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)* under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 14001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EEKW20
Initial Registration Date : 29/03/2023 Issuance Date : 29/03/2023
Date of Expiry : 28/03/2026
1st Surve. Due : 29/02/2024 2nd Surve. Due : 28/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

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ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of, Shri Vile Parle Kelavani Mandal's Institute of Pharmacy, Dhule for awarding us the assignment of Environmental Audit of their Pimpri campus for the Year: 2023-24.

We are thankful to all Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Shri Vile Parle Kelavani Mandal's Institute of Pharmacy, Dhule consumes Energy in the form of **Electrical Energy and LPG;** used for various gadgets, office & other facilities.

2. Pollution due to Institute Activities:

- **Air pollution:** Mainly CO_2 on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste, Paper & Plastic Waste
- **Liquid Waste:** Human liquid waste

3. Present Energy Consumption& CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	**65530**	kWh
2	Annual CO_2 Emissions	**61.28**	MT
3	Annual LPG Consumed	**114**	Kg

4. Usage of Renewable Energy:

- The Institute has installed a Roof Top Solar PV Plant of Capacity **72kWp**.
- The Energy Generated by Roof Top Solar PV Plant in 2023-24 is **86400 kWh.**
- The reduction in Annual CO_2 Emission in 2023-24 is **80.35 MT.**

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**46**	**28**	**37**
2	Minimum	**35**	**21**	**28**

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	**300**	**45**
2	Minimum	**208**	**40**

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Segregation & handover to Municipal Council
3	Sanitary Waste	Provision of Sanitary Waste Incinerator

4	Bio Medical Waste	Provision of a Dedicated Disposal Pit
5	Liquid Waste	Installation of Sewage Treatment Plant
6	Laboratory Liquid Waste	Provision of a Soak Pit
7	Chemical Fumes'	Provision of Fuming Hood
8	E Waste	Disposed of through HP Customer Support Agency

8. Rain Water Management & Water Conservation:

The rain water falling on the terrace is collected through pipes and is used for increasing the underground water table. A soak tank is provided for collection of drained water. An open well is there, wherein the rain water is collected by gravity is stored and is used for gardening purpose.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on Energy Conservation Display of Posters
- Provision of E Vehicle in the Campus

10. Assumptions:

- **1 kWh**of Electrical Energy releases **0.93 Kg** of **CO_2**into atmosphere
- **1 Kg**of LPG releases **2.694 Kg of CO_2** into atmosphere
- Average Energy generated by **1 kWp** Solar PV Plant :**4 kWh/Day**
- Annual Solar Energy Generation Days: **300 Nos**

11. References:

- For CO_2 Emission Calculations: www.ccd.gujarat.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Quality Standards: www.cpcb.com
- For Roof Top Solar Energy Generation: www.solarrooftop.gov.in

ABBREVIATIONS

SVKM	:	Shri Vile Parle Kelavani Mandal
Kg	:	Kilo Gram
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
KLPD	:	Kilo Litres per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM-2.5	:	Particulate Matter of Size 2.5 Micron
PM-10	:	Particulate Matter of Size 10 Micron
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I
INTRODUCTION

