

## GREEN AUDIT REPORT

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**GODAVARI FOUNDATION'S**

**DR ULHAS PATIL MEDICAL COLLEGE AND HOSPITAL**

NH-6, BHUSAWAL ROAD, JALGAON

MAHARASHTRA 425309

Phone No: 0257-2366678

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Conducted and Submitted by



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# CERTIFICATE

## ENERFUTURE TECHNOLOGY PRIVATE LIMITED

Verified and Certified that



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has carried out  
**Green/Environment Audit**  
as per guidelines laid down in the  
Indian Standards and Codes  
in 2019-20.



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## ACKNOWLEDGEMENT AND CONCEPT

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Enerfuture thanks the management of Dr Ulhas Patil Medical College and Hospital, Jalgaon for assigning this important work of Green Audit of Dr Ulhas Patil Medical College and Hospital, Jalgaon.

Green audit is defined as a formal examination of practices adopted and their effects on the environment, by an organization. It is also widely known as Environmental Audit.

The aim of the Green Audit is to review the overall environment management systems. Depending on the types of standards and the focus of the audit, there are different types of environmental audits.

Organizations now recognize the importance of environmental matters and accepts that their environment performance should be scrutinized to understand its impact and to take remedial measures to lessen it.

Environmental auditing is used to:

1. Investigate
2. Understand and
3. Identify

These are then used to help in improving existing human activities, with the aim of reducing the adverse effects of these activities on the environment.

An environment auditor studies an organization's environment effects in a systematic and documented manner and produces an environmental audit report.

Green audit for an educational institution mainly examines the following systems

1. Renewable/ green energy usage
2. Water management
3. Biodiversity
4. Health and safety management
5. Sanitation management
6. Adopted Green practices

Contribution of college's team is equally important in this venture. Team of technical experts from Enerfuture Technology Pvt Ltd is grateful to all the following personnel of Dr Ulhas Patil Medical College and Hospital, Jalgaon for their kind cooperation, furnishing required data, analysis report and support offered during our visit.

Name	Designation
Dr. Ulhas V Patil	Chairman
Prof Dr. N. S. Arvikar	Dean
Mr. Pramod Bhirud	Registrar
Prof Dr. Bapurao M. Bite	Assistant Professor
Prof	Assistant Professor

We are also thankful to the other staff members who were actively involved while taking measurements and conducting field study.

### STUDY TEAM

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5	Mr Prasad Kalal	B.E Electrical, BE (Electrical), Electrical Supervisor(51242), Electrical Contractor(37364)

### LIST OF INSTRUMENTS USED

1. Lux meter (Meco)
2. TDS meter
3. CO2 meter
4. Air quality measure meter
5. Sound dB meter

## CONTENTS

EXCECUTIVE SUMMARY .....	9
COLLEGE INTRODUCTION .....	12
INTRODUCTION.....	12
VISSION .....	13
MISSION .....	13
AFFILIATION .....	13
INFRASTRUCTURE .....	14
QUALITY POLICY .....	15
LOCATION.....	16
RENEWABLE ENERGY SYSTEMS.....	17
1. SOLAR PHOTOVOLTAIC SYSTEM- ELECTRICAL ENERGY GENERATION.....	17
INTRODUCATION.....	17
OBSERVATION.....	18
RECOMMENDATION .....	18
SAVINGS MEASURES .....	19
SAVINGS DUE TO SOLAR PV SYSTEM INSTALLATION AND AVAILABLE ROOFTOP SPACE .....	19
2. SOLAR WATER HEATING SYSTEM- HOT WATER GENERATION.....	21
OBSERVATION.....	21
CO2 EMISSION REDUCTION .....	23
RECOMMENDATION .....	23
WASTE MANAGEMENT SYSTEMS .....	24
1. BIO-GAS GENERATION .....	24
OBSERVATION.....	24
SAVINGS MEASURES .....	25
SAVINGS DUE TO BIO GAS PLANT .....	25

2. COMPOSTING.....	26
OBSERVATION .....	26
RECOMMENDATION .....	27
WATER QUALITY AND MANAGEMENT SYSTEMS.....	28
1. TDS LEVEL OF WATER.....	28
INTRODUCTION .....	28
OBSERVATION .....	29
RECOOMENDATION .....	30
2. RAIN WATER HARVESTING- COLLEGE PREMISES.....	31
OBSERVATION .....	31
RECOMMENDATION .....	31
3. WATER TAP REDUCER .....	32
OBSERVATION .....	32
RECOMMENDATION .....	32
AIR QUALITY .....	33
INTRODUCTION .....	33
OBSERVATION .....	34
AIR QUALTY PARAMETERS- PM2.5, PM10, HCHO, HVOC.....	34
AIR QUALTY PARAMETERS- CO2 .....	38
SOUND COMFORT/QUALITY .....	43
INTRODUCTION .....	43
OBSERVATION .....	44
DAY LIGHT ILLUMINATION/COMFORT.....	49
INTRODUCTION .....	49
OBSERVATION .....	50
HEALTH AND SAFETY MANAGEMENT AND INFRASTRUCTURE.....	55

1. COLLEGE INFRASTRUCTURE .....	55
INTRODUCTION .....	55
OBSERVATION .....	55
ASSESSMENT OF COLLGE CAMPUS BUILDING INFRASTRUCTURE .....	55
2. HEALTH AND SAFETY MANAGEMENT .....	57
OBSERVATION .....	57
RECOMMENDATION .....	57
NO VEHICLE DAY INITIATIVE .....	62
OBSERVATION .....	62
RECOMMENDATION .....	62
CO2 EMISSION REDUCTION DUE TO NO VEHICLE DAY .....	62
OTHER ENERGY EFFICIENT, GREEN, HEALTH, WASTE PRACTICES BY THE COLLEGE MANAGEMENT ...	63
1. LIQUID WASTE MANAGEMENT/ SLUDGE TREATMENT PLANT/ WASTE WATER TREATMENT PLANT .....	63
INTRODUCTION .....	63
OBSERVATION .....	64
RECOMMENDATION .....	64
2. SOLID WASTE MANAGEMENT (SCRAPS LIKE PLASTIC, PAPER ETC)/ E- WASTE MANAGEMENT/BIO-WASTE ETC .....	65
INTRODUCTION .....	65
E-WASTE MANAGEMNT .....	65
OBSERVATION .....	66
3. TREE PLANTATION, SOIL CONSERVATION ETC.....	67
INTRODUCTION .....	67
OSERVATION .....	67
4. PLASTIC AND PAPER FREE CAMPAIGN/ AWARNESS PROGRAMME .....	68
INTRODUCTION .....	68



RECOMMENDATION .....	68
5. CLEANLINESS CAMPAIGN/ OTHER ENVIRONMENTAL, HEALTH SAFETY ACTIVITIES ETC.....	70
REFERENCES AND STANDARDS .....	72



