# Green Audit Report of Atma Malik Institute of Technology and Research (AMRIT)

## Mohili-Aghai, Tal. Shahapur, Dist. Thane



### Submitted by

We Build Pathways Pvt. Ltd., Nashik An ISO 9001:2015 Certified Organization from TUV SUD (NABCB) Accredited Certifying Body



## Report Date – 05<sup>th</sup> June 2023

Report No. WBPPL/GA/03



## **CERTIFICATE**

This is to certify that, **M/s WeBuild Pathways Pvt. Ltd. Nashik** has conducted Green Audit of **Atma Malik Institute of Technology and Research (AMRIT)** during academic year **2022 – 23**. The green audit was conducted in accordance with the guidelines given by NAAC Criteria. This report is as per the present status of green initiatives taken by AMRIT, Mohili – Aghai, Tal. Shahapur, Dist. Thane.

The Green Audit involves observations about Use of Alternative Energy Sources, Management of biodegradable and non-biodegradable wastes, water conservation facilities and green campus initiatives.

Present Green Audit report has been prepared by the team of auditors based on their knowledge and the data given by the institute. In an opinion and to our best knowledge as well as based on available information, this green audit report gives a true and fair view in conformity with the principles of Green Auditing.

#### **Green Audit Team Members**

Backer

Sumant D. Parkhi

Dr. Hitesh R. Thakare

Proudi

Ameya S. Parkhi

Date: 05/06/2023

**Report NO.** WBPPL/GA/03



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### 1. Introduction

- The ever-increasing population as well as demand for higher economic growth has led to rapid urbanization along with increase in per capita fuel consumption.
- This has resulted in several environmental and ecological concerns at local, regional, national and global level.
- In such conditions, adoption of the Green Campus system and methodology for sustainable development has become more important than ever.
- Briefly, Green Audit can be defined as "systematic identification, recording, quantification, verification, analysis and reporting of the activities and processes contributing to sustainable environment and development."
- Such an audit helps the institutes to systematically introspect their strengths and weaknesses relevant to sustainable development, thereby enabling the institute to identify and implement the opportunities for improvement.
- Atma Malik Insititute of Technology and Research (AMRIT) was started in the year 2011.
   AMRIT is located at Mohili-Aghaii on a table top mountain surrounded by hills and blessed with serene, outstanding scenery.
- The Campus of the institute encompasses about 100 acres of scenic and beautiful natural setting of hills and valleys and world class infrastructure.
- The campus is self –sufficient and conducive to 360 degree development of its students.
- The institute is providing high quality education and training to meet the emerging needs of the Industry.
- The campus is located at about 100 km from Nashik and 18 kms away from Shahapur. Nearest railway station is Atgaon which is about 12 km away from the campus.
- The management of the institute had a splendid vision of providing education and ample opportunities to the children and youth of India to excel globally in different professions.
- The Institute presently offers undergraduate courses with annual intake of 210 students.
- The institute going to face its NAAC cycle for the first time in AY 2023-24.

- It was observed that the institute is very keen to promote green initiatives wherever possible, as a commitment towards better environment and sustainable development for the benefit of the society.
- The institute has already put in a lot of efforts to help the environment.
- To further increase its green performance and identify energy saving opportunities, M/s.
   WeBuild Pathways Pvt. Ltd. Nashik was assigned the responsibility to conduct Green Audit of the premises.
- WeBuild Pathways Pvt. Ltd. Nashik, is Certified by TUV SUD South Asia Private Limited Certification Agency, for ISO 9001:2015.
- TUV SUD is Accredited by National Accreditation Board of Certification Bodies (NABCB).
- This Green Audit Report presents various aspects of Environmental Consciousness and Sustainability practices being followed at the institute such as, Use of Alternative Energy Sources, Waste Management, Water Conservation Facilities and Green Campus Initiatives.
- This report consists of
  - Green audit / Environment audit.
  - Energy audit
  - Clean and green campus initiatives.
  - Beyond the campus environmental promotion and sustainability activities.
- The data presented in this green audit report has been collected and verified through frequent on-site visits to the campus.
- Analysis of the data collected, Geo tagged photos, necessary documentation and recommendations are discussed in the following chapters.

## 2. Green Audit Team

Essential Details of team members including Designation, Professional qualification & experience, who contributed for this Green audit, are as follows:

S. No.	Name	Qualification	Designation	Experience
1.	Sumant D. Parkhi	DME, DBM, MMS Lead Auditor: Environment Management System - ISO 14001, Energy Management Systems ISO 50001, Occupational Health and Safety Management System ISO 45001.	Founder, Principal Consultant, Trainer & Auditor IRCA Registered Principal Auditor for ISO 14001:2015	38 Years
2.	Dr. Hitesh R. Thakare	B. E. Mech., M. Tech. Ph.D. (Mech. Engg.) BEE Certified Energy Auditor (CEA – 27707) Internal Auditor ISO 9001:2015	Energy Auditor & Team Member	13 Years
3.	Ameya S. Parkhi	B. E. Mech. M. S. (EHS) (Rochester Institute of Technology, New York, USA) ISO 45001 Lead Assessor	EHS Consultant & Specialist	05 Years

#### Table 1 Essential Details Team members of Green Audit Team

Contact us: WeBuild Pathways Pvt. Ltd, 24, Sarthak, Bhavanjali Nagar, Anandwalli, Gangapur

Road, Nashik – 422013.

Mobile (Mr. S. D. Parkhi) - 98220 90206, Office - 94222 59805

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## 3. Aim, objectives and scope

- The management of the institute recognizes its vital role & responsibility in creating awareness about the importance of sustainable development.
- This innate motivation has been actualized through implementation of various green initiatives throughout the campus.
- Main aim of this green audit is to verify and ensure that the green practices and various sustainability initiatives followed in the institute are in accordance with the intent of the management as well as guidelines prescribed by accreditation bodies, if any.

Following are salient *objectives* of green audit undertaken:

- 1. To identify current green practices and various sustainability initiatives undertaken by the institute.
- 2. To review and verify the physical existence as well as documentation relevant to green practices and various sustainability initiatives.
- To substantiate the compliance of green practices and various sustainability initiatives being followed at the institute in accordance with guidelines of accreditation bodies, if any.
- 4. To identify the scope for further improvement of green practices and various sustainability initiatives, both in qualitative and quantitative terms.

