WATER CONSUMPTION & WATER CONSERVATION AUDIT REPORT

MIT ART, DESIGN AND TECHNOLOGY UNIVERSITY,

Loni Kalbhor, Pune 412201

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

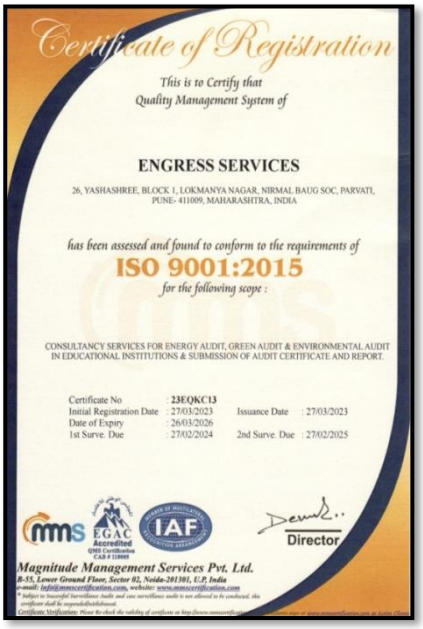
Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

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



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: eee@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)

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of MIT Art, Design and Technology University, Loni Kalbhor, Pune, for awarding us the assignment of Water Consumption & Conservation Study Report of their Loni Kalbhor Campus for the Year: 2023-24

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

EXECUTIVE SUMMARY

1. MIT Art, Design and Technology University, Loni Kalbhor, Pune consumes Water which is lifted from Rajwadi Well and the borewells inside the University premises.

2. Present Per Day Water Consumption:

No	Particulars	Value	Unit
1	Per Day Water Consumption	**1113000**	Liters

3. Rain Water Harvesting Practices:

- Water Collection and storage through Trenches at Building IOD-1, IOD-2 & IOD-3
- Collection of Rain Water falling on the terrace and recharging the borewell, near MANET Mess Facility

4. Rain Water Harvesting Potential:

No	Particulars	Value	Unit
1	Total Roof Top Area of University Buildings	**38353.7**	Sq. m.
2	Total Rain Water Harvesting Potential	**17863.7**	Liters

5. Present Water Conservation Practices:

- Installation of Sewage Treatment Plant & usage of Treated Water for Gardening & For Flushing Usage at Hostel Blocks
- Installation of Water Meters for STP Water Reuse purpose
- Implementation of Water Less Bio Urinals

6. Water Conservation Opportunities:

- Installation of Water Meters at all Main pipe Sections
- Usage of Auto Controller Unit for all Pump houses
- Usage of Efficient Water Nozzles
- Usage of Dual Flush System at all Wash rooms
- Installation of Sand Filter units in all Water pipe lines running down from the terrace
- Prepare Water Consumption Charts for all Campuses and recording the Data on Daily basis

7. Assumptions:

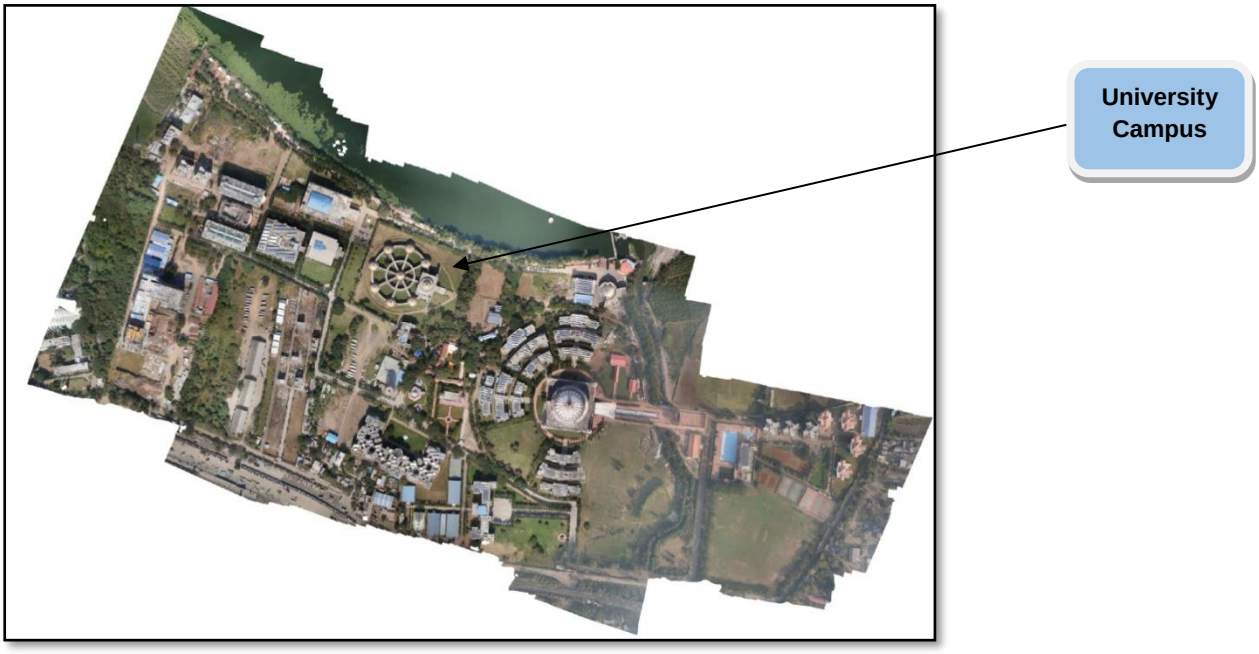
- Average Annual Rainfall: **753 mm**
- Run Off Coefficient: **0.6**