## EXCECUTIVE SUMMARY

Sr No	Location	Area	Objective/Purpose	Recommendation/Status
1	Main college building	Solar Photovoltaic System- 318Wp	To generate electrical energy by renewable sources and reduce the CO2 emissions	Can be Implemented
5	College canteen	Bio-Gas generation plant- 100m3/day	Utilised organic food generated in the hostel mess to generate bio-gas for cooking purpose. This saves conventional fuel LPG and ultimately reduce the CO2 and Greenhouse gases emissions	Implemented
6	College campus	Composting	Reduces the landfill pollution and greenhouse gases reduction. Also produce bio-fertiliser compost to trees in the college campus	Can be Implemented
7	All buildings of college, hospital	Tap water reducers	To save the water	Can be Implemented
		Hands free water tap system	This saves the water and also good for personal health protection to avoid frequent hand touching to water taps.	Can be Implemented
8	All buildings of college, hospital, hostel etc	Rain water harvesting	Save water. Increases the groundwater recharge.	Can be Implemented

9	College buildings/campus	Air Comfort/ Quality	Air quality for human being comfort	Partially Aspirational
10	College buildings/campus	Sound Comfort/ Quality	Sound quality or comfort for human being comfort	Within permissible limits
11	College buildings/campus	Daylight Comfort/Illumination	Daylight illumination for human being comfort	Within permissible limits
12	College buildings/campus	Health and Safety Management	Health facility	Ok
			Electrical safety- electrical wiring, its loose connections etc , unwanted materials are placed in electrical panel rooms	Need to be remove
			Fire safety- number of fire extinguishers are placed in college campus	Less number
			Fire safety- Maintenance validity of fire extinguishers are expired	Need to renew immediately after due date
			Unwanted material placed in college campus	Need to place properly
13	College buildings/campus	No vehicle day	Save the conventional fuel and reduces the CO2 emissions.	Can be implemented on every Saturday of month
14	College buildings/campus	Waste management- Bio-waste	Reduce health hazards due bio waste to personal health	Regularly implemented every year

15	College buildings/campus	Waste management- Solid waste	Reduce the CO2 emissions by recycling of solid waste	<b>Regularly implemented and maintained every month.</b>
16	College buildings/campus/other city area	Tree plantation/ Green belt cover	To increase the forest cover. Reduce the Air, Noise pollution, reduce CO2 emissions etc	<b>Regularly conducted by college</b>
17	College buildings/campus/other city area	Cleanliness drive and awareness campaign etc	To create awareness among the students and public	<b>Regularly conducted by college</b>
18	College buildings/campus	Plastic free campaign	Save environment from non-recycling and hazardous materials.	<b>Regularly conducted by college</b>

## COLLEGE INTRODUCTION

### INTRODUCTION



Dr. Ulhas Patil Medical College & Hospital (DUPMC) was started by Godavari Foundation in 2008 to impart quality education in the field of Medical Science. This is one of the flagship institutions of the Godavari Foundation. It started functioning from the academic year 2008-09. The College is recognized by Medical Council of India & is affiliated to Maharashtra University of Health Sciences (MUHS), Nashik. It is the first medical college to be located in Jalgaon District & is spread over an area of Over 33 acres. The Present Premise comprises of College Building, Teaching Hospital Building of 500 Bed Capacity, Staff Quarters, and Separate Hostels for Boys & Girls, Play Ground, Library, Canteen & other amenities.

Each Department consists of a well-qualified staff, well equipped Practical 7 Research Laboratories, well set up Museums with catalogues, Dissection Hall of Anatomy Department & Demonstration Room. College also has 4 Lecture Halls with required Audio-Visual facilities. A resourceful Central Library including E-Library too is open 24\*7 for Staff & Students. The Various Special features of the institute make it a Quality Institute.

A Core team of experienced and qualified faculty bears the responsibility to impart knowledge to aspiring students in DUPMC. Interaction with eminent personalities of the Medical Field is a continuous activity at the DUPMC. In addition to giving them value-added skills, the DUPMC provides the students with a solid foundation to base their Medical practical knowledge on. It endows the students with Advanced & Updated Medical skills.

The Godavari Foundation has since its inception built a formidable name in the field of Medical, Para- Medical, Science, Engineering, Management, Agriculture, Primary-Secondary education, Law & other education. The Board of the Management of the Society consist of a group of selfless, dedicated and hardworking educationists whose endeavor in providing & establishing good professional education to the students has been a relentless effort on their part. The Management is headed by a person like Hon.Dr.Ulhas Patil whose missionary zeal in the spread of education has been acknowledged by the society.

Jalgaon is developing as a decent city with district headquarter, is famous all over India as the center of foremost banana growing area. It has recently acquired the fame as "GOLD CITY" for heavy gold trading.




## VISSION

Our Vision is to produce quality health care professionals and to promote excellence in health care. Dr.Ulhas Patil Medical College & Hospital, Jalgaon will seek to be a center of excellence in Medical Education, Research and Healthcare Services at the National and International Level.

## MISSION

Our Mission is to impart excellent education opportunities for the students of health care profession. The institute in pursuit of its vision will provide outstanding educational experience, in all the disciplines of Medicine and allied Health Sciences, in a supportive environment of scholarship, research, integrity, critical thinking and self-directed learning. It will provide comprehensive, culturally sensitive, community oriented Health care to individuals and families.

## AFFILIATION

	<p><u>Dr.Ulhas Patil Medical College &amp; Hospital, Jalgaon</u></p>																															
	<p><u>Recognized by Medical Council of India, New Delhi.</u></p>																															
	<p style="text-align: center;"><u>Affiliated to Maharashtra University of Health Sciences, Nashik.</u></p> <p style="text-align: center;"><b>PARTICULARS OF AFFILIATED UNIVERSITY VICE CHANCELLOR &amp; REGISTRAR :</b></p> <table border="1" data-bbox="475 1496 1329 1908"> <thead> <tr> <th>Item</th> <th>Vice Chancellor</th> <th>Registrar</th> </tr> </thead> <tbody> <tr> <td>Name</td> <td>Prof. Dr. Deelip Mhaisekar Hon'ble Vice-Chancellor</td> <td>Dr. K.D. Chavan</td> </tr> <tr> <td>University</td> <td colspan="2">Maharashtra University of Health Science</td> </tr> <tr> <td>State</td> <td>Maharashtra</td> <td>Maharashtra</td> </tr> <tr> <td>Pin Code</td> <td>422004</td> <td>422004</td> </tr> <tr> <td>Phone (Off)</td> <td>0253- 2539114</td> <td>0253- 2539292</td> </tr> <tr> <td>(Res)</td> <td>0253- 2539113</td> <td>0253- 2539295</td> </tr> <tr> <td>(Fax)</td> <td></td> <td></td> </tr> <tr> <td>Mobile No.</td> <td></td> <td></td> </tr> <tr> <td>E.mail:</td> <td>vc@muhsnashik.com</td> <td>registrar@muhsnashik.com</td> </tr> </tbody> </table>		Item	Vice Chancellor	Registrar	Name	Prof. Dr. Deelip Mhaisekar Hon'ble Vice-Chancellor	Dr. K.D. Chavan	University	Maharashtra University of Health Science		State	Maharashtra	Maharashtra	Pin Code	422004	422004	Phone (Off)	0253- 2539114	0253- 2539292	(Res)	0253- 2539113	0253- 2539295	(Fax)			Mobile No.			E.mail:	vc@muhsnashik.com	registrar@muhsnashik.com
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**INFRASTRUCTURE**