Following areas/avenues are covered under the *scope* of present study:

- 1. Use of Alternative Energy Sources such as solar energy, implementation of energy efficient technologies for energy conservation.
- Management of different kinds of degradable and non degradable wastes such as solid wastes, liquid waste, e – waste etc.
- 3. Facilities for Water Conservation and water management initiatives.
- 4. Green Campus Initiatives

## 4. Methodology

Green Audit was conducted systematically by using following procedure:

1. The members of the green audit team visited the campus of the institute.



Geotagged Photo of Meeting of Green Audit team members

- Green audit team members held an initial discussion with key staff members of the institute such as IQAC Coordinator, NAAC Criteria 7 Coordinator and maintenance manager who have been assigned the responsibility of monitoring the 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 the importance of Green Audit and its contribution in improving the overall environmental performance of the institute.
- 5. Then, team members physically checked the presence of various green initiatives undertaken and facilities created through campus tour.
- 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, the 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 and green audit team members and a final report submitted to the institute.

## 5. Site details

- Atma Malik Institute of Technology and Research (AMRIT), was established in 2011. College has developed various educational facilities such as state of the art lecture halls, laboratories, seminar hall and library.
- The institute has also taken care of recreational facilities such as playground for cricket, football and basketball, box cricket ground, indoor games facility for badminton, carrom, table tennis, chess, punching bags, running track etc.
- Total land area allocated to the institute is 15 Acres. i.e., 60702.8 Sq. m.
- Total land area constructed by the institute is 14 Acres for
  - college building
  - o playgrounds
  - o roads
- Hence, land covered by the institute through construction is 93% of available land.
- Remaining area is covered with plantation.
- The institute has an average electrical energy consumption of 10,066 kWh per month.
- Sewage output of the institute is directly connected to Septic Tanks.
- Tree plantation has been carried out on a large scale to reduce environmental pollution, taking into account the importance of native species of trees.
- A botanical garden is also developed in the campus premises, which also consists of medicinal plants.
- Carrying out the green audit of such a huge campus presented a colossal challenge for the green audit team. Hence, guidelines provided by NAAC Criteria 7 were adhered to in order to execute the present green audit.
- All essential details about all these observations are presented in the following chapters.

## 6. GREEN AUDIT

#### 6.1 Water Conservation Facilities

- Institute has made preliminary analysis of water usage in the campus. This is presented as follows:
- Water consumption in college (AMRIT)
  - No of people = 744
  - Water consumption per day per person = 08 litres
  - Total water consumption = 744 x 8 = 5,952 litres.
- Water consumption in hostels
  - No. of students in boys hostel = 125
  - No. of students in girls hostel = 49
  - Total students in hostel = 174
  - Water consumption per day per person = 135 litres
  - Total water consumption = 174 x 135 = 23,490 litres

#### 6.1.1 Rain Water Harvesting

- For rainwater collection, due to slope/level difference of institute, most of the rainwater is naturally returned back to ground, thereby recharging the groundwater level.
- It was observed that institute is having total area of 60702.8 Sq. m. Hence, there is good potential for systematic rainwater harvesting.
- However, geologically, institute is situated on the top of non-porous rock, which creates barrier for percolation of water up to aquifers.
- To counter this problem, presently, the institute has developed 03 large scale reservoirs in the campus to facilitate rainwater harvesting.
- The volume of these reservoirs are 2,500 m<sup>3</sup>, 3,500 m<sup>3</sup> and 2,000 m<sup>3</sup> respectively.
- The rainwater storage capacity of these reservoirs is as follows:
  - Reservoir 01 25,00,000 (25 Lakh Litres)
  - Reservoir 02 35,00,000 (35 Lakh Litres)
  - Reservoir 03 20,00,000 (20 Lakh Litres)
- The water from these reservoirs is pumped to the institute for utility purposes.
- The water from these reservoirs is also used in lawns and gardens in the campus.
- This water is not used for drinking purposes.
- Water used for drinking purposes is obtained from well constructed in the campus, after processing it through RO units installed for individual water cooler.



Geotagged photo of first reservoir developed by the institute for rainwater harvesting



Geotagged photo of second reservoir developed by the institute for rainwater harvesting



Geotagged photo of piping arrangement providing water to campus from reservoir



Geotagged photo of Lawns provided with water from reservoir

#### **Recommendation**

- 1. Considering the slope of land in the campus, rainwater harvesting potential can be further evaluated.
- 2. This can also include water collected from rooftops of various buildings in the campus.

#### 6.1.2 <u>Renovation/maintenance/cleaning of water tanks</u>

- Cleaning of overhead as well as underground water tanks is performed periodically by the personnel appointed for the purpose.
- Generally, the tank used for supplying drinking water is cleaned once in 30 days.
- Tanks of utility water are cleaned once in 4 months.
- Presently, 04 water tanks are kept at top of the building in the campus.
- 02 water tanks are kept on the rooftop of engineering building.
- 02 water tanks are kept on the rooftop of hostels.
- The total storage capacity of water storage tanks is 92,000 liters.
- The water from these storage tanks is used for utility purposes.
- There are float valves installed for overhead tanks.



Geotagged photo of float valves used in overhead water tank

#### 6.1.3 Bore well / Open Well Recharge

- Presently, there are 02 bore wells constructed in the campus. However, its water is not much extracted due to availability of sufficient amount of rainwater and water from reservoirs.
- There is 01 open well constructed in the campus.
- This well is recharged through natural rainwater collected as well as natural groundwater streams.



Geotagged photos of well constructed by the institute

#### **Recommendation**

• Water meter can be installed to measure the usage of water from the wells.

#### 6.1.4 Construction of tanks and bunds

#### Current Status

- Presently, 04 water tanks are kept at top of the building in the campus.
- 02 water tanks are kept on the rooftop of engineering building.
- 02 water tanks are kept on the rooftop of hostels.
- In total, 10 water tanks are constructed at top of the A, B, C, D, E-Wings, Atmadhyas building, Meditation Hall, in the campus.
- Each of these tanks is having varying storage capacity of water. Thus, the total storage capacity is 3,15,000 litres.

- Water tanks are provided with water from reservoirs and well constructed in the campus. Institute has constructed water bunds throughout the campus.
- These bunds are helpful in collecting the excessive rainwater falling in the campus and channeling this water towards reservoirs/natural streams.
- Due to the presence of these bunds, there is no spilling of water inside the campus, which helps to keep the roads dry and safe as well as enhance the ground storage of water.
- Institute is also procuring water from Mumbai Municipal Corporation (BMC).
- Water meter has been installed on the line connecting BMC Pipeline with the campus piping network.