CHAPTER-I
INTRODUCTION

1. Key Study Points:

No	Particulars
1	Study of Present Water Consumption
2	Study of Rain Water Management
3	Study of Present Water Conservation Practices
4	Study of Further Water Conservation Opportunities

1.2 University Campus Image:

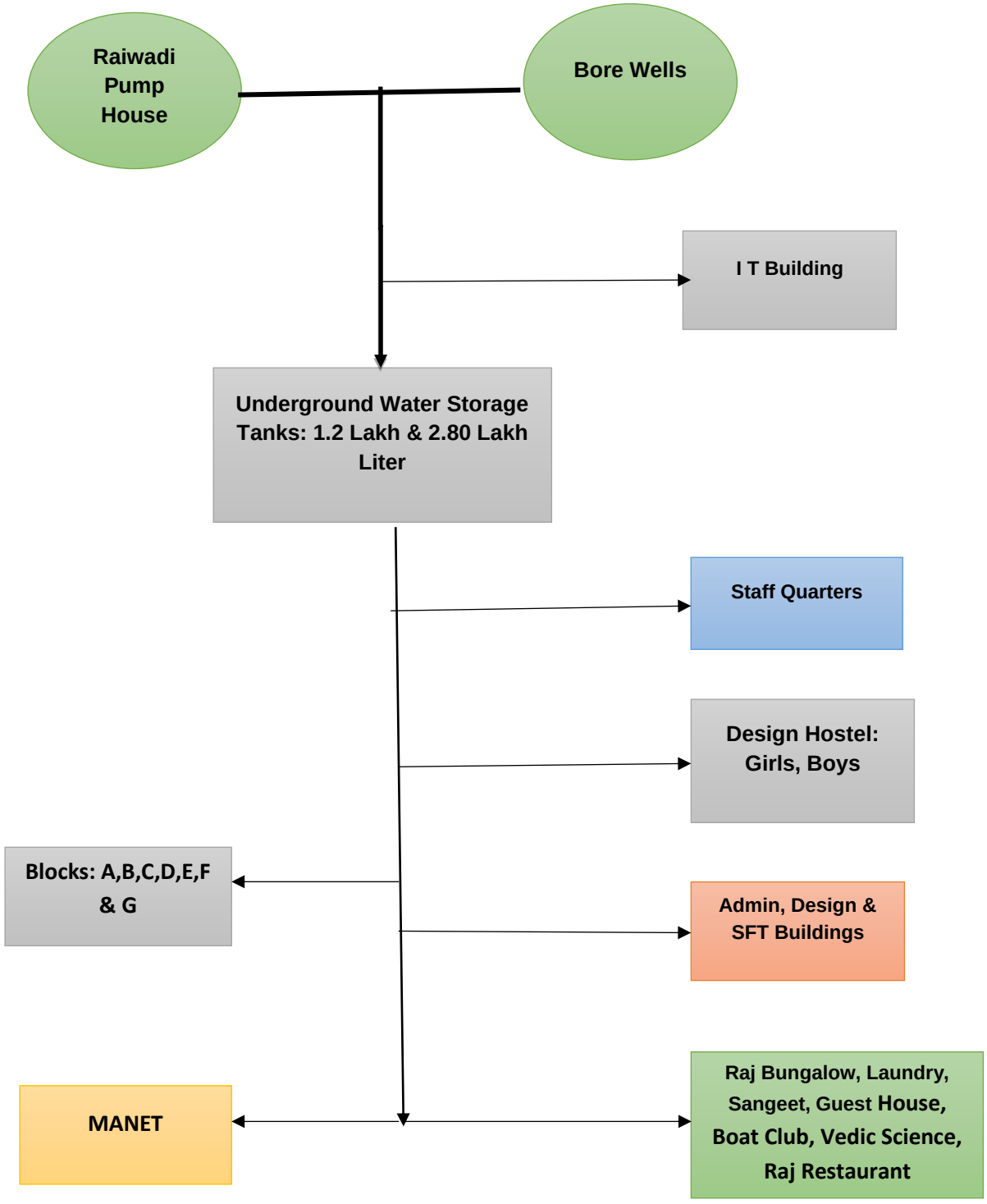


CHAPTER-II
ESTIMATION OF PRESENT WATER CONSUMPTION

2.1 Study of Water Consumption/Estimation:

Study of Single Line Diagram of Water Distribution:

Chart No 3: Single Line Diagram of Water Distribution:



2.2. Brief Description of Water Distribution System:

1. The University has own well located at Raiwadi, about 5.5 kms away from the main campus, in the Loni Kalbhor Village. From this Raiwadi well, the Water is pumped to the main campus. There are two Submersible Water pumps at the Raiwadi Well section, of 10 HP and 15 each, which pump the water to main campus.

2. In the Campus there are two underground RCC Water Storage tanks, of capacities 1.2 Lakh Liters and 2.8 Lakh Liters. The 1.2 Lakh Liter Tank is used for Drinking purpose, while the 2.8 Lakh Liter Tank is used for Domestic purpose.

3. The main Water Filter Plant is near the Underground Water Tank. There is also a Filtration Plant at MANET Hostel Terrace.

4. There are two Dug Wells in the campus, namely located at:

1. Near Guest House
2. Near Design Hostel

5. There are three bore wells, namely at:

1. MANET Hostel Canteen block
2. I T Building
3. Design Hostel Block

2.3. Details of Building wise Overhead Water Storage Tanks:

Table No 1: List of Overhead Water Tanks:

No	Location	Capacity, Liters	Qty	Total Capacity, Liters
1	Sangeet	7000	4	28000
2	Guest House	12000	1	12000
3	Guest House	21000	1	21000
4	Guest House	2000	2	4000
5	Boat Club- U/G	30000	1	30000
6	Raj Bungalow	1000	2	2000
7	Girls Hostel- Design	20000	2	40000
8	Boys Hostel- Design	5000	10	50000
9	Raj Restaurant	12000	2	24000
10	Raj Restaurant	15000	1	15000
11	Raj Restaurant	5000	1	5000
12	Admin Building	10000	1	10000
13	Admin Building	25000	1	25000