<b>Infrastructure</b>			
Land & Building			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Description</b>	<b>Qty</b>
1	Land Area		35 Acar
2	Build Up Area		59786.58 sq.mt
3	Play Ground/Sports/Games area		
Learning/Teaching			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Description</b>	<b>Qty</b>
1	No. of Class rooms		5
2	No. of Laboratories		13
3	No. of Seminar Halls(Rooms)		2
4	No. of Conference rooms		1
5	No. of Committee Rooms		8
<b>Infrastructure</b>			
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1	No. of Class rooms		5
2	No. of Laboratories		13
3	No. of Seminar Halls(Rooms)		2
4	No. of Conference rooms		1
5	No. of Committee Rooms		8
Teaching Tools, AIDS & Sports			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Description</b>	<b>Qty</b>
1	No. of Televisions		30
2	No. of OHPs		15
3	No. of LCDs		60
4	No. of VCP/VCR		
5	Auditorium	Gallary	1
6	Gymnasium		1
7	Sports Play Ground	Green Lawn	1

## QUALITY POLICY



### Dr.Ulhas Patil Medical College & Hospital

#### Quality Policy

We at **Dr.Ulhas Patil Medical College & Hospital** established to provide excellent, contemporary and service oriented education in the field of Medical Sciences to our students facilitating them to always succeed in the Current Medi-Competition.

Further we are also committed to provide practical knowledge by familiarizing them in current trends in Various Medical Science & Technological Streams.

We work towards enhancement of our student's satisfaction by adhering to our commitments & continual improvement in our quality Medi-education systems.



**Dean**

### LOCATION



#### Dr. Ulhas Patil Medical College & Hospital

डॉ. उल्हास पाटील मेडिकल कॉलेज आणि हॉस्पिटल

3.8 ★★★★★ 430 reviews

Medical school

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COVID-19 vaccine location

NH No.6, Bhusawal Rd, Jalgaon, Maharashtra 425309





## RENEWABLE ENERGY SYSTEMS

### 1. SOLAR PHOTOVOLTAIC SYSTEM- ELECTRICAL ENERGY GENERATION

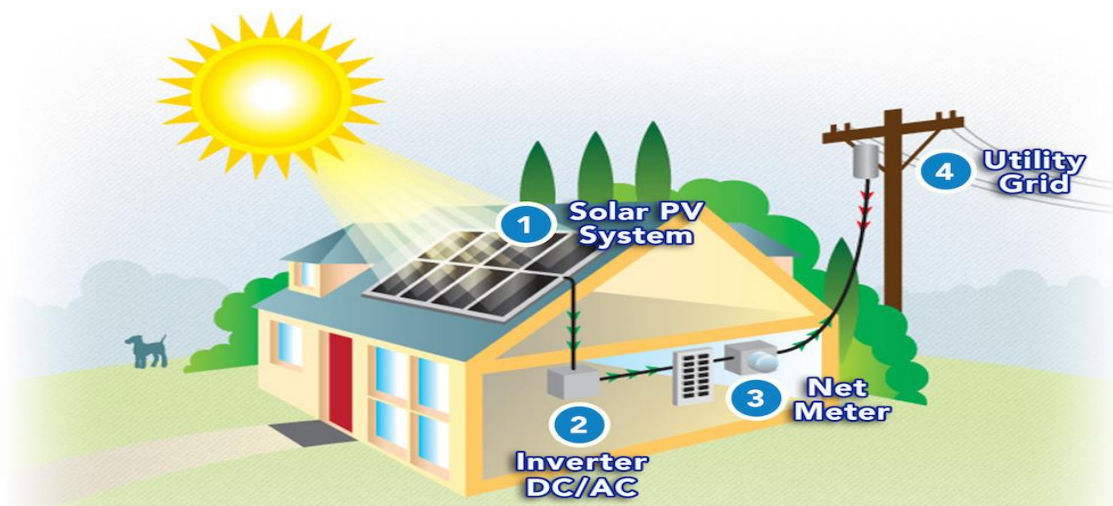
#### INTRODUCTION

Solar photovoltaic system- with Net meter



Maharashtra Government has new solar energy policy name as “Rooftop Solar with Net Meter system”. Maharashtra government encourages to install rooftop solar PV system with net meters at available roof top of consumers. This helps to reduce the burden on existing conventional fuel fired power plants in the country.

Solar Rooftop Net meter system helps consumers to reduce the electricity consumption in the electricity bill due to net meter.



## **OBSERVATION**

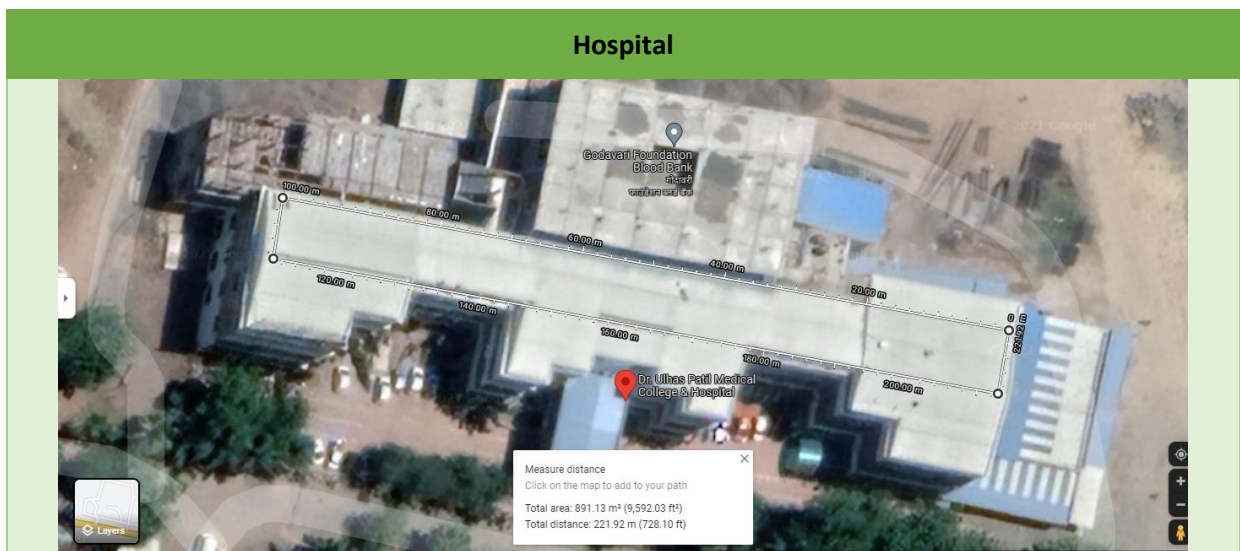
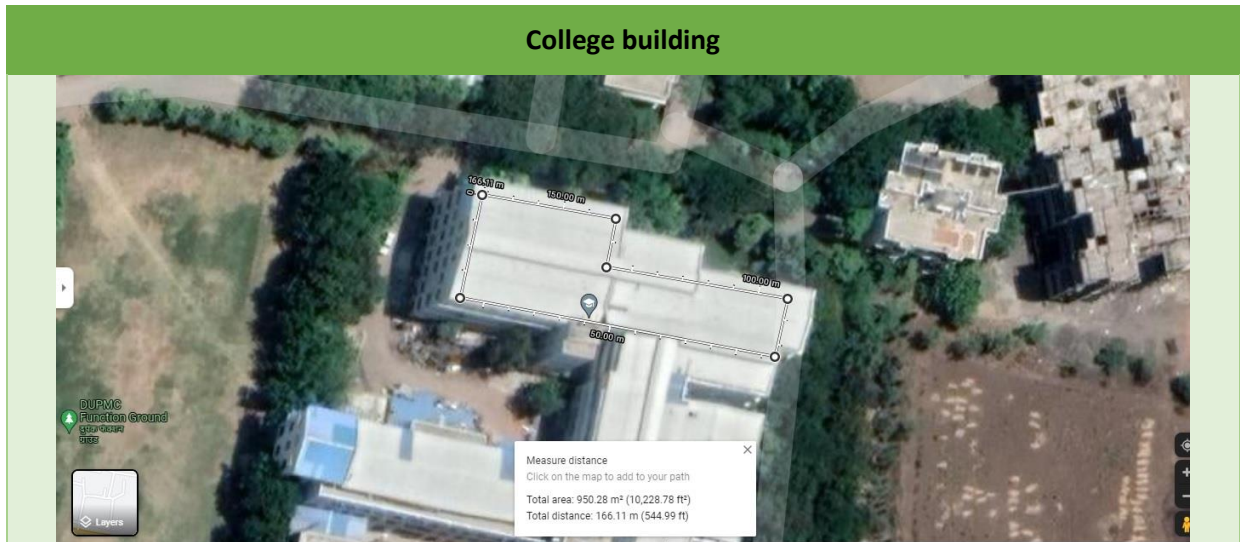
1. It is observed that in the college has not installed Solar PV system for solar energy generation.
2. In the college premises there are number of buildings.
3. Main college building, hospital, sports complex buildings have large amount of rooftop space available for Solar PV system installation.