1. Important Definitions:

1.1. Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

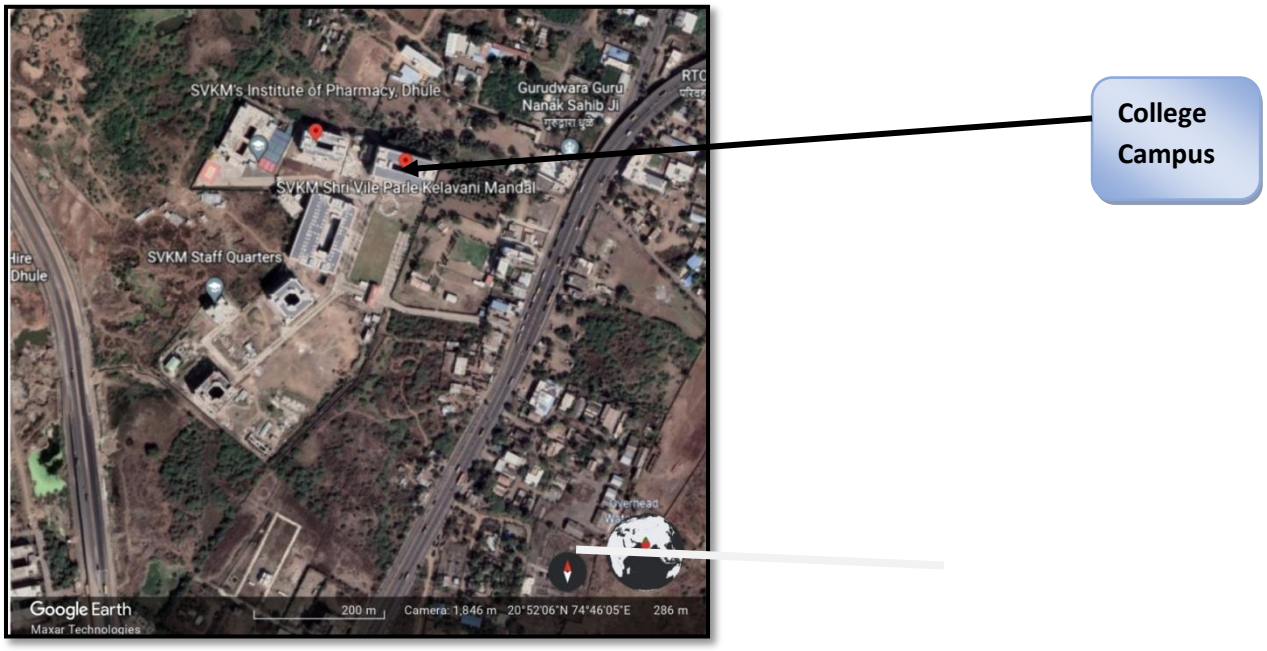
1.2. Environmental Audit: Definition:

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.2Key Study Points:

No	Particulars
1	Study of Present Resource Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Indoor Air Quality
4	Study of Indoor Lux & Noise Level
5	Study of Water Management
6	Study of Waste Management Practices
7	Study of Environment Friendly Practices

1.3 Institute Location Image:



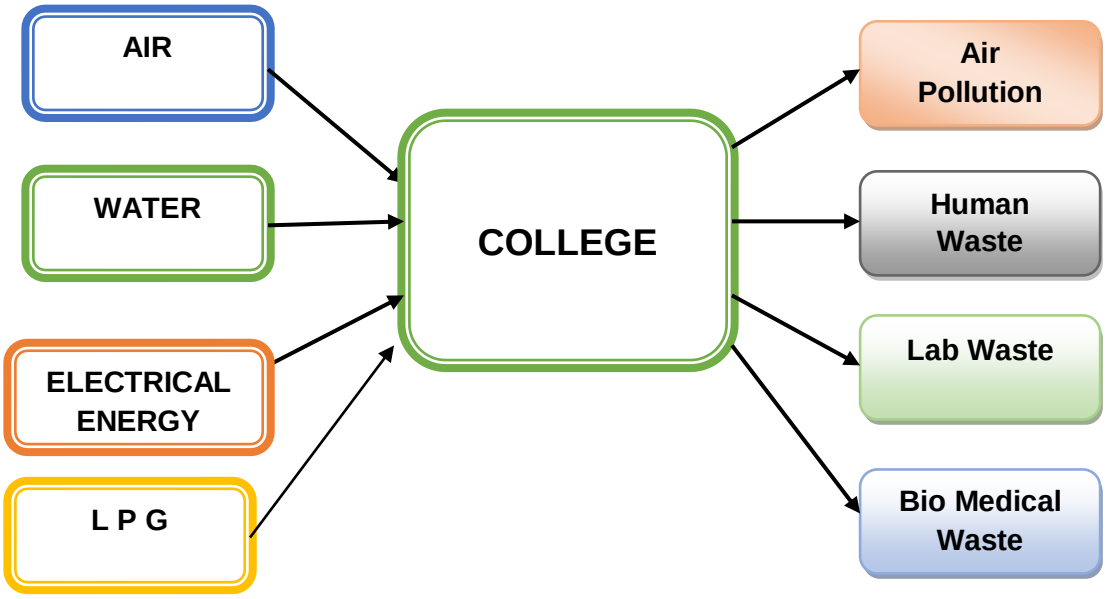
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the Institute System & Environment as under.

Chart No 1: Representation of Resource Requirement & Waste of aInstitute:



Now we compute the Generation of CO_2 on account of consumption of Electrical Energy. The basis of Calculation for CO_2 emissions due to Electrical Energy is as under.