Geotagged Photo of Overhead water tank & distribution system



Geotagged photo of bunds constructed in the campus



Geotagged photo of Water Filtration Plant Capacity 5000 lit/hr.



Geotagged photo of Water Meter installed on the pipeline connecting BMC Pipe with institute's piping network

#### 6.1.5 Waste Water Recycling

#### Current Status

- The RO Reject water from central RO plant is stored in a tank and thereafter used for gardening purposes.
- This storage tank has capacity of 100 liters approximately.
- The RO Reject water from small/local RO units is channelized towards lake constructed in the campus through water bunds constructed.
- Rainwater falling on the ground, roads and rooftop of buildings is channelized towards natural streams in the vicinity.

#### **Recommendations**

- 1. Target should be 100% utilization of treated water for intended use.
- 2. Record of water consumed, quantity treated and quantity recycled and utilized should be maintained and monitored on daily and monthly basis.
- 3. Treated water analysis should be carried out regularly and results should be monitored.
- 4. RO reject water utilization cum distribution system can be established and monitored.
- 5. RO reject can be used for gardening as well flushing.





Geotagged photo of RO Reject water collection tank

#### 6.1.6 Maintenance of water bodies and distribution system in the campus

#### Part A – Maintenance of Water Bodies

#### **Current Status**

Presently, 03 reservoirs have been constructed in the campus which store the natural rainwater as well as water collected from bunds in the campus.

#### Part B – Maintenance of Distribution System

#### **Current Status**

- 1. RO system is used for drinking water purification.
- 2. 02 RO enabled water coolers are installed on each floor of the institute.
- 3. Capacity of each RO water cooler is about 50 litres.
- 4. 01 central RO plant is also installed.
- 5. Presently, float type water level sensor system is installed for RO plants only.
- 6. The reject from RO Plant is sent to lake and used for gardening purpose. This also helps for water conservation.
- 7. Drip irrigation system is being used at landscape gardens.
- 8. Sprinkler system is also used in football ground, cricket ground, archery ground in summer season.
- 9. These systems help to conserve the water by eliminating evaporation losses from soil.

#### **Recommendation**

- 1. Leakages of water in the water distribution system should be regularly monitored and arrested to ensure no loss of water.
- 2. Periodic checking and maintenance of seals and packaging should be undertaken to minimize water loss by dripping.
- 3. Install water flow meters for major consumption areas, different buildings, RO Plants etc. to enable the water accounting, considering substantial quantum of people residing in the campus.
- 4. All taps should be provided with Pressure Reducers and low flow faucets.
- 5. Pipeline diagrams should be prepared for the campus.
- 6. Properly the redundant piping connections, if any.



Geotagged photo of Drip irrigation system for plantation near Dhyan Kuti



Geotagged photo of Sprinkler System used in the campus

## 7. Energy Audit through energy conservation initiatives

### 7.1 Use of Solar energy as alternative source of energy

#### Part A. – Natural Light & Ventilation

#### **Current Status**

- Natural light entering the building is giving a cool lighting effect without using electricity, thereby helping to reduce carbon emission.
- This also reduces the burden on artificial lighting to be used in the institute.
- Hence, use of as much as natural light as possible is always encouraged for educational institutes.
- Natural light and ventilation are provided in college campuses and buildings.
- Architectural design is made in such a way that utilization of natural light & ventilation is ensured.
- Classrooms and laboratories are provided with overhead louvers which facilitate cross ventilation of air when classroom/laboratory door is closed. This helps to avoid the need for artificial air conditioning devices.
- Vertical slits are constructed to facilitate air ventilation and natural light.



Geotagged photo of Natural light in corridor



Geotagged photo of Natural Light in Classroom



Geotagged photo of Natural Light in Laboratory



Geotagged photo of Natural Light in Grahak Bhandar and cafeteria



Geotagged photo of natural light in Prasadalaya



Geotagged photo of Natural Light in Indoor Games facilty



#### Geotagged photo of natural light used in Green gymnasium





Geotagged photo of Natural Light in library



Geotagged photo of grilled opening constructed inside the institute's building



Geotagged photo of Natural Light in Box Cricket Ground

#### Part B – Use of Solar Water Heating (SWH) Systems to conserve energy

- The solar water heaters are installed for the boys and girls hostel buildings to satisfy their hot water need for bathing.
- The boy's & girl's hostels provided with 8,000 liters per day of solar water heater capacity.
- For the rainy season, when solar will not be capable of heating the water, heat pump is installed for water heating.
- This is an air source heat pump, having 10 ton heating capacity with storage volume of 6,000 liter capacity.
- The heat pump is provided with sensor to auto switch it in ON and OFF position.
- As per specifications, this heat pump has COP of about 4.38. Thus, it provides about 04 times more heat to the water than electrical heater, while consuming same electrical energy.

Sr. No.	Location of Solar Water Heater	Capacity of Solar water heater installed
1	A wing terrace (Right side)	6500 LPD
2	A wing terrace (Left side)	3500 LPD
3	B Wing Terrace	11,300 LPD
4	D Wing	6,500 LPD
5	E Wing	4000 LPD
6	F Wing	2000 LPD
	Total Capacity	33,800 LPD

#### Table 6.1 Details of Solar Water Heating Systems installed in the campus



Geotagged photo of Solar Water Heaters Installed for Boys Hostel



Geotagged photo of Solar Water Heaters Installed on Rooftop of Girl's Hostel





Geotagged photo of air source heat pump used in the campus

Sr. No.	Parameter	Observation / Value
1	No. of staff members and students staying in campus	1793
2	Hot water requirement per day	30 LPD
3	Total hot water requirement	= 1793 x 25 = 44,825 LPD
4	Installed capacity of SWH system	33,800 LPD
5	Mass of water to be heated	33,800 kg
6	Specific heat of water	1 kCal/kg°C
7	Initial temperature of water at entry to solar water heater	30°C
8	Final temperature of water at exit of solar water heater	70°C
9	1 Unit of electricity = 1 kWh electricity =	860 kCal
10	Energy saved using solar water heater	= 33,800 x 1 x (70 – 30) / 860 = 1572.09 kWh/day
11	Operational days per year considering rainy season	9 months = 365 – 92 of July, August & September = 273 days/yr
12	Annual energy saving expected due to installation of solar water heater	= 1572.09 x 273 = 4,29,181.39 kWh/year

#### Table – Estimate of possible saving due to capacity addition of solar water heating system

#### <u>Remarks</u>

- It is clearly observed in quantitative terms that substantial quantity of electrical energy has been saved through existing solar water heating systems.
- 2. Present installed capacity is 75.40% of total required capacity.
- 3. Installation of SWH system has helped to save 4,29,181.39 units of electricity every year.