## **RECOMMENDATION**

1. College can installed Solar PV system on rooftops as per energy consumption and rooftop space available on various available rooftop space of the buildings on CAPEX model.
2. Or College can installed Solar PV system on OPEX model i.e Built Operate Transfer (BoT) model where no need of investment by college.

## SAVINGS MEASURES

### SAVINGS DUE TO SOLAR PV SYSTEM INSTALLATION AND AVAILABLE ROOFTOP SPACE



### Sports complex



### Savings due to Solar PV system installation

<b>Total Rooftop space available- approximate</b>	35000	sqfoot
<b>Average energy consumption of main college building</b>	210000	kWh/month
<b>Total capacity of Solar PV system can be installed</b>	318	kWp
<b>Total solar unit generation</b>	35795	kWh/month
<b>Average electricity unit rate</b>	13.1	INR/kWh
<b>Total cost of Solar PV system</b>	14318182	INR
<b>Total saving</b>	468920.5	INR/month
<b>Payback period</b>	30.53	months
<b>Payback period</b>	<b>2.54</b>	<b>year</b>

## 2. SOLAR WATER HEATING SYSTEM- HOT WATER GENERATION

### OBSERVATION

1. In boys and girls hostel, there is Solar Water Heating system is installed for the purpose of water heating instead of electric heaters.
2. Total capacity of Solar Water Heating system is 21450 litres/day.
3. Auxiliary heaters are not used in solar water heating system in the morning.
4. Condition of some solar flat plate collector is not in good condition or damage. Due to this efficient and output of the system reduces.

Solar Water Heating System- 21450litres/day- Hostel



**Damage solar flat plate collectors**



**Replace with new solar flat plate collectors**

## CO2 EMISSION REDUCTION

Particulars		
Hot water temperature	55	deg C
Cold water temperature	25	deg C
Temperature difference(delta T)	30	deg C
Volume of water	21450	lit
Volumetric flow	21450	lit/day
Hot water temperature	55	deg C
Enthalpy of cold water	25.04	kcal/kg
Enthalpy of Hot water	55	kcal/kg
Enthalpy difference	29.96	kcal/kg
Amount of heat used	642642	kcal
Power used for heating	747.26	kW
Monthly kWh	22791.37	kWh/month
Saving kWh	22791.37	kWh/month
Saving kWh	273496.48	kWh/year
Saving INR	278966.41	INR/month
<b>CO2 emission reduction/year</b>	<b>232.47</b>	<b>tonnes of CO2e</b>

## RECOMMENDATION

- It is recommended that replace the damage solar flat plate collector with new one.
- Also do the yearly maintenance of solar flat collectors for scale formation inside the tube to increase and maintain the efficiency of the system.

## WASTE MANAGEMENT SYSTEMS

### 1. BIO-GAS GENERATION

#### OBSERVATION

1. In the college canteen mainly bio gas is used which is produced at central Bio gas plant situated outside the college campus.
2. Separate bio gas line is connected to the college canteen.
3. During shortage of bio gas, then only LPG cylinders are used.

#### Bio gas plant







## SAVINGS MEASURES

### SAVINGS DUE TO BIO GAS PLANT

Saving due to Bio gas plant		
Capacity of bio gas plant	100000	kg/day
Approximate bio gas generation	100000	kg/day
Approximate bio gas generation	100	m3/day
Equivalent LPG gas saved	3050	m3/month
Approximate LPG saved	4575	kg/month
Approximate LPG cylinder saved	241	nos
Cost saved	<b>240789.47</b>	<b>INR/month</b>

## 2. COMPOSTING

### OBSERVATION

1. In college premises there are number of trees are planted by college management.
2. There is substantial amount of waste of tree leaves, shrubs are generated in the college premises.
3. Currently there is no composting plant in the college premises.

Number of Trees



Number of Trees



Number of trees in the college premises

Number of Trees



Number of Trees



Number of trees in the college premises

## RECOMMENDATION

1. College can initiative to implement the compost plant in the college premises.
2. Compost can be used in the college campus tee purposes or can be used any other agriculture field.

## WATER QUALITY AND MANAGEMENT SYSTEMS

### 1. TDS LEVEL OF WATER

#### INTRODUCTION

The water we drink contains essential salts and minerals like calcium, potassium and magnesium, besides hydrogen and oxygen.

These minerals make up the acceptable levels of TDS (Total Dissolved Solids). Besides, these minerals, the source water contains heavy impurities like arsenic, antimony, lead, iron, etc. It also includes carbonates, fluorides, sulphides and other salts picked along the way. These contaminants enhance the TDS levels to unacceptable levels.

BIS (Bureau of Indian Standards) determines the TDS acceptability levels in drinking water. In India, drinking water can contain TDS up to 500 ppm. BIS has constituted the following table that could clarify the matters further.

