



Criteria 7: Institutional Values and Best Practices
Key Indicator 7.1: Institutional Values and Social Responsibilities

- 7.1.2: The Institution has facilities and initiatives for**
- 1. Alternate sources of energy and energy conservation measures**
 - 2. Management of the various types of degradable and nondegradable waste**
 - 3. Water conservation**
 - 4. Green campus initiatives**
 - 5. Disabled-friendly, barrier free environment**

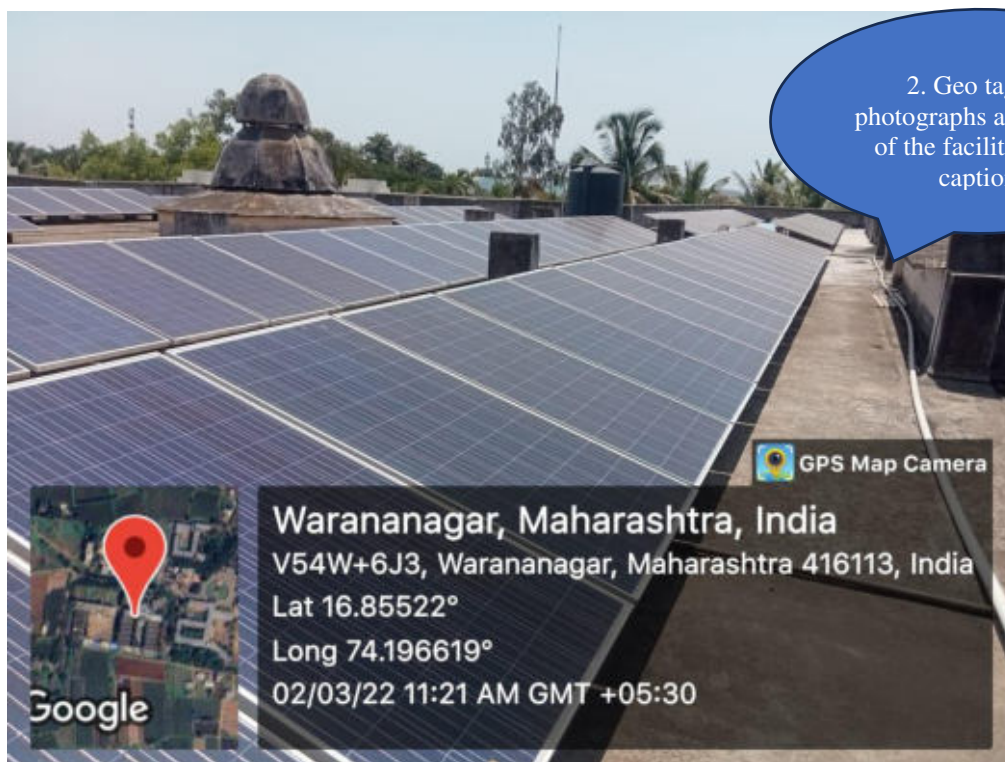


Criteria 7: Institutional Values and Best Practices
Key Indicator 7.1: Institutional Values and Social Responsibilities

1. Link to the policy documents of the institution.

<http://www.tkcpwarana.ac.in/uploads/naac/policies/Policy%20for%20Green%20Campus%20C%20Energy%2C%20Environment.pdf>