14	Design College Building	3000	4	12000
15	SFT Building	25000	3	75000

16	MANET Building	10000	4	40000
17	Block-A,B,C	10000	1	10000
18	Block-A,B,C	5000	1	5000
19	Block- D,F	10000	1	10000
20	Block- D,F	5000	1	5000
21	Terrace	10000	2	20000
22	Hostel- G Block-1	9000	1	9000
23	Hostel- G Block-2	5000	1	5000
24	Hostel- A,B,C,D, E, F	38000	1	38000
25	Hostel- A,B,C,D, E, F	6000	1	6000
26	I T Building-1	49000	1	49000
27	I T Building-2	42000	1	42000
28	I T Building-3	40000	1	40000
29	**Total**			**632000**

2.4. Details of Water Pumps:

Table No 2: List of Water Distribution Pumps:

No	Location	Capacity, H P	Qty
1	Raiwadi	15	1
2	Raiwadi	10	1
3	R O Plant-1	7.5	1
4	R O Plant-2	5	1
5	Design Hostel-Girls	5	1
6	Design Hostel-Boys	5	1
7	Design College	2	2
8	Admin Building	3	1
9	SFT Building	5	1
10	I T Building-1	7.5	2
11	I T Building-2	7.5	2
12	Raj Restaurant	2	2
13	Raj Bungalow	2	1
14	Guest House	2	2
15	Sangeet	2	2
16	MANET	5	2
17	Blocks-A,B,C	2	2
18	Dug Well- Guest House	5	1
19	Dug Well- Design	5	1
20	Bore well- Design	2	4

2.5. Study of Water Consumers:

Table No 3: Approximate Quantification of Water Consumers:

No	Section	No of Users
1	MANET	1200
2	Design, Fine Arts	750
3	Film, Drama	1200
4	Sangeet	500
5	Vedic Science	500
6	Staff Quarter-New	400
7	Design Hostel- Girls	400
8	Design Hostel- Boys	400
9	Hostel-MANET	1200
10	Hostel- Boat Club	200
11	Staff Quarter-III	400
12	I T Section	2800
13	Staff Members	700
14	Outside Visitors	150
15	**Total**	**10650**

2.6 Computation of Per Day Water Consumption:

For computation of Water Consumption, field survey was conducted. At each building, in how much time it takes the Water Tank to fill up time was studied, with the help of the respective section pump operators. The pump operation is fully automatic. As soon as the Water level falls the preset value, the pump starts pumping the Water into the overhead tank. The frequency of Tank filling up time was studied. We present the Data for Tank Filling up time as under.