TDS level (PPM)		Reasons for acceptability or non-acceptance
less than 50	Unacceptable	The water with these TDS level does not contain the minerals required for healthy growth
50 - 150	Acceptable	Such TDS levels are usually due to minor industrial contamination
150 - 250	Acceptable	BIS considers water with this TDS levels as the healthiest of all because it is excellent for cardiovascular health
250 - 350	Acceptable	Many areas in India depends on groundwater or bore wells for their water requirements. This water contains essential minerals hence is in acceptance range
350 - 500	Fair	The maximum TDS levels acceptable for human consumption is 500
above 500 - 1200	Not Acceptable	BIS does not recommend any TDS level above 500 as fit for human consumption. However, water with TDS levels up to 1200 can be subjected to purification using Reverse Osmosis(RO) technology to eliminate TDS and bring it down to acceptable levels

**OBSERVATION**

1. Drinking water requirement of college fulfil by bore well water as well as public water supply by MIDC filtration plant.
2. Domestic water requirement of college is also fulfil by bore well public water supply by MIDC filtration plant.
3. For drinking water, in college RO plants are installed to reduce the TDS level of water.
4. TDS level of drinking water is 22 and 26 ppm which less than acceptable level.
5. TDS level of drinking water and domestic water as

**TDS level of water**



**Drinking water- RO water**

**Domestic water- Public water supply**

**⊘- Unacceptable**

**⊘- Unacceptable**

**TDS level of water**



**Domestic water**

**✓- Acceptable**

	<b>TDS</b>	<b>Acceptability</b>
	<b>ppm</b>	
<b>Drinking water-RO water</b>	22	<b>Not Acceptable</b>
<b>Water- Public water supply</b>	26	<b>Not Acceptable</b>
<b>Domestic water</b>	414	Acceptable

### RECOOMENDATION

1. It is recommended that to increase the TDS level of Drinking water from RO plant.
2. Also convey the same government authority of public water supply about the TDS level of the water.

## 2. RAIN WATER HARVESTING- COLLEGE PREMISES

### OBSERVATION

1. College has not implemented rain water harvesting in any of the buildings.
2. College has very large rooftop space where large amount of rain water can be saved during rainy season.
3. Using rain water harvesting either recharge the bore well or collecting at underground water tank.
4. Collected rainwater water can be used for garden purposes or domestic purposes.

### RECOMMENDATION

1. It is recommended that to implement rainwater harvesting at various buildings to harvest maximum amount of water either collecting in underground water tank or recharge the bore wells.

Building rooftops







Buildings



### 3. WATER TAP REDUCER

#### OBSERVATION

1. College has conventional water tap system in the area like bathrooms, toilets, laboratories, hostels, hospitals etc.
2. Conventional water tap system consumes or requires more water for the purpose of washings, cleanings etc.

Conventional Tap water system	Tap water system with Reducer
	
<p><b>College have currently conventional tap water system at laboratories, bathrooms, kitchen, hostel etc</b></p> <p><b>Existing tap water system uses more water while during purpose of washing of utensils, hands etc in college.</b></p>	<p><b>Used reducer to tap water for purpose of washing of utensils, hands etc which reduces flow of water and ultimately saves the water.</b></p>
	

#### RECOMMENDATION

It is recommended that increased the number of water reducers for water tapping for save the water in other places like bathrooms, kitchen etc.



## AIR QUALITY

### INTRODUCTION

Indoor air is considered to be healthy when the air does not contain contamination in harmful concentrations and is acceptable when the majority of people feel satisfied. A human being breathes about 12,000 litres of air every day and is vital for our health. Exposure to hazardous airborne agents present in indoor space causes adverse effects such as respiratory and cardiovascular diseases, allergy and irritation of the respiratory tract and possibly leads to cancer.

Main source of indoor air pollutants are from outdoor air, household cooking (especially cooking with biomass or frying), tobacco smoking, polluted ambient air, cleaning agents, resuspension of dust during the cleaning activities, construction materials and paints, copy machines and printers as well as other human activities. Ambient air pollutant sources are vehicle emissions, thermal power plants, biomass burnings, construction work, unattended debris, open sewage pipes, fossil fuel based power generation and various industrial processes etc.

Threshold values for indoor air quality parameters				
Parameters	Classification			
	Class A	Class B	Class C	
Level	Aspirational	Acceptable	Marginally acceptable	
CO <sub>2</sub>	Ambient+350	Ambient+500	Ambient+700	ppm
PM <sub>2.5</sub>	<15	<25	<25	ppm
PM <sub>10</sub>	<50	<100	<100	ppm
HCHO	30			µg/m <sup>3</sup>
TVOC	<200	<400	<500	µg/m <sup>3</sup>
<b>Occupational satisfaction</b>	<b>90</b>	<b>80</b>	-	%

## OBSERVATION

1. In college air quality is at good/ aspirational level.
2. Only the place where construction of building is going on, air quality is at not acceptable level.

## AIR QUALTY PARAMETERS- PM2.5, PM10, HCHO, HVOC

Account office	Counsel hall
 <p>Air quality monitor displaying the following data:</p> <ul style="list-style-type: none"><li>Time: 19:24:12</li><li>Overall: Fresh</li><li>LEVEL: Fresh</li><li>HCHO: 0.048 mg/m<sup>3</sup></li><li>TVOC: 0.129 mg/m<sup>3</sup></li><li>PM2.5: 033</li><li>PM10: 038</li></ul> <p>2021/9/24 09:43</p>	 <p>Air quality monitor displaying the following data:</p> <ul style="list-style-type: none"><li>Time: 19:26:41</li><li>Overall: Fresh</li><li>LEVEL: Fresh</li><li>HCHO: 0.042 mg/m<sup>3</sup></li><li>TVOC: 0.135 mg/m<sup>3</sup></li><li>PM2.5: 028</li><li>PM10: 032</li></ul> <p>2021/9/24 09:45</p>
<p><b>v-Marginally acceptable</b></p>	<p><b>v-Marginally acceptable</b></p>

**Biochemistry lab**



**v-Marginally acceptable**

**Microbiology lab**



**v-Aspirational**

**Reading hall**



**v-Aspirational**

**Construction site @ college building**



**v-Aspirational**

Lecture hall



⊘-Not acceptable

Library



✓-Aspirational

Ketki hall



✓-Aspirational

Passage



✓-Aspirational

Ground in premises



✓-Aspirational

OPD ward



✓-Aspirational

Operation Theatre (OT)