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Photo of work completion report of 3000 LPD Solar Water Heat System installed in the campus

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Photo of purchase order of 500 LPD Solar Water Heater System installed in the campus dated

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Photo of Tax Invoice of 500 LPD Solar Water Heat System installed in the campus dated 17.12.2018

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Photo of purchase order of 500 LPD Solar Water Heater System of FARMSON Make installed in the campus dated 23.01.2019 and 11.02.2019

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Photo of Tax Invoice of 500 LPD Solar Water Heat System of FARMSON Make installed in the

campus dated 26.02.2019

#### Part C – Use of Solar Photovoltaic (PV) System for Electricity generation

- Presently, Solar Photovoltaic (PV) systems having capacity 180 kW is installed in the campus to generate electricity.
- Such a unit can be helpful in generating electricity in-house as well as export of surplus electrical energy generated to the grid through net metering agreement with State Electricity Board (SEB).
- This first solar PV unit was installed in 2014 of 80 kWh capacity and second unit installed in 2020 of 100 kWh capacity.
- Till May 2023, approximately 4,87,653.7 kWh of electrical energy has been generated because of this PV unit.
- This solar PV unit is installed on the rooftop of workshop, Goshala, bus parking shade and meditation hall.

Sr. No.	Capacity of Solar PV Unit	Location	Installation date
1.	80 kWp	Workshop & Bus parking	20 January 2014
2.	100 kWp	Rooftop of Goshala	20 January 2020

#### Table – Details of Solar PV Plant installed in the campus



Geotagged photo of Solar PV unit installed on the rooftop of Workshop




#### Geotagged photo of Solar PV unit installed on the rooftop of Goshala



Geotagged photo of Solar PV unit installed on the rooftop of Bus parking shade

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Photo of purchase order and tax invoice of Solar PV unit mounted in the institute

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#### <u>Recommendations</u>

- 1. It is clearly observed in quantitative terms that a substantial quantity of electrical energy has been saved through installation of solar PV units.
- 2. Installation of Solar PV system connected to grid on engineering building rooftop is recommended, since significant space is available at the rooftop of engineering building.
- 3. Location of the college is such that abundant sunlight is available for electricity generation using the Solar PV system.
- 4. As a thumb rule, approximately 10 sq. m. space is required for installation of 1 kW capacity of solar PV system. So, the institute should evaluate the space available for such installation.

## 7.2 Application of Sensors for energy conservation

A significant amount of electrical energy savings can be achieved in the long run through

- a. Application of Motion-based sensors for lighting systems in corridors, washrooms, classrooms, laboratories, offices and cabins.
- b. Timer-based sensors for street light.
- c. Temperature based sensors for cooling centers and air conditioners.
- d. Level sensors for automatic ON OFF of water pumping systems.
- e. Pressure based sensors for large capacity overhead water tanks.

#### **Current status**

- 1. Air conditioners are already equipped with temperature sensors.
- 2. Air conditioners are operated through Remote, which helps to easily control their temperature ranges.
- 3. Air conditioners installed in the building are Star Rated.
- 4. The RO units installed for drinking water purification are fitted with Float Control Valve to avoid overflowing of water once the tank is filled with requisite capacity.
- 5. The temperature sensors are installed in solar water heater storage tanks.
- 6. The temperature sensors are installed in air source heat pump.
- 7. These sensors regulate the temperature of hot water in the range of  $41^{\circ}C 55^{\circ}C$  by switching the electrical heaters ON and OFF as per the weather conditions.

#### **Recommendations**

- 1. Timer-based sensors are recommended in following areas:
  - a) Street lights on campus 100 nos.
- 2. Temperature range for air conditioners should not be less than 24°C in college buildings.
- 3. Study can be initiated to check the techno economic feasibility of Variable Frequency Drive (VFD) installation for motors having capacity 10 hp and above & being operated with variable loading.
- 4. Motion sensors are recommended in following areas:

	– 1 No.
b. Canteen	
c. Management office	– 1 No.
d. Washroom blocks – Colleg	e – 7 Nos.
e. Laboratories	– 40 Nos.

- f. Seminar Hall 1 Nos.
- 5. Many of the present air conditioners are BEE Star Rated air conditioners. All of them are operated through remote control.
- 6. Other air conditioners can be replaced with Star Rated air conditioners in future, whenever necessary.
- 7. Temperature of air conditioners is observed to be about 26°C.



Geotagged photo of temperature controlled air conditioners installed in Principal sir's Cabin



Geotagged photo of Float Control Valve installed in RO unit of drinking water purification system



Geotagged photo of temperature sensors installed in air source heat pump

# 7.3 Use of LED lamps & other energy efficient equipment

### 7.3.1 Use of LED Lamps in the institute

- 1. LED lighting systems help to save energy by consuming less electricity for the same lighting output as compared to conventional incandescent bulbs or CFL lamps.
- 2. Initial cost of LED lamps is higher as compared to CFL lamps. However, it can be recovered through energy savings realized due to their installation.
- 3. One more benefit with LED lamps is their longer service life as compared to incandescent bulbs and CFL lamps.
- 4. There are total 242 LED lamps installed in engineering institute's building.
- 5. There are 100 street lamps each installed with LED lamps of having 100 W and 150 W capacity.
- 6. Additionally, master switches are provided in laboratories. These master switches facilitate the shutdown of power of entire room when it is not being used.
- 7. Turbo ventilators have been installed on the rooftop of workshop building. This helps to avoid operation of ceiling fans while maintaining the requisite airflow through the building.

#### **Recommendation**

- 1. Information regarding promotion of energy conservation should be displayed at prominent locations across the institute.
- 2. Such initiative will enhance the participation of all staff members and students in energy conservation practices.