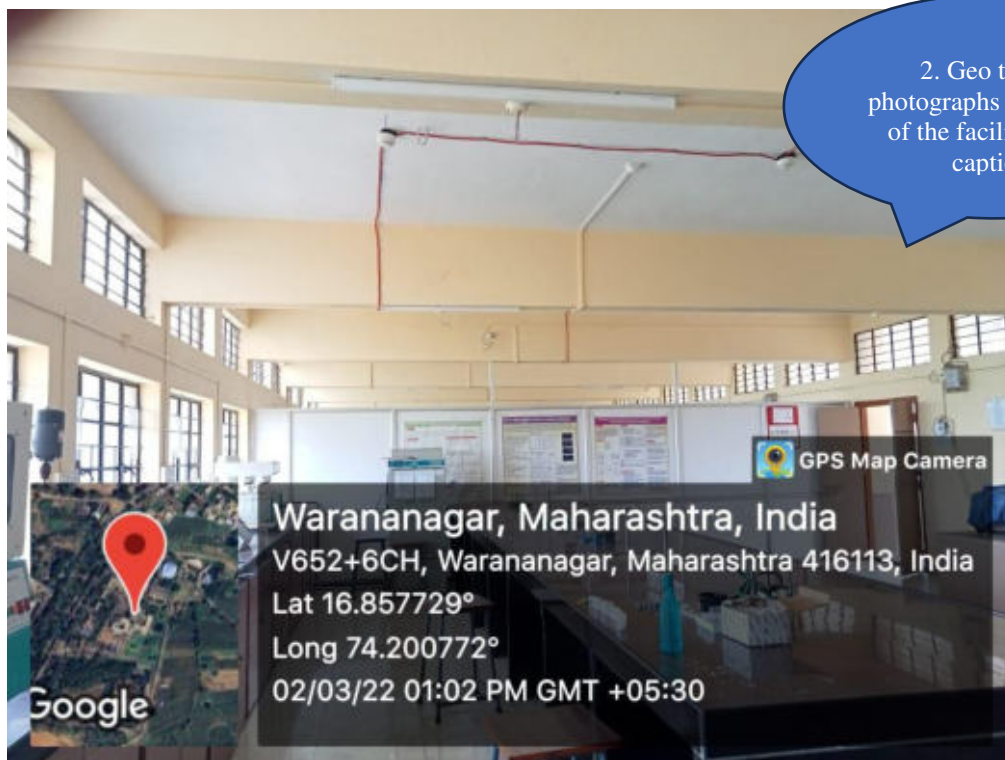
1. Alternate sources of energy and energy conservation measures



Solar Energy



Criteria 7: Institutional Values and Best Practices
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Use of LED bulb/ power efficient equipment



Criteria 7: Institutional Values and Best Practices
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2. Management of the various types of degradable and nondegradable waste

॥ स्वच्छतेचा ध्यास करा, आरोग्याचा मंत्र करा ॥
स्थापना : १/०४/१९६४

ग्रामपंचायत बहिरेवाडी

ता. पन्हाळा, जि. कोल्हापूर

- व्यसनमुक्ती गांव म्हणजे प्रगत गांव
- आडानी बाय डोक्याला ताप, आडानी आई घर वाया जाई.
- घरफाळा व पाणीपट्टी वेळेत भरून सहकार्य करा.
- पाणी जपून वापरा / बालविवाह टाळा.
- पाणी उकळून व गाळून पिणे आरोग्यास हितकारक.
- सन २०२१-२२ चा यशवंत ग्रामपंचायत पुरस्कार प्राप्त
- जन्म व मृत्युनोंद २१ दिवसांचे आंत प्रा. पं. कार्यालयात करा.
- आपला परिसर स्वच्छ ठेवा / आपले आरोग्य आपल्या हाती.
- घरोघरी वैयक्तिक शौचालय बांधा.
- एडस म्हणजे मृत्यू, / शुद्ध लहान सुख महान.
- लंटा मुक्त गांव.
- हगणदारी मुक्त गांव.

जावक क्र. _____ दि. 23/03/2023

CERTIFICATE OF BIO-WASTE

This is to certify that all types of solid, liquid, biochemical & biological waste generated at SWSM's Tatyasaheb Kore College of Pharmacy, Warananagar and due disposal of same is carried out by the arrangement made by Grampanchayat at Bahirewadi.

ग्रामसेवक
श्री.एन.एम. धोरेवत
ग्रामपंचायत, बहिरेवाडी

Certificate of Biowaste from Grampanchayat Bahirewadi



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Hazardous chemicals and radioactive waste management



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3. Water Conservation



2. Geo tagged photographs and videos of the facilities with caption.

Nature based wastewater Treatment System for composite Sewage (Reed Bed System) installed in campus/ open well recharge/ Waste water recycling