⊘-Not acceptable

College canteen



✓-Aspirational

**AIR QUALTY PARAMETERS- CO2**

**Account office**



**v-Aspirational**

**Counsel hall**



**v-Aspirational**

**Biochemistry lab**



**v-Aspirational**

**Microbiology lab**



**v-Aspirational**

**Reading hall**



**v-Aspirational**

**Construction site @ college building**



**v-Aspirational**

Lecture hall



v-Aspirational

Library



v-Aspirational

Ketki hall



v-Aspirational

Passage



v-Aspirational



Ground in premises



v-Aspirational

OPD ward



v-Aspirational

Operation Theatre (OT)



v-Aspirational

College canteen



v-Aspirational

Location	CO2	PM2.5	PM10	HCHO	TVOC	Level
	ppm	ppm	ppm	ppm	ppm	
Account office	520	33	38	48	129	Marginally acceptable
Counsel hall	494	28	32	42	135	Marginally acceptable
Biochemistry lab	465	26	30	12	120	Marginally acceptable
Microbiology lab	443	24	27	9	9	Aspirational
Reading hall	478	21	24	4	3	Aspirational
Construction site @ college building	452	23	26	1	2	Aspirational
Lecture hall	413	24	27	107	999	Not acceptable
Library	444	23	26	3	3	Aspirational
Ketki hall	817	23	26	40	1	Aspirational
Passage	420	31	35	20	0	Aspirational
Ground in premises	359	23	26	3	25	Aspirational
OPD ward	500	25	29	3	32	Aspirational
Operation Theatre (OT)	570	25	29	236	999	Not acceptable
College canteen	457	26	30	39	3	Aspirational

## SOUND COMFORT/QUALITY

### INTRODUCTION

Noise is unwanted sound. Ambient noise is all encompassing noise associated with any given environment and is usually a composite of sounds from many sources near and far. Any abnormal sound which irritates human being is called as noise pollution.

Noise is one of the undesirable products of technological civilization. Admits this civilization wherever we go, noise surrounds us. The roar of traffic, the passage of trains and aeroplanes, the bustle of crowds and the working of industry and the public utilities deafens our ears. Even home is invaded by noise. The noise from whatever source it comes from is undoubtedly, physiologically as well as psychologically harmful.

Invading environment in dangerous proportions, it is an invisible but insidious form of pollutant. Noise as a potentially harmful pollutant is being recognised as a great nuisance these days affecting the quality of the particularly, in urban areas.

The Environment (Protection) Act, 1986, under Sec. 6 has mentioned "Rules to regulate environment (Protection) Act, 1986, under Sec. 6 has mentioned "Rules to regulate environmental pollution". This section has explained the maximum allowable limits of concentrations of various environmental pollutants (including noise) for different areas.

Air quality standards in respect of Noise			
Area code	Category of Area/ Zone	Limits/Levels	
		Day Time	Night Time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40

**OBSERVATION**

Account office	Counsel hall
 <p>2021/9/24 09:41</p>	 <p>2021/9/24 09:45</p>
<b>v-within permissible limits</b>	<b>v-within permissible limits</b>

**Biochemistry lab**



2021/9/24 09:48

v-within permissible limits

**Microbiology lab**



2021/9/24 09:53

v-within permissible limits

**Reading hall**



2021/9/24 09:57

v-within permissible limits

**Construction site @ college building**



2021/9/24 10:01

v-within permissible limits

Lecture hall



v-within permissible limits

Library



v-within permissible limits

Ketki hall



v-within permissible limits

Passage



v-within permissible limits

Ground in premises



v-within permissible limits

OPD ward



v-within permissible limits

Operation Theatre (OT)



v-within permissible limits

College canteen



v-within permissible limits

Location	Noise	Limits/Levels
	dB	
Account office	68.3	within permissible limits
Counsel hall	73.7	within permissible limits
Biochemistry lab	52.5	within permissible limits
Microbiology lab	68.5	within permissible limits
Reading hall	60	within permissible limits
Construction site @ college building	59.9	within permissible limits
Lecture hall	51.6	within permissible limits
Library	56.7	within permissible limits
Ketki hall	71.6	within permissible limits
Passage	65.1	within permissible limits
Ground in premises	58.5	within permissible limits
OPD ward	71.8	within permissible limits
Operation Theatre (OT)	66.6	within permissible limits
College canteen	72.6	within permissible limits





## DAY LIGHT ILLUMINATION/COMFORT

### INTRODUCTION

Light has significant impact on many body functions, including the nervous system, circadian rhythms, pituitary gland, endocrine system, pineal gland and alertness as these are affected by different wavelengths of light.

Variations over time in lighting conditions, in terms of intensity, illumination levels, distribution, ambient lighting and colour temperature, can stimulate alertness and well-being of people.

Threshold IL luminance level		
Building type	Type of space	IL luminance
		<b>Lux</b>
Schools	Classrooms	500
	Corridors	100
	Teachers rooms	300
	Libraries	500
	Offices	300

OBSERVATION

Account office



v-within permissible limits

Counsel hall



v-within permissible limits

**Biochemistry lab**



v-within permissible limits

**Microbiology lab**



v-within permissible limits

**Reading hall**



v-within permissible limits

**Construction site @ college building**



v-within permissible limits

Lecture hall



2021/9/24 10:09

v-within permissible limits

Library



2021/9/24 10:16

v-within permissible limits

Ketki hall



2021/9/24 10:13


v-within permissible limits



Passage



2021/9/24 10:21

v-within permissible limits

Ground in premises	OPD ward
<p>NA</p>	
<p>NA</p>	<p>v-within permissible limits</p>

Operation Theatre (OT)	College canteen
	
<p>v-within permissible limits</p>	<p>v-within permissible limits</p>

Location	LUX	Limits/Levels
	lumens	
Account office	550	within permissible limits
Counsel hall	387	within permissible limits
Biochemistry lab	25	within permissible limits
Microbiology lab	402	within permissible limits
Reading hall	201	within permissible limits
Construction site @ college building	220	within permissible limits
Lecture hall	42	within permissible limits
Library	78.7	within permissible limits
Ketki hall	120	within permissible limits
Passage	775	within permissible limits
Ground in premises	-	within permissible limits
OPD ward	195	within permissible limits
Operation Theatre (OT)	41	within permissible limits
College canteen	49	within permissible limits

\* values are measured in daylight and given standard values of lux are with lightings

## HEALTH AND SAFETY MANAGEMENT AND INFRASTRUCTURE

### 1. COLLEGE INFRASTRUCTURE

#### INTRODUCTION

College campus comprises of mainly two buildings as main college building and computer science building.

Apart from this two in college separate college canteen, gymkhana, vehicle parking area, horticultural garden etc are in the premises.