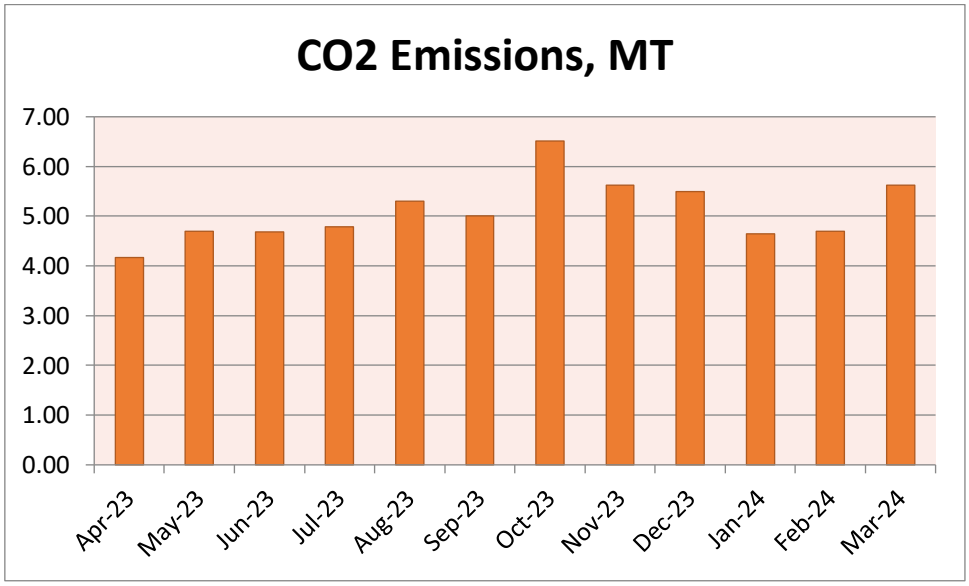
- **1 kWh** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere
- **1 Kg** of LPG releases **2.68 Kg of CO_2** into atmosphere.

Table No 1: Study of Purchase of Energy & CO_2 Emissions: 23-24:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO_2 Emissions, MT
1	Apr-23	4459	9	4.17
2	May-23	5025	10	4.70
3	Jun-23	4975	19	4.68
4	Jul-23	5125	9	4.79
5	Aug-23	5687	6	5.31
6	Sep-23	5358	10	5.01

7	Oct-23	6978	8	6.51
8	Nov-23	6025	9	5.63
9	Dec-23	5875	10	5.49
10	Jan-24	4974	9	4.65
11	Feb-24	5025	8	4.70
12	Mar-24	6024	7	5.62
13	Total	65530	114	61.28
14	Maximum	6978	19	6.51
15	Minimum	4459	6	4.17
16	Average	5460.83	9.5	5.11

Chart No 2: Month wise CO_2 Emissions:



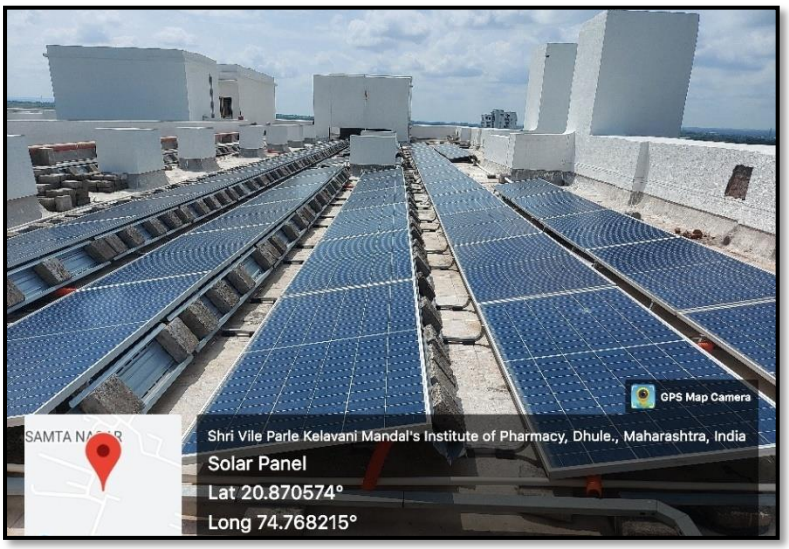
CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The Institute has installed a **72 kWp** capacity Roof top Solar PV Plant. We compute the Reduction in Annual CO_2 Emission.