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Rain water harvesting



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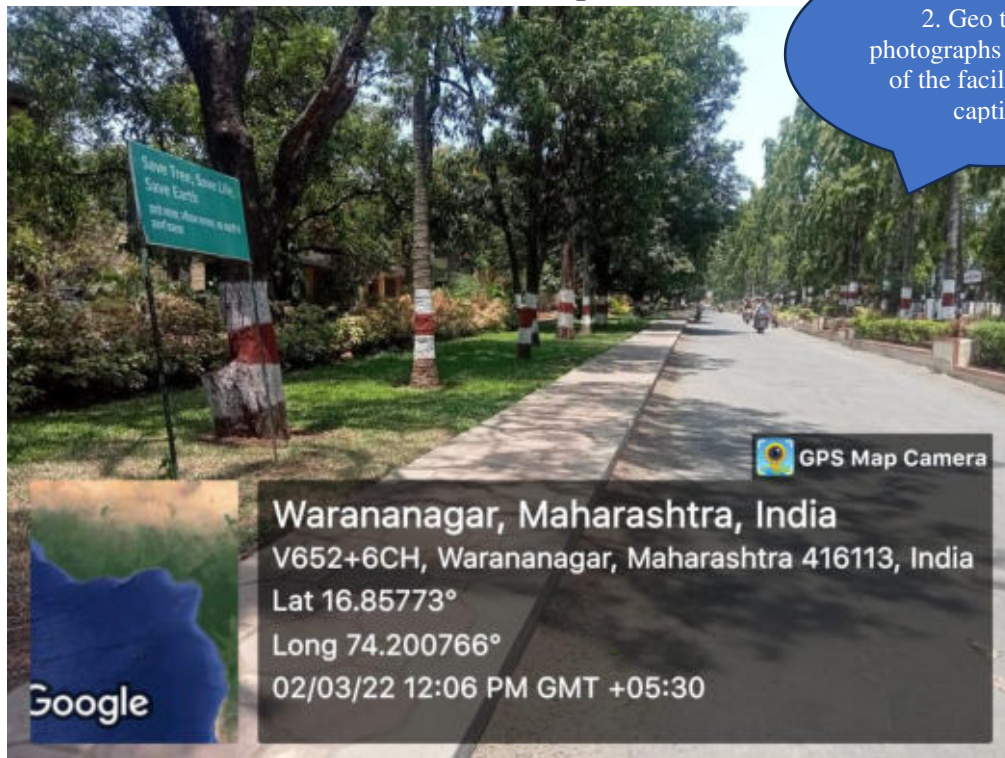


Water tanks of 5000 lit. capacity each.



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4. Green campus initiatives



Green campus slogan



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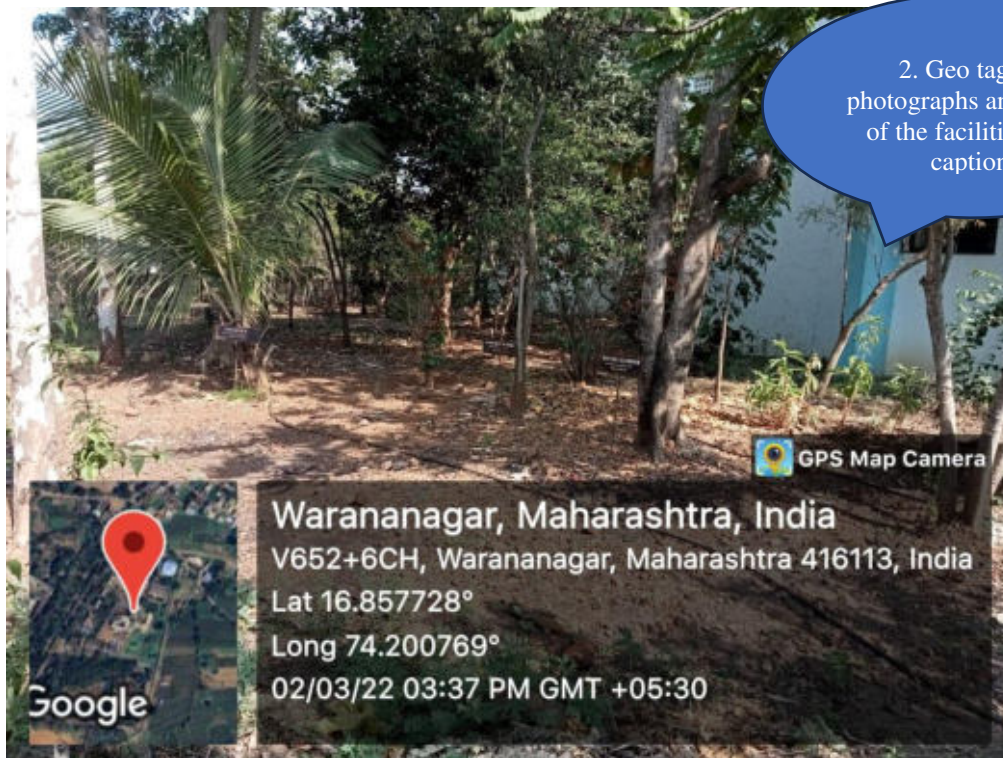