Sr. No.	Name of Department	LED Lights	Watt	CFL	Watt	Tube light	Watt
1	Mechanical Engineering	37	20	-	-	-	-
2	EXTC Engineering	24	20	-	-	02	40
3	Civil Engineering	46	20	-	-	-	-
4	Computer Engineering	24	20	-	-	-	-
5	DESH Department	21	20	-	-	-	-
6	Exam Department	7	20	-	-	-	-
7	Seminar Hall	16	20	-	-	-	-
8	Library	20	20	-	-	-	-
	Admin Section			-	-	-	-
9	1. Panel Light	41	16	-	-	-	-
	2. Tube Light	6	20	-	-	-	-
	Total	242				02	

## Table – Details of LED and other Lamps installed in the institute

# Table – Details of Energy Efficient / Star Rated equipment installed

Sr. No.	Location	Name of equipment	Star rating	Quantity	Capacity
1	Principal sir's cabin	Star Rated Air Conditioner	03 Star	01	1.5 Ton
2	Board room	Star Rated Air Conditioner	03 Star	02	02 Ton each
3	Laundry	Washing Machine	03 Star	01	2200 W
4	Auditorium	Star Rated Air Conditioner	03 Star	01	02 Ton each
5		Blue Star AC	Normal AC	02	1.5 Ton
6	Reception / office	Ceiling fan	05 Star	13	45 W
7	Water pumping station	Energy efficient motor for pump	04 Star	02	10 hp



Geotagged Photo of LED Lamps installed in administration area



Geotagged photo of master switch installed for laboratory



Geotagged Photo of LED Lamps installed in classroom



Geotagged Photo of LED Lamps installed in laboratory



Geotagged photo of LED bulbs installed for street lighting in the campus





Geotagged photo of LED Lamps installed in seminar hall



Geotagged Photo of LED Lamps installed in library

#### **Recommendations**

- Study can also be initiated to check the deviation between recommended and actual illumination levels in various areas of the institution and take corrective action thereafter.
- 2. Considering the significant distance of the institute away from main road as well as spread of the institute over wide area, street lamps can be transformed into solar lamps.

#### **Energy efficient equipment**

- The institute has installed master switches for laboratories so that all electrical equipment in the respective laboratory can be switched off when not necessary.
- Such master switches are also installed for every room in the hostel and faculty residence.
- This initiative helps greatly to conserve the energy.
- The Star Labeling program undertaken by the Bureau of Energy Efficiency (BEE) enables the user to make informed decisions about purchase of energy efficient equipment such as Air Conditioners and Transformers.
- Furthermore, maintaining higher power factor in the system enables reduction of current and subsequently, the energy loss of the overall system.

#### **Current status**

- There are about 06 air conditioners installed in the campus.
- Presently, there is one power transformer installed. One for College having a 200 kVA rating. (One diesel generator of 125 kVA are also available).
- Voltage stabilizer has been installed in the main control room.
- This helps to maintain proper voltage level in the electrical system of campus.
- Due to proper voltage, current is also regulated appropriately. This helps to avoid energy loss due to excess current flowing through the system.



Geotagged photo of master switches installed in the campus (a) outside classroom (b) outside laboratory (c) outside hostel room



Geotagged photo of Voltage Stabilizer unit installed in the main control room of the campus



Geotagged photo of master switch outside the hostel room

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#### **Electricity Bill Analysis**

- 1. **Table 7.1** shows the electricity bill analysis.
- 2. It has been observed that electrical energy consumption of the campus is consistently in the range of 10,066 kWh per month.
- kWh consumption of the institute is varying in nature, considering academic schedule of the university.
- 4. Institute has never exceeded the contract demand. It indicates there is no excessive electrical energy consumption. Hence no excess demand charges paid by the institute.
- Institute is consistently maintaining very high value of power factor in the range of 0.990 to 1.000. it indicates that current in the electrical system of the institute is not excessive and thus, unnecessary energy loss from current carrying conductors is avoided.
- 6. By maintaining power factor close to unity, institute has also gained a monetary incentive of Rs. 41,378.49/- in last 01 year.
- In the last one year, institute has generated 90,123 kWh of electrical energy using solar PV units.

Sr. No.	Bill Month	KWH Consumption	Billed Demand (KVA)	Charges for Excess Demand	PF	P.F. Penal Charges / P.F. Incentive	Solar PV Generation
1	Jul-22	19377	46	0.0	0.990	₹ -5,321.45	4900.00
2	Aug-22	15946	36	0.0	0.990	₹ -4,347.90	9011.00
3	Sep-22	15228	39	0.0	1.000	₹ -5,851.65	2889.00
4	Oct-22	8135	36	0.0	1.000	₹ -3,295.58	6754.00
5	Nov-22	7149	39	0.0	0.990	₹ -2,176.93	8139.00
6	Dec-22	15508	39	0.0	0.990	₹ -4,253.66	7829.00
7	Jan-23	10453	36	0.0	0.990	₹ -2,950.59	7547.00
8	Feb-23	7962	36	0.0	1.000	₹ -3,282.98	8739.00
9	Mar-23	9695	36	0.0	1.000	₹ -3,844.86	9894.00
10	Apr-23	3151	36	0.0	1.000	₹ -1,799.00	8119.00
11	May-23	1789	36	0.0	1.000	₹ -1,283.73	9568.00
12	Jun-23	6399	36	0.0	1.000	₹ -2,970.16	6734.00
	Average	10,066 kWh			Total	₹ -41,378.49	90,123.00

# Table 7.1 Electricity bill details of Atma Malik Institute of Technology and Research (AMRIT), Mohili – Aghai, Shahapur

# 8. Management of Biodegradable & non-biodegradable waste

## 8.1Solid Waste Management

#### 8.1.1 Biodegradable waste

This kind of waste includes garden waste and food waste.

#### **Current Status**

- 1. Presently, solid waste is generated in the campus through
  - Food leftovers in Prasadalaya
  - o Cow dung from Goshala maintained by the institute
  - Human biological waste in the campus
  - o Garden waste and foliage
- 2. Prasadalaya serves breakfast, lunch and dinner to staff members, students and visitors.
- 3. Presently, there are 147 no. of cows in the campus.
- 4. There are about 1793 people residing in the campus presently. This includes
  - o Students in hostels-1584
  - o Male Staff- 84
  - Female Staff-71
  - o Other- (Staff Kids)-54
- 5. Leftover food, Cow dung and human biological waste, all are channelized towards septic tanks and composting pits constructed by the institute.
- 6. Garden waste and foliage is collected by gardeners and sent to the composting pits using tractor appointed for the purpose.
- 7. Dry garbage from the campus is collected and transferred to the composting tray along with cow dung, food waste, where it gets converted into compost by earthworms.
- 8. Vermicomposting is a natural process in which earthworms convert rigid waste materials into compost.
- 9. The compost created by this environmentally friendly process has long been used as a natural fertilizer to boost plant growth.