Table No 6: Computation of Reduction in Annual CO_2 Emission:

No	Particulars	Value	Unit
1	Roof Plant Solar PV Plant Capacity	72	kWp
2	Average Daily Energy Generated by 72kWp Plant	4	kWh
3	Annual Generation Days	300	Nos
4	Annual Energy Generated	**86400**	kWh
5	1 kWh of Electrical Energy emits	**0.93**	Kg of CO_2
6	Reduction in CO_2 emission by Solar PV Plant**= (4) * (5)/1000**	**80.35**	MT/Annum

Photograph of Roof Top Solar PV Plant:



CHAPTER IV
STUDY OF INDOOR AIR QUALITY

1. Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

2. Air qualityis a measure of the suitability of air for breathing by people, plants and animals.

3. Air Quality Index: Air Quality Index (AQI) is a number used by government agencies to measure the **Air Pollution** levels and communicate it to the population.

In this Chapter, we present three important Parameters: **AQI**- Air Quality Index,**PM-2.5**- Particulate Matter of Size 2.5 micron and **PM-10**- Particulate Matter of Size 10 micron

Table No 3: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Class Room-111	35	21	30
2	Seminar Hall	36	22	28
3	Faculty Room	40	24	31
4	Admin Office	36	22	32
5	Computer Lab	46	28	37
	Maximum	**46**	**28**	**37**
	Minimum	**35**	**21**	**28**

Table No 4: Air Quality Index Values & Concentration of PM 2.5 & PM10: (By CPCB):

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

Conclusion:

From the above measured values, we conclude that the observed values of AQI, PM-2.5 & PM-10 are in the **Satisfactory Range**, as per the guidelines given by Central Pollution Control Board.

CHAPTER V
STUDY OF INDOOR LUX & NOISE PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include:**Lux Level and Noise Level.**

Table No 4: Study of Indoor Comfort Condition Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Class Room-111	224	45
	Seminar Hall	230	41
3	Faculty Room	300	42
4	Admin Office	228	40
5	Computer Lab	208	43
	Maximum	**300**	**45**
	Minimum	**208**	**40**

Recommended Lux & Noise Level: As per BEE & ISHRAE Guidelines:

A) Noise Level Reference:		
No	**Location**	**Noise Level Range, dB**
1	Offices	45-50
2	Occupied Class Room	40-45
3	Libraries	35-40
B) Reference Lux Level, Lumens:		
1	For Class Rooms	**200 Plus**
2	For Reading Rooms	**200 Plus**

Conclusion:

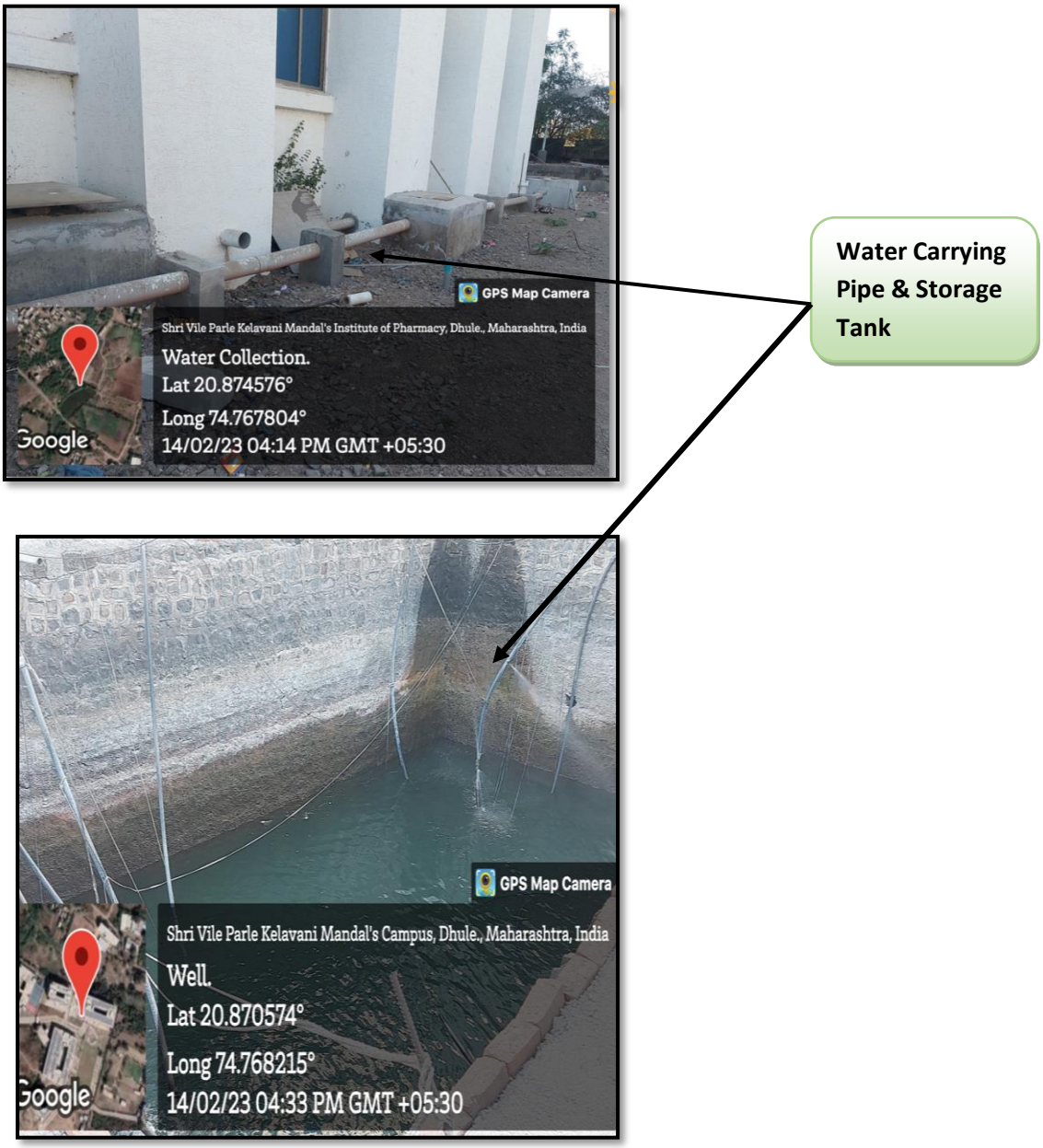
From the above measured values, we conclude that:

- The Noise Level is within the prescribed Limit
- The Lux Level at various locations is Okay

CHAPTER VI
STUDY OF RAIN WATER MANAGEMENT

The rain water falling on the terrace is collected through pipes and is used for increasing the underground water table. A soak tank is provided for collection of drained water. An open well is there, wherein the rain water is collected by gravity is stored and is used for gardening purpose.

Photograph of Underground Rain Water Pipe and Water Collection Tank:



CHAPTER-VII
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the Institute.

Details of Waste Management Practices:

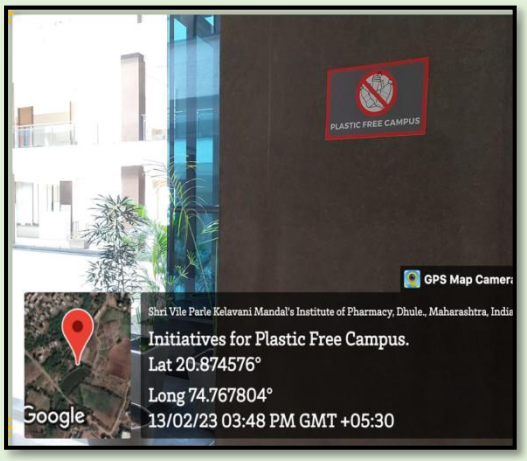
No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source & Handover to Municipal Council	**Waste Collection Bin:** 
2	**Organic Waste**	Segregation at source and handover to Municipal Council	**Handing over Wet Waste to Municipal Authorities:**  Housekeeping staff dumping segregated wastes in Dhule Municipal Corporation's garbage collecting van
2	**Sanitary Waste**	Provision of Sanitary Waste Incinerator	**Sanitary Waste Incinerator**: 

3	**Liquid Waste**	Provision of Sewage Treatment Plant of Capacity 600 m^3/Day	**Sewage Treatment Plant:** 
4	**Bio Medical Waste**	Provision of Special Pit for disposal of Bio Medical Waste	**Bio Medical Disposal Pit** 
5	**Laboratory Liquid Waste**	Provision of a Soak Pit for Disposal of Laboratory Liquid Waste	**Chemical Waste Soak Pit** 
6	**Chemical Fumes' Management**	Provision of Fuming Hood for Fumes' Management	**Fuming Hood** 
7	**E Waste**	**Disposed of through HP Customer Support**	

CHAPTER-VIII
STUDY OF ENVIRONMENT FRIENDLY PRACTICES

In this Chapter, we present the Eco Friendly Practices, followed by the Institute.

Details of Eco Friendly Practices:

No	Head	Observation	Photograph
1	**Tree Plantation**	Tree Plantation in the Campus	**Internal Tree Plantation:** 
2	**Creation of Awareness among Stake Holders**	Display of Poster on Plastic Free Campus	**Poster on Plastic Free Campus:** 

3	**Promotion of E Vehicle**	Usage of E Vehicle in the Campus	**E Vehicle**