2. Geo tagged photographs and videos of the facilities with caption.

Tree plantation in memory of visit of Sanofi India Ltd. HR team for Pool Campus Drive held on 11th January, 2019



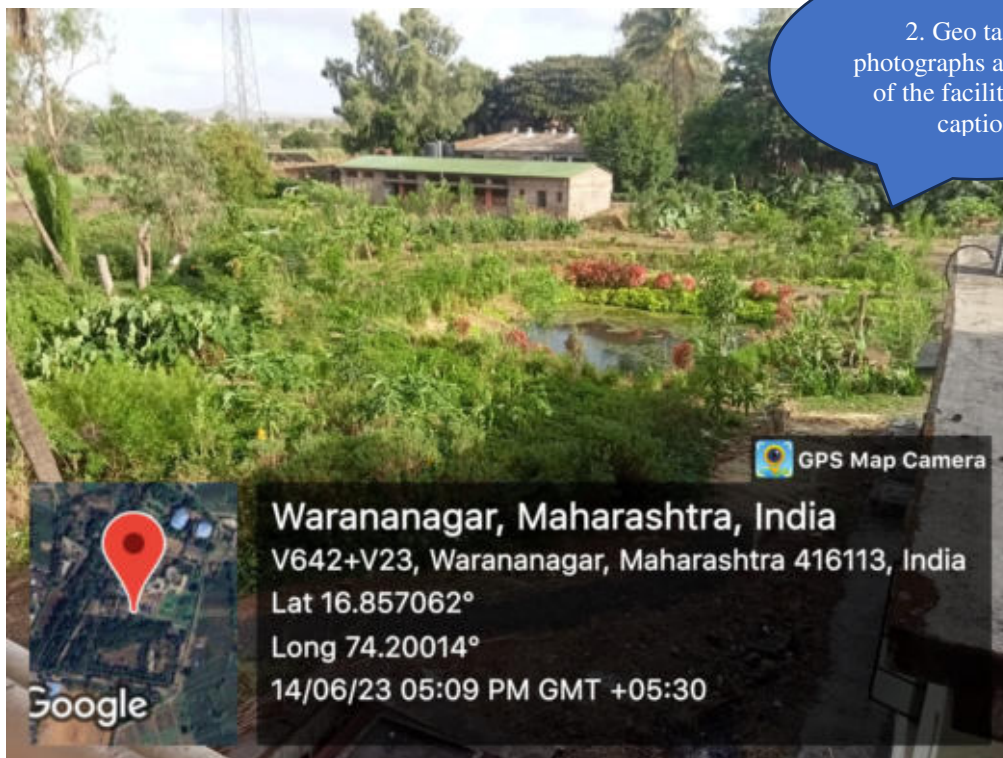
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Botanical Garden



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2. Geo tagged photographs and videos of the facilities with caption.