Geotagged photo of food waste collected in Prasadalaya



Geotagged photo of cow shade (Goshala) built in the campus



Geotagged photo of cow dung collection in the campus



Geotagged photo of Garbage collection bins installed in the campus for degradable waste



Geotagged photo of collection of garden waste in the institute



Geotagged photo of Composting plant available in campus

# Table 3 Essential Details of Vermicomposting unit installed in the campus

Sr. No.	Торіс	Details		
1	Title	Vermicompost Unit		
2	Location	Atma Malik Institute of Technology and Research (AMRIT)		
3	Raw Material	<ul> <li>Organic waste coming out from the college campus, consisting of</li> <li>Plant leaves, stem, other garden waste,</li> <li>Leftover food from Prasadalaya</li> <li>Cow dung</li> <li>Human biological waste</li> </ul>		
4	Capacity	Approximately 10 Ton of compost produced per Year.		
5	Size Details	<ul> <li>The Composting unit consists of 06 rectangular pits.</li> <li>The size of each pit is 5 m x 5 m x 2 m.</li> </ul>		
6	Process Details	<ul> <li>Initially a bed of biodegradable waste is prepared at the bottom over that a layer of cow dung is put, above this again a layer of biodegradable waste is put.</li> <li>In this way 4 to 6 alternate layers of bio – waste &amp; cow dung is kept one over each other.</li> <li>It is kept for eight days and a small amount of water is sprinkled over that for a week in order to maintain the moist environment.</li> <li>After this, the sufficient quantity of earthworms are added to these beds.</li> <li>Earthworms &amp; microorganisms from cow dung act on this biodegradable material and convert it into valuable compost.</li> <li>Then it is kept for 40 days.</li> <li>After a certain period of 40 days, a good quality of compost is obtained.</li> </ul>		
7	Uses Of Compost	This compost produced is used as a fertilizer in the entire college campus for the plants, grass lawn, poly-house and organic farming.		
8	Advantages	<ol> <li>This is a complete green process with no waste is produced.</li> <li>The organic waste generated in college is treated in college itself.</li> <li>The cost of the fertilizer is saved.</li> </ol>		

#### 8.1.2 Non-biodegradable waste

• This kind of waste includes plastic, paper, carton, corrugated boxes, empty containers etc.

#### Current Status

- Non-degradable waste like, plastic wrappers, sheets, etc., are collected at source by placing trash bins at suitable locations.
- Waste is dumped into the ground by making a dump area approximately 12 x 10 m in size. After filling of this dump, it is covered.
- Used files of student submission are given to vendor for disposal after 03 years of storage.
- Students have also made use of paper waste for model making of various scientific concepts.

### **Recommendation**

- Institute can check the scope for replacement of plastic polybags with cotton bags.
- These bags can be utilized during felicitations of resource persons or given to visitors to keep their belongings.
- Proper arrangement for disposal of non-biodegradable waste should be made in future.



Geotagged Photo of Dustbins for collection of non-degradable waste



### Geotagged photo of non-bio degradable waste dump area



Geotagged photo of Notice on Plastic Ban







## Geotagged photo of models prepared by students using waste papers

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## 8.2 Liquid Waste Management

## Current status

- Presently, the liquid waste generated through toilets is disposed off into the septic tank constructed by the institute.
- Care is taken to avoid leakage of liquid waste into mainstream water.
- The waste water from RO plant is sent to the tank constructed by the institute.
- Institute has taken initiative to produce **Go-Ark**, a mixture of Gomutra (Cow Urine), water and other Ayurvedic Chemicals in the tanks installed.
- This Go-Ark is utilized for organic farming in the campus.
- Every year approximately 2,000 litres of Go-Ark is generated in the campus.
- Generation of Go-Ark greatly helps to reduce the problem of liquid waste management as well as it helps towards organic farming.



Geotagged photo of septic tank constructed by the institute



Geotagged photo of Go – Ark tanks constructed by the institute

# 8.3 Hazardous Chemicals Waste Management

#### **Hazardous Chemicals**

#### **Current status**

- Presently no hazardous chemicals are used on campus.
- Most of the chemicals used the laboratories are used in diluted form.
- Proper training is given to concerned team members about proper storage, handling as well as utilization of such chemicals.
- General awareness is also created about hazards associated with mishandling of chemicals through precautionary posters displayed in the laboratories.
- Concerned team members are aware about information through MSDS.

## **Recommendation**

- 1. Flammable and toxic chemicals should be stored in separate metallic cupboards in a cold and dry place.
- 2. Material Safety Data Sheet (MSDS) for hazardous chemicals needs to be maintained.



Geotagged photo of chemical storage facility in Chemistry Laboratory

## 8.4 E-Waste management

- It covers Electronic waste or e waste described as discarded electrical or electronic devices.
- Used electronics which are destined for refurbishment, reuse, resale, and salvage and recycling through material recovery or disposal are considered as e waste.
- Items included in this type of waste are Desktop PC including CPU, monitor and accessories, Laptops, Servers and storage devices, Network equipment like modems and cables, Printers, copiers, Telephone and cellular equipment, UPS, ACs etc.

#### Current status

- The e waste collected in the institute has been given to a certified e waste recycler named WE The Recycling Company, Bhivandi, Mumbai.
- The e waste disposed by the institute included
  - Desktop Computers 230
  - Laptops 00
  - $\circ$  UPS 100
  - $\circ$  Printers 26
  - $\circ$  Scanners 00
  - Any other equipment (small computer parts) 2668

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Photo of Maharashtra Pollution Control Board Certificate for Authorized Recycler We-The Recycling Company



Geotagged Photo of agreement between the institute and certified e - waste recycler

#### **Recommendation**

Regular monitoring of E-waste generated should be done and record should be maintained.

# 9. Clean and Green Campus Initiatives

# 9.1 Restricted Entry of Automobiles

- Complete implementation of "<u>vehicle parking at main gate</u>" has been done so as to restrict the movement of vehicles inside the campus.
- 2. All the faculty and staff members park their vehicles in the parking and then walk up to their respective departments.
- 3. The institute has 07 buses & 02 passenger vehicles for transportation.
- 4. The students are charged reasonably and staff members are provided free transport facility.
- 5. This initiative has been taken to discourage them from using their own vehicles.
- 6. This facility is provided on no profit no loss basis.
- Institute has contributed in reducing use of private vehicles and subsequently air pollution by providing such transportation facility.
- 8. The use of bicycles in the campus is promoted and encouraged by the institute management.
- 9. Pathways have Natural slope for vehicles to slow down in campus.
- 10. The List of vehicles approaching the campus is given in the following table.