#### OBSERVATION

#### ASSESSMENT OF COLLEGE CAMPUS BUILDING INFRASTRUCTURE

Sr No	Locations	Space	Ventilation	Natural Light	Cleanliness	Remark
1	Main college building	Spacious	Good	Good	Good	
2	Hospital building	Spacious	Good	Good	Good	
3	Anatomy	Spacious	Good	Good	Good	
4	Biochemistry	Spacious	Good	Good	Good	
5	Physiology	Spacious	Good	Good	Good	
6	Pharmacology	Spacious	Good	Good	Good	
7	Pathology	Spacious	Good	Good	Good	
8	Microbiology	Spacious	Good	Good	Good	
9	Forensic medicine and toxicology	Spacious	Good	Good	Good	
10	Community medicine	Spacious	Good	Good	Good	
11	Ophtalmology	Spacious	Good	Good	Good	
12	Ear, Nose and Throat(ENT)	Spacious	Good	Good	Good	
13	Medicine	Spacious	Good	Good	Good	
14	Paediatrics	Spacious	Good	Good	Good	
15	TB and chest	Spacious	Good	Good	Good	
16	Psychiatry	Spacious	Good	Good	Good	



17	Surgery	Spacious	Good	Good	Good	
18	Obstetrics and Gynaecology	Spacious	Good	Good	Good	
19	Orthopaedics	Spacious	Good	Good	Good	
20	Radiology	Spacious	Good	Good	Good	
21	Skin	Spacious	Good	Good	Good	
22	An aesthesis	Spacious	Good	Good	Good	
23	Emergency medicine	Spacious	Good	Good	Good	
24	Cardiology	Spacious	Good	Good	Good	
25	Library & Reading hall	Spacious	Good	Average	Good	
26	Class rooms	Spacious	Good	Good	Good	
27	Canteen	Spacious	Good	Good	Average	
28	Gymkhana/sports complex	Spacious	Good	Good	Good	
29	College premises	Spacious	Good	Good	Good	
30	Passage	Spacious	Good	Good	Good	
31	Toilet Blocks	Spacious	Good	Good	Good	



## 2. HEALTH AND SAFETY MANAGEMENT

### OBSERVATION

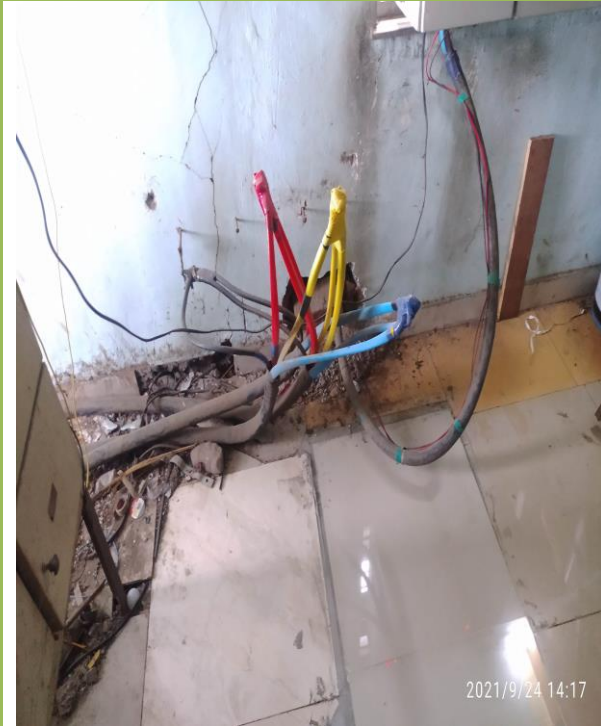
1. Regular cleaning of college campus and toilets is done by the cleaning staff. This involves dusting, floor cleaning and toilets cleanings.
2. Garden and parking area is also kept clean by staffs.
3. Cleaning equipment and washing liquids are provided to the cleaning staff.
4. Electrical connections are not as per IS/NBC standards. Electrical doors open at some places. Electrical cables are also hanging not as per IS/NBC standards.
5. There is no maintenance of both the transformers in the premises. Oil level is fully empty.

### RECOMMENDATION

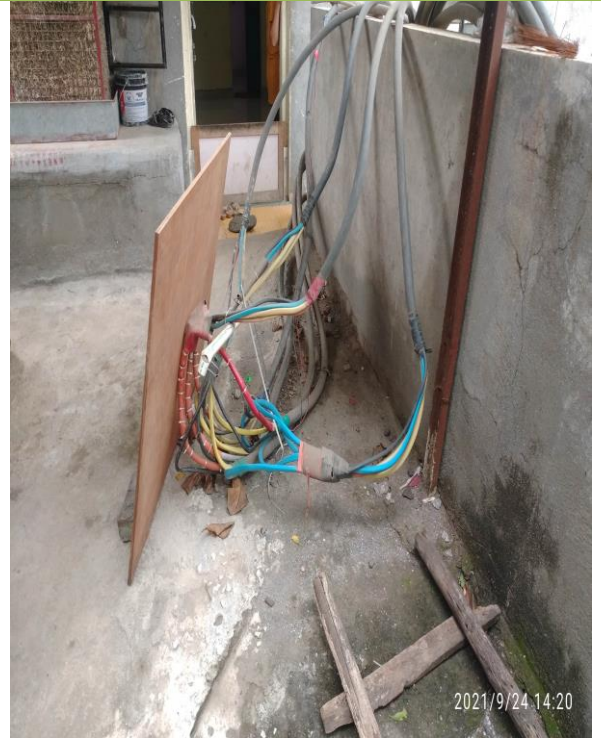
1. In college premises and buildings area, during audit team found the unwanted materials. It is recommended that removed the unwanted material in the premises
2. College have its own medical hospital attached in the same premises.
3. There are very few number fire extinguishers and no sand bucket are placed in college campus building for fire safety purpose. But it is also very important and necessary to renew the maintenance of fire extinguishers on right time. Currently they are out dated.
4. Open wiring, loose connections and not properly addressed cable wiring have been observed in college, that may lead to short circuits as well as from electrical safety it is dangerous. Also panel doors are not closed properly. So it is an urgent repair and corrected.
5. It is recommended that take proper action for electrical system from safety point view as per IS/NBC standards.
6. Do the regular yearly maintenance of transformers yearly for oil filtration, oil top-up if empty etc

**Electrical safety**

**Electrical connections**



**Electrical connections**



**Electrical connections are not as per IS/NBC standards.**

**⊘- Dangerous**

Electrical safety

Electrical connections



Electrical connections



**Electrical connections are not as per IS/NBC standards. Electrical cables are hanging.**

**⊘- Dangerous**

**Electrical safety****Transformer Oil Level**

**Transformer oil level is fully empty**

**⊘- Need to take immediately action for top-up and maintenance of transformer**

**Fire safety****Validity of Fire extinguishers**

**Maintenance validity of fire extinguishers are expired**

**⊘- Need to renew immediately after due date**

Health safety

Conventional water taping system



College and hospital have currently conventional water taping system

Hands free water taping system



College can adopts hands free water taping system. This saves the water and also good for personal health protection to avoid frequent hand touching to water taps.

## NO VEHICLE DAY INITIATIVE

### OBSERVATION

1. Many of the college staff use the private or own vehicle to come college.
2. It contributes the CO<sub>2</sub> emission due to burning of petrol or diesel in the vehicles.
3. College has not implemented the policy of “No Vehicle Day”

### RECOMMENDATION

It is recommended that college can implement the “No Vehicle Day” once every week to reduce the CO<sub>2</sub> emission reduction due fuel burning.

### CO<sub>2</sub> EMISSION REDUCTION DUE TO NO VEHICLE DAY

Particulars		
Number of vehicles in college premises	250	nos
Average running of vehicle	2	km/vehicle
Average fuel required	250	litres/day
Average cost of fuel	25000	INR/day
Number of days in months	4	nos
Average fuel save	1000	litres/month
Average cost save	100000	INR/month
Average CO <sub>2</sub> emission reduction per month	0.67	tonnes of CO <sub>2</sub> e
Average CO <sub>2</sub> emission reduction per year	<b>8.04</b>	<b>tonnes of CO<sub>2</sub>e</b>

## **OTHER ENERGY EFFICIENT, GREEN, HEALTH, WASTE PRACTICES BY THE COLLEGE MANAGEMENT**

### **1. LIQUID WASTE MANAGEMENT/ SLUDGE TREATMENT PLANT/ WASTE WATER TREATMENT PLANT**

#### **INTRODUCTION**

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff (storm water) to the sewage treatment plant. Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primary treatment of sewage.