Landscaping with trees and plants



Criteria 7: Institutional Values and Best Practices Key Indicator 7.1: Institutional Values and Social Responsibilities

4. Photographs of
Ramps/ rails/lift/wheel
Chair/signage board
/Toilet/ software etc.



Plants purchased from Savitribai Phule University, Pune for herbal garden at HEI



Criteria 7: Institutional Values and Best Practices
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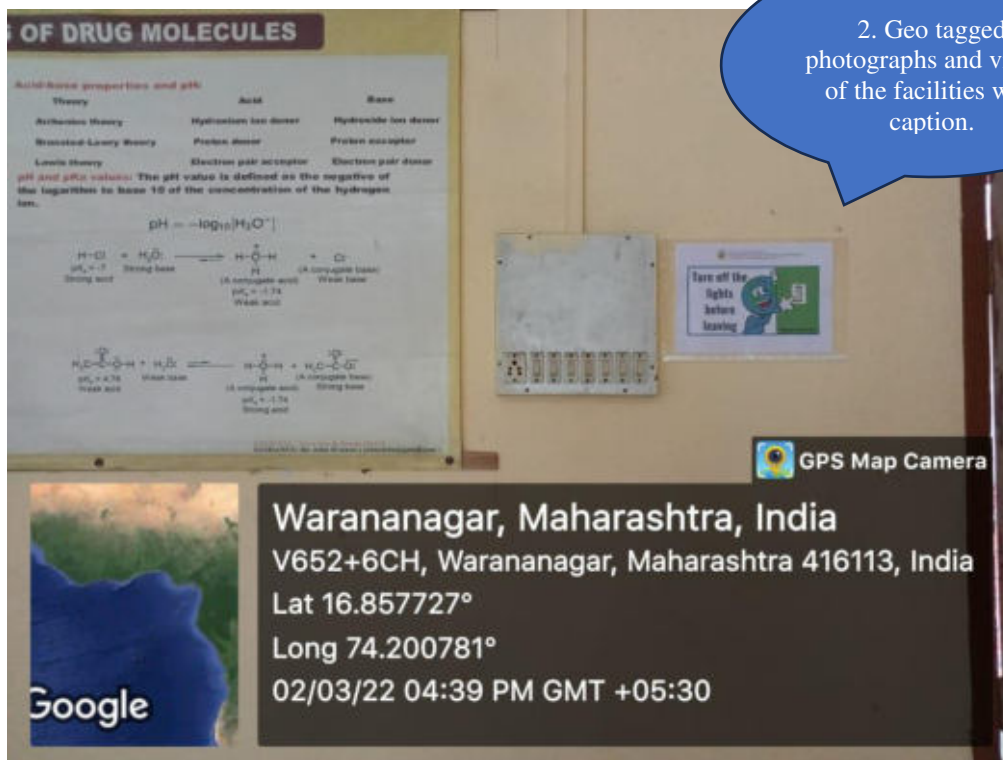
3. Bills for the purchase of equipment for the facilities created under this metric.



Beyond campus tree plantation during NSS Camp – 20th to 24th January, 2020



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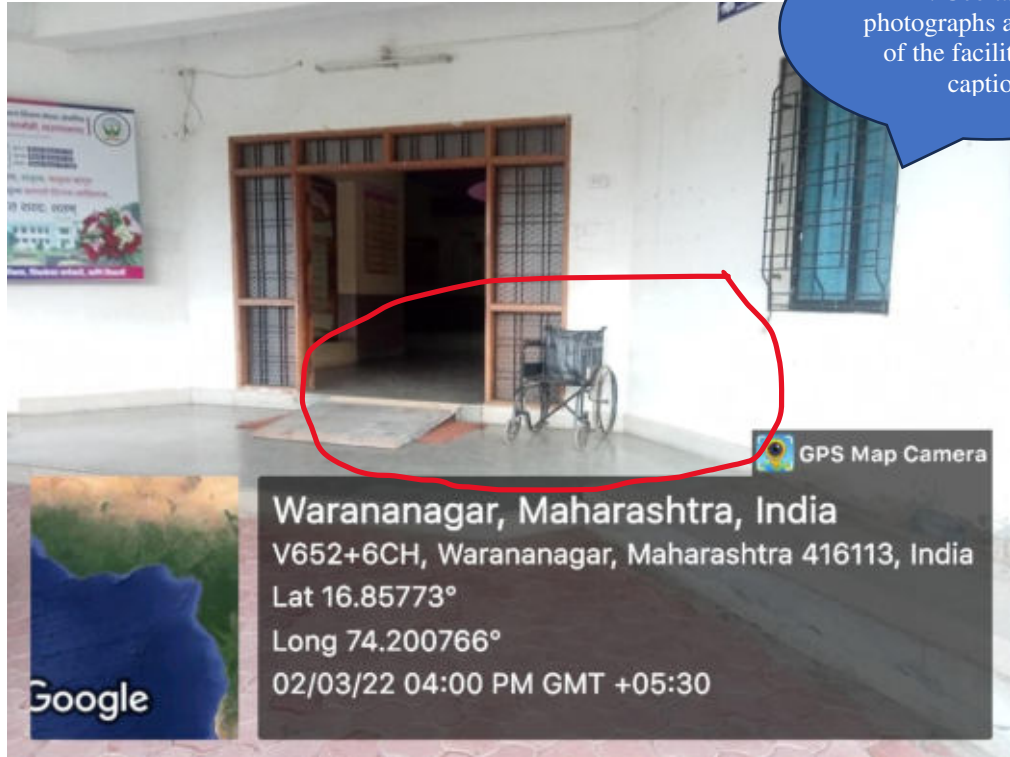
Save Energy Signage



Criteria 7: Institutional Values and Best Practices
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5. Disabled friendly, barrier free environment

1. Built environment with ramps/ lifts for easy access to classrooms



Ramp and wheel chair for disabled person



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Pedestrian friendly pathways



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3. Bills for the purchase of equipment for the facilities created under this metric.

TAX INVOICE											
SHRI WARANA VIBHAG SAHAKARI GRAHAK MANDAL LTD						Customer : S24T0116 TATYASAHEB KORE COLLEGE OF B. PHARMACY					
A.P.WARANANAGAR TAL.PANHALA DIST.KOLHAPUR 416113						GSTIN : 27AAAAA0598Q125 POS: MAHARASHTRA					
Invoice No: 11120447206			Date: 31-Mar-2022			GST No :			State Code : 27		
Sr No	Description of Goods	HSN Code	Qty	Rate	BRate	Total	CGST		SGST		Total With GST
							%	Amt	%	Amt	
1	SLIMLINE CDL TUBE SET	9405	18.00	235.00	209.82	3,776.76	6.00%	226.61	6.00%	226.61	4,230.00
2	FAN REGULATER	8414	2.00	100.00	84.75	169.50	9.00%	15.26	9.00%	15.26	200.00
3	16A SP MCB	8536	2.00	250.00	211.86	423.72	9.00%	38.13	9.00%	38.13	500.00
4	10*8 SINGAL BOARD SUNMIKE	8538	2.00	85.00	72.03	144.06	9.00%	12.97	9.00%	12.97	170.00
5	JUNCTION BOX 2 VE	8536	3.00	10.00	8.47	25.41	9.00%	2.29	9.00%	2.29	30.00
6	ANCHOR PENTA 6A PILOT 2 PLATE	8536	3.00	18.00	15.25	45.75	9.00%	4.12	9.00%	4.12	54.00
7	ANCHOR PENTA 6A 1 WAY DELUXE	8536	3.00	16.00	13.56	40.68	9.00%	3.66	9.00%	3.66	48.00
8	ANCHOR 16 AMP THREE PIN TOP	8536	4.00	76.00	64.41	257.64	9.00%	23.19	9.00%	23.19	304.00
Total			37.00			4,883.52		326.23		326.23	5,536.00
₹ (In Words) : Nine Thousand Eight Hundred Ninety Four						Discount		0.00			
Declaration : We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct. or-1142 10.3.2022 Navnath patil						Cash		0.00			
						Net Amt		9,894.00			
						RE WARANA VIBHAG SAHAKARI GRAHAK MAND		Authorised Signatory			