Table No 4: Study of Tank Filling Up Frequency & Computation of Daily Water Consumption:

No	Location	Total Capacity, Liters	Filling Time, Day	Consumption, Liters/Day
1	Sangeet	28000	2	56000
2	Guest House	12000	2	24000
3	Guest House	21000	2	42000
4	Guest House	4000	2	8000
5	Boat Club- U/G	30000	1	30000
6	Raj Bungalow	2000	2	4000
7	Girls Hostel- Design	40000	1	40000
8	Boys Hostel- Design	50000	1	50000

9	Raj Restaurant	24000	2	48000
10	Raj Restaurant	15000	2	30000
11	Admin Building	10000	3	30000
12	Admin Building	25000	1	25000
13	Design College Building	12000	2	24000
14	SFT Building	75000	2	150000
15	MANET Building	40000	2	80000
16	Block-A,B,C	10000	2	20000
17	Block-A,B,C	5000	2	10000
18	Block- D,F	10000	1	10000
19	Block- D,F	5000	2	10000
20	Terrace	20000	2	40000
21	Hostel- G Block-1	9000	2	18000
22	Hostel- G Block-2	5000	6	30000
23	Hostel- A,B,C,D, E, F	38000	2	76000
24	Hostel- A,B,C,D, E, F	6000	6	36000
25	I T Building-1	49000	2	98000
26	I T Building-2	42000	2	84000
27	I T Building-3	40000	2	40000
28	**Total**			**1113000**

2.6 Estimation of Daily Water Consumption:

From the above analysis, we arrive at the conclusion that the Average Daily Water Consumption of the University is **1113000 liters/Day.**

CHAPTER-III
STUDY OF RAIN WATER HARVESTING

3.1 Study of Rain Water Management:

The roof top area for IOD 1, IOD 2, IOD 3 and IT Building are 3516.2 sq. m., 1887.6 sq.m., 1421.5 sq.m. and 2925.8 sq.m. respectively. With an annual average rainfall for the Pune region considered as 0.763 m along with rainfall coefficient of 0.6, the rainwater harvesting potential of three buildings are **1609.71, 1008.16, 650.76 and 1339.43 cu.m.** The total rainfall harvesting potential for these buildings = **4608 cu.m**. = **46,08,000 Liters** depending on the catchment area for rainwater harvesting.

3.2 Photograph of Rain Water Trenches:

Trenches at Building: IOD-1

Trenches at Building: IOD 2

Trenches at Building: IOD 3

Building: IOD 3

Building: IT Building

3.3 Rain Water Harvesting potential of University:

No	Particulars	Value	Unit
1	Total Roof Top Area of University Buildings	**38353.7**	Sq. m.
2	Total Rain Water Harvesting Potential	**17863.7**	Liters

3.4 Borewell recharge Practices:

The University also has borewell recharge provision to utilize the rainfall and making the most of the recharge facility.

Photographs of Rain Water Collection & Borewell Recharge Point:

Borewell Recharge on the Campus

CHAPTER-IV
STUDY OF PRESENT WATER CONSERVATION PRACTICES

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

Details of Waste Conservation Practices:

No	Head	Observation	Photograph
1	**Waste Water Recycling**	Installation of Sewage Treatment Plant & Usage of Treated Water for gardening	**Sewage Treatment Plant:** 
2	**Water Conservation at Wash Rooms**	Implementation of Bio Urinals- No Water Usage in Urinals	**Bio Urinal:** 

3	**Water Meter Installation**	The University has installed Water Meter at STP Reuse Water	**Photographs of Water Meter:**  

CHAPTER V
STUDY OF WATER CONSERVATION OPPORUNITIES

In this Chapter we present various Opportunities to reduce the Water Consumption.

- Installation of Water Meters at all Main pipe Sections
- Usage of Auto Controller Unit for all Pump houses
- Usage of Efficient Water Nozzles
- Usage of Dual Flush System at all Wash rooms
- Installation of Sand Filter units in all Water pipe lines running down from the terrace
- Prepare Water Consumption Charts for all Campuses and recording the Data on Daily basis