Sr. No.	Vehicle Name	Capacity	No. of vehicles
1.	Buses	40 persons	07
2.	Passenger vehicles	05 Persons	02

- 11. Faculty members generally use the concept of carpooling to commute to and from the institute, if they are coming by car.
- 12. The parking space of vehicles is also covered with plantation, wherever possible.
- 13. The timing of college bus is adjusted in such a way that staff members staying in Mumbai can catch local train appropriately.
- 14. This also helps to promote the community travel and avoid personal vehicles.

		Academic Year: 2022-23
Rev : 00 Date: 11-7-2022	NOTICE	Semester: ODD/EVEN
		Date: 01/01/2023
	Notice	
All Staff and	students of AMRIT are h	ereby informed that, you
all has to use publi	c transport or common bu	s facility and pull-car for
daile martine to		·
daily routine to ave	nd air pollution and to redu	ice traffic load.
Copy to: 1. HoD Meel 2. HoD EXT 3. HoD Com 4. HoD Civil 4. Admin Sec	nanical Engineering C Engineering puter Engineering Engineering tition	
		<u>Co</u>

Photo of notice to all staff members for using public transport for commutation



Geotagged photo of car parking near entrance of the institute



#### Geotagged photo of faculty walking from main parking to college building



Geotagged photo of college bus parking



Geotagged photo of bus facility provided by the institute for students and faculty member

and staff



Geotagged photo of passenger vehicles provided by the institute for students and faculty

## member and staff



#### Geotagged photo cycles used in the campus



## Geotagged photo of Use of carpooling concept by faculty members

#### **Recommendation**

- 1. PUC Certificate and fitness certificate of all the vehicles entering in the premises should be monitored regularly.
- 2. Use of e vehicles should be promoted in the premises.

# 9.2 Pedestrian friendly pathways

- 1. The pathways in the campus are pedestrian friendly, with no obstruction from moving vehicles.
- 2. The dedicated pathways are provided with sufficient width for the pedestrians.
- 3. The covered pathways are constructed to commute between two connected buildings.
- 4. Clearly visible signboards are placed in the campus at salient places indicating the directions for different locations.
- 5. White coloured clear side marking is done on the pathways.
- 6. Provision of sufficient light on these pathways is made in case of night time use.



Geotagged photo of clearly visible signboards for places in the campus





Geotagged photo of clearly visible signboards for places in the campus


#### Geotagged photo of broad pedestrian friendly pathways in the campus



Geotagged photo of covered pathways connecting two building in the campus



Geotagged photo of sufficiently wide walking space in the campus

#### 9.3 Ban on use of plastics

#### Current Status

- 1. Institute has initiated replacement of plastics by paper, glass and steel.
- 2. Tea is served in **Chai Glasses** made of steel and not plastic.
- 3. Lunch and other food items are served to faculty and students in steel plates and no plastic plates are used for the purpose.
- 4. The subject manual required for academic evaluation of students is made of paper instead of plastic files.
- 5. Informative sign boards have been displayed to motivate the students and staff members to maintain a plastic free environment.
- 6. Instructions are displayed at various locations so that the campus remains plastic free.
- 7. Students have initiated an awareness program about a ban on plastics through conduction of Rally as a NSS Activity.
- 8. Institute has displayed the instructions about a ban on Single Use plastic across the campus.



Geotagged photo of steel plates used in campus



Geotagged photo of Steel chai glasses used in campus



Geotagged photo of subject manual made of paper instead of plastic



Geotagged photo of information signboards for plastic free campus

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#### 9.4 Landscaping with trees and plants

- 1. The campus has significant greenery covering all over and is maintained by a team of around 10 gardeners.
- 2. The institute has prepared tree count for the entire campus, by considering native and foreign species of trees.
- 3. Presently, a total of 03 landscape gardens are developed.
  - o At the entrance
  - In front of civil dept.
  - C wing hostel area
- 4. In addition to these, Botanical Plant Garden has been developed in the campus, which also includes some of the medicinal plants.
- 5. There are about 50 old trees in the campus which have been preserved during the construction process that has taken place in the campus. These trees can be observed at several locations in the campus.
- 6. The details about various plants are as given in the following Table.

Sr. No.	Name of Tree	Technical Name	Tree Count
1	चाफा	Frangipani	62
2	पाम	Palm	94
3	पाम (वाईन )	Palm (Wine)	2
4	बॉटल पाम	Bottle Palm	13
5	पपई	Рарауа	8
6	आंबा	Mango	249
7	नारळ	Coconut	140
8	गुलमोहर	Royal Poinciana	75
9	बदाम	Almond	5
10	सप्तपर्णी	Blackboard Tree	51
11	वड	Banyan	1
12	कदंब	Burflower-Tree	175
13	शंखेश्वर	Caesalpinia Pulcherrima	26

#### Table – Tree Count carried out for the campus

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14	रेन ट्री	Ren Tree	67
15	पुडीका चाफा	Monkey Pod Tree	95
16	सिताफळ	Custard Apple	50
17	जांभूळ	Java Plum	24
18	शेवगा	Drumstick	35
19	ईडलिंबू	Rough Lemon	9
20	आवळा	Indian Gooseberry	9
21	साग	Teak Tree	8
22	उंबर	Ficus Racemosa	3
23	सोनचाफा	Michelia Champaca	13
24	कडुलिंब	Neem Tree	16
25	पेरु	Guava	51
26	फणस	Jackfruit	18
27	रुद्राक्ष	Blueberry Beads	2
28	केळी	Banana	37
29	लिंबू	Lemon	51
30	चिकू	Sapodilla	14
31	चिंच	Tamarind	20
32	बेल	Indian Bael	10
33	अंजीर	Fig	14
34	रिठा	Soapberries	1
35	बकुळा	Spanish Cherry	18
36	बहावा	Golden Shower Tree	12
37	औदुंबर	Cluster Fig	3
38	म्हुळी	Mahua Flowers	3
39	हिरवा चाफा	Manorangin	1
40	कवठ	Wood-Apple	7
41	काजू	Cashew Fruit	2
42	रामफळ	Wild Sweetsop	8
43	सफेद चाफा	Plumeria Plant	2
44	औदुंबर	Cluster Fig	3
45	प्राजक्त	Night-Flowering Jasmine	2
46	कांचन	Phanera Variegata	19
47	स्टार फ्रुट	Carambola	7
48	ॲप्पल बोर	Indian Jujube	7
49	केशर आंबा	Gir Kesar	136

50	हापूस आंबा	Alphonso Mango	69
51	बारमाही कैरी	Perennial Carey	2
52	अडुळसा	Malabar Nut	8
53	तमालपत्र	Bay Leaf	5
54	वेलची	Cardamom	2
55	आमसूल	Kokum	5
56	बेरशिंग	Cassia Fistula	1
		Total	1770

- 7. Total number of trees planted is 1770.
- 8. Total area covered under plantation in the campus is 60%. Total construction in the campus including college, hostels, Prasadalaya, roads etc. is 40% of available space.
- 9. Gift is given to the campus visitor in the form of saplings.

#### **Recommendation**

Tree ownership can be given to employees.



Geotagged photo of landscaping near main admin building



Geotagged photo of tree plantation in the campus



Geotagged photo of botanical garden developed in the institute



Geotagged photo of medicinal plants developed in the institute



Geotagged photo of medicinal plantation in the campus



Geotagged photo of old trees preserved in the campus



Geotagged photo of garden developed near hostel





Geotagged photo of tree plantation activity carried out by the institute



Geotagged photo of Gift given to the campus visitor in the form of saplings

## **10.** Beyond the campus environmental promotion activities

There are several activities undertaken by institute for community environmental promotion. These are presented as follows:



Cleanliness drive in the village Ambhai by institute's students and faculty



Cleanliness drive by NSS Volunteers during Palkhi (Holy Procession)



Water reservoirs cleaning activity at Khutadi village



Swachh Bharat Abhiyaan at Ambhai Village

#### **Recommendation**

1. Awareness on **Ban on Plastics**, particularly during Shravan month to the devotees visiting Trimbakeshwar / Shirdi / Kokamthan can be organized.

Page no.	Recommendation	
12	<ul> <li>Considering the slope of land in the campus, rainwater harvesting potential can be further evaluated.</li> <li>This can also include water collected from rooftops of various buildings in the campus.</li> </ul>	
14	• Water meter can be installed to measure the usage of water from the wells.	
18	<ul> <li>Target should be 100% utilization of treated water for intended use.</li> <li>Record of water consumed, quantity treated and quantity recycled and utilized should be maintained and monitored on daily and monthly basis.</li> <li>Treated water analysis should be carried out regularly and results should be monitored.</li> <li>RO reject water utilization cum distribution system can be established and monitored.</li> <li>RO reject can be used for gardening as well flushing.</li> </ul>	
38	<ul> <li>It is clearly observed in quantitative terms that a substantial quantity of electrical energy has been saved through installation of solar PV units.</li> <li>Installation of Solar PV system connected to grid on engineering building rooftop is recommended, since significant space is available at the rooftop of engineering building.</li> <li>Location of the college is such that abundant sunlight is available for electricity generation using the Solar PV system.</li> <li>As a thumb rule, approximately 10 sq. m. space is required for installation of 1 kW capacity of solar PV system. So, the institute should evaluate the space available for such installation.</li> </ul>	
42	<ul> <li>Information regarding promotion of energy conservation should be displayed at prominent locations across the institute.</li> <li>Such an initiative will enhance the participation of all staff members and students in energy conservation practices.</li> </ul>	
48	<ul> <li>A study can also be initiated to check the deviation between recommended and actual illumination levels in various areas of the institution and take corrective action thereafter.</li> </ul>	

## **11.** Summary of Recommendations

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	• Considering the significant distance of the institute away from the main road as well as
	spread of the institute over wide area, street lamps can be transformed into solar lamps.
	<ul> <li>Institute can check the scope for replacement of plastic polybags with cotton bags.</li> </ul>
57	• These bags can be utilized during felicitations of resource persons or given to visitors to
	keep their belongings.
	• Proper arrangement for disposal of non-biodegradable waste should be made in future.
62	• Flammable and toxic chemicals should be stored in separate metallic cupboards in a cold
	and dry place.
	Material Safety Data Sheet (MSDS) for hazardous chemicals needs to be maintained.
64	Regular monitoring of E-waste generated should be done and record should be
	maintained.
	PUC Certificate and fitness certificate of all the vehicles entering in the premises should
69	be monitored regularly.
	<ul> <li>Use of e – vehicles should be promoted in the premises.</li> </ul>
79	Tree ownership can be given to employees.
87	• Awareness on <i>Ban on Plastics</i> , particularly during Shravan month to the devotees visiting
	Trimbakeshwar / Shirdi / Kokamthan can be organized.
1	

### 12. Acknowledgement

Green audit team of **WeBuild Pathways Pvt. Ltd, Nashik** wishes to express sincere gratitude towards the wholehearted cooperation and support extended by Honorable President **Shri Prakash Ji Mehta**, Honorable Executive President **Shri Umesh Jadhav Ji**, Honorable Principal **Dr. Dnyandeo D Shinde**, NAAC Coordinator **Prof. Sumit Kumar**, Green Audit Coordinator **Prof. Pravin Thorat & Prof. Nisha Shelar**, **NSS Program officer Prof. Dattatraya Patil** as well other team members of various support departments of Atma Malik Institute of Technology & Research (AMRIT), during the entire course of the green audit. Without their untiring enthusiasm and involvement, this green audit study would have been left incomplete.





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This certificate is issued based on Green Audit Report

Certificate No – WBPPL/GA/03 Green Audit Report issue date – 5<sup>th</sup> June 2023



An ISO 9001:2015 certified organization from TUV SUD (NABCB) accredited certifying body.



Sumant D. Parkhi Director & EMS Auditor



Dr. Hitesh R. Thakare Energy Auditor

# WeBuild Pathways Pvt. Ltd.

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# CERTIFICATE

The Certification Body of TÜV SÜD South Asia Private Limited

certifies that



## WEBUILD PATHWAYS PVT.LTD 24, SARTHAK, BHAVANJALI NAGAR, ANANDWALI, GANGAPUR ROAD NASHIK – 422013, MAHARASHTRA, INDIA

has implemented Quality Management System

in accordance with ISO 9001:2015

for the scope of

Scope 1 - Provision of Consultancy for ISO 9001, ISO 14001, ISO 45001, ISO 50001, ISO 22000, IATF 16949, ISO 21001, ISO 27001, ISO 20000-1, ISO 22301 BCMS, SA 8000.

Scope 2 - Conducting Green audit, energy audits, environment audit & safety audits, second party audits as per Scope 1.

Scope 3 - Conducting in house and open house trainings on ISO standards as per Scope 1.

The certificate is valid from **2023-06-03** until **2026-06-02** 

Subject to successful completion of annual periodic audits

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Date of Initial certification: 2023-06-03

Issue Date: 2023-06-03 Rev. 00





Rahul Kale Head of Certification Body of TÜV SÜD South Asia Private Limited, **Mumbai** Member of TÜV SÜD Group



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