Software By Retailware : 9890002875

*Original for Recipient/ Duplicate for Supplier *



Criteria 7: Institutional Values and Best Practices

Key Indicator 7.1: Institutional Values and Social Responsibilities

3. Bills for the purchase of equipment for the facilities created under this metric.

TAX INVOICE											
SHRI WARANA VIBHAG SAHAKARI GRAHAK MANDAL LTD						Customer : S24T0116					
A.P. WARANANAGAR TAL. PANHALA DIST. KOLHAPUR 415113						TATYASAHEB KORE COLLEGE OF PHARMACY B PHARM					
GSTIN : 27AAAA50598Q1ZS POS: MAHARASHTRA						COLLEGE CAMPUS PANHALA					
						WARANANAGAR Mobile No. 9720000000					
Invoice No: 11230129672			Date: 9-Nov-2022			GST No :		State Code : 27			
Sr No	Description of Goods	HSN Code	Qty	Rate	BRate	Total	CGST %	CGST Amt	SGST %	SGST Amt	Total With GST
1	48" CROMPTN CELLING FAN	8518	4.00	2,200.00	1,864.41	7,457.84	9.00%	671.19	9.00%	671.19	8,800.00
2	STUDIOMASTER XR 50WAL	8518	2.00	7,600.00	6,440.68	12,881.36	9.00%	1,159.32	9.00%	1,159.32	15,200.00
3	16 HI FLOW WALL EAN CROMPTON	8518	4.00	2,075.00	1,758.47	7,033.89	9.00%	633.05	9.00%	633.05	8,300.00
4	20 VAT LED TUBE SET	8538	5.00	190.00	161.02	805.10	9.00%	72.46	9.00%	72.46	950.00
Total			15.00			28,177.98		2536.02		2536.02	33,250.00
(In Words) : Thirty Three Thousand Two Hundred Fifty						Discount		0.00			
Declaration : We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct. or-1279-4.11.2022 navnath patil						Cash		0.00			
						Net Amt		33,250.00			
						SHRI WARANA VIBHAG SAHAKARI GRAHAK MANDAL LTD					
						Authorized Signatory					

Software By Retailware : 9890002875

*Original for Recipient/ Duplicate for Supplier



Criteria 7: Institutional Values and Best Practices

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3. Bills for the purchase of equipment for the facilities created under this metric.

New Credit

साधकान / सीज

TAX INVOICE

SHRI WARANA VIBHAG SAHAKARI GRAHAK MANDAL LTD
 A.P. WARANANAGAR TAL. PANHALA DIST. KOLHAPUR 416113
 GSTIN : 27AAAAS0598Q125 POS: MAHARASHTRA

Customer : S24T0116
 TATYASAHEB KORE COLLEGE OF PHARMACY B PHARI
 COLLEGE CAMPUS PANHALA
 WARANANAGAR Mobile No. - 7288955579

Invoice No: 11230172750 Date: 26-Jan-2023 GST No: State Code: 27

No	Description of Goods	HSN Code	Qty	Rate	Amount	Total	CGST		SGST		Total With GST
							%	Amt	%	Amt	
1	0.5W (LF) RULB PINK	9405	2.00	45.00	90.00	76.28	9.00%	6.87	9.00%	6.87	90.00
2	EVEREADY LED BLB	9405	4.00	95.00	380.00	322.04	9.00%	28.98	9.00%	28.98	380.00
3	0.5W										
3	TAFARJA TESTER	8205	1.00	57.00	57.00	48.31	9.00%	4.35	9.00%	4.35	57.00
Total			7.00			446.03		40.20		40.20	527.00

₹ (In Words) : Five Hundred Twenty Seven Only

Declaration: We declare that this invoice shows the actual price of the goods described and that all particulars are true and correct.

Cash 0.00

Net Amt 527.00

Authorized Signatory

Software by: Rataware : 961002275

*Original for Recipient/ Duplicate for Supplier



Criteria 7: Institutional Values and Best Practices
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3. Bills for the purchase of equipment for the facilities created under this metric.

Approved by PCL AICTE New Delhi
 Recognized by Govt. of Maharashtra
 Affiliated to Shivaji University, Kolhapur (SUK)

Shree Warana Vibhag Shikshan Mandal's
TATYASAHEB KORE COLLEGE OF PHARMACY
 Warananagar, Tal: Panhala, Dist: Kolhapur, 416 113 (M.S.)
 Phone: (02328) 223501, 223526, Fax: 223501; Website: www.tkcpwarana.ac.in
 Email: tkcp.pc@unishivaji.ac.in

NIRF 2017 & 2018: 51 to 75 RankBand

Dr. John Dsouza
Principal

Hon. Dr. Vinayji V. Kore (Snavkar)
President

Friday, August 20, 2021

To,
The Hon'ble President,