## OBSERVATION

1. College has implemented Sludge Treatment Plant (STP)/ Waste Water Treatment Plant in the college to treat the waste water generated at College and labs or canteen.
2. But currently it is not in function.

### Sewage water treatment plant- Not functional



## RECOMMENDATION

It is recommended that revamp the existing system with naturally treated water system which also reduces the energy consumption for treating the water.



## 2. SOLID WASTE MANAGEMENT (SCRAPS LIKE PLASTIC, PAPER ETC)/ E-WASTE MANAGEMENT/BIO-WASTE ETC

### INTRODUCTION

College have good policy and maintained the record for solid waste generated in the college like old newspapers, books, scrap boxes, etc.

### E-WASTE MANAGEMNT

Electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution.

Electronic scrap components, such as CPUs, contain potentially harmful components such as lead, cadmium, beryllium, or brominated flame retardants. Recycling and disposal of e-waste may involve significant risk to health of workers and communities in developed countries and great care must be taken to avoid unsafe exposure in recycling operations and leaking of materials such as heavy metals from landfills and incinerator ashes.

### The environmental impact of the processing of different electronic waste components

E-Waste Component	Process Used	Potential Environmental Hazard
Cathode ray tubes (used in TVs, computer monitors, ATM, video cameras, and more)	Breaking and removal of yoke, then dumping	Lead, barium and other heavy metals leaching into the ground water and release of toxic phosphor
Printed circuit board (image behind table – a thin plate on which chips and other electronic components are placed)	De-soldering and removal of computer chips; open burning and acid baths to remove metals after chips are removed.	Air emissions and discharge into rivers of glass dust, tin, lead, brominated dioxin, beryllium cadmium, and mercury
Chips and other gold plated components	Chemical stripping using nitric and hydrochloric acid and burning of chips	PAHs, heavy metals, brominated flame retardants discharged directly into rivers acidifying fish and flora. Tin and lead contamination of surface and groundwater. Air emissions of brominated dioxins, heavy metals, and PAHs
Plastics from printers, keyboards, monitors, etc.	Shredding and low temp melting to be reused	Emissions of brominated dioxins, heavy metals, and hydrocarbons
Computer wires	Open burning and stripping to remove copper	PAHs released into air, water, and soil.

**OBSERVATION**

1. College has given solid waste generated like papers, metal scrap etc to the construction department for recycling purpose.
2. This helps to reduce the CO2 emission reduction due to recycling of the solid waste.
3. Currently college has not given E-waste to any authorised partner.
4. College given the Bio-waste generated in the hospital to authorised partner named "Mansai biomedical Waste Enterprises private Limited" in jalgaon.

**E-waste activity certificate**

**MANSAI BIOMEDICAL WASTE ENTERPRISES  
Pvt. Ltd. JALGAON**  
Fact : Gal No.413, Near Resource Factory, Shivaji Nagar, Khankai Road, Jalgaon - 425001.  
Office : Hirapanna Apt. 1st Floor Flat No. 1, Pande Dairy Chowk Omkar Nagar, Jalgaon - 425001.

MBMWEP/CE/RT/00048/2021-2022 Date: 16/09/2021

## CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that " DR ULHAS PATIL MEDICAL COLLEGE AND HOSPITAL" Dr. Mrs. Varsha U Patil, Jalgaon whose Reg. No. is J-59 is registered With " Mansai Biomedical Waste Enterprises Pvt. Ltd. for Jalgaon Municipal Corporation Jalgaon" A Common Bio-Medical Waste Treatment & Disposal Facility for - 750 Beds From 03/04/2012. The Bed Strength is changed from 750 Beds to 1110 Beds from 01/07/2019 onwards. The Biomedical waste Generated in the hospital is collected & Transported from the Hospital and disposed off scientifically by Mansai BioMedical Waste Enterprises Pvt. Ltd." as per the rules and regulation of Maharashtra Pollution Control Board and Central Pollution Control Board.

This Certificate is valid from 16/09/2021 to 15/09/2022.

  
16/09/2021

Your's Faithfully,  
MANSAI BIO MEDICAL WASTE ENT.PVT.LTD.  
  
Rajiv ~~Director~~ Director

2021/9/24 13:45

**v- Good Initiative**

### 3. TREE PLANTATION, SOIL CONSERVATION ETC

#### INTRODUCTION

Tree-planting is the process of transplanting tree seedlings, generally for forestry, land reclamation, or landscaping purpose

In silviculture the activity is known as reforestation, or afforestation, depending on whether the area being planted has or has not recently been forested. It involves planting seedlings over an area of land where the forest has been harvested or damaged by fire, disease or human activity. Tree planting is carried out in many different parts of the world, and strategies may differ widely across nations and regions and among individual reforestation companies. Tree planting is grounded in forest science, and if performed properly can result in the successful regeneration of a deforested area. Reforestation is the commercial logging industry's answer to the large-scale destruction of old growth forests, but a planted forest rarely replicates the biodiversity and complexity of a natural forest.[citation needed]

Because trees remove carbon dioxide from the air as they grow, tree planting can be used as a geoengineering technique to remove CO<sub>2</sub> from the atmosphere. Desert greening projects are also motivated by improved biodiversity and reclamation of natural water systems, but also improved economic and social welfare due to an increased number of jobs in farming and forestry.

Canopies in tropical and temperate forests can be important habitats for many animals and plants. A dense canopy cover will let little light reach the ground and will lower temperatures. The canopy protects the ground from the force of rainfall and makes wind force more moderate

#### OSERVATION

1. In the college premises there are number of trees which are maintained by the college.
2. College also took initiative of tree plantation with the help of students in the city area.

#### 4. PLASTIC AND PAPER FREE CAMPAIGN/ AWARENESS PROGRAMME

##### INTRODUCTION

As single used plastic is hazardous to the environment as it is once used cannot be recycled. Also paper is used in college for various purposes like student assignments, official works etc.

##### RECOMMENDATION

1. It is recommended that college should take plastic free campaign in the college.
2. It also recommended that college take initiative to lower the usage of paper in the college and possible make system digitalised.

##### Example of Plastic free campaign initiative/awareness programme







## 5. CLEANLINESS CAMPAIGN/ OTHER ENVIRONMENTAL, HEALTH SAFETY

### ACTIVITIES ETC





Oct 21, 2021 10:58:08 AM  
Altitude:139.7m  
Speed:2.5km/h  
DUPMC JALGAON KH

## REFERENCES AND STANDARDS

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3. Indian Green Building Council (IGBC), India
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9. Plastic Waste (Management and Handling) Rules, 2016, Government of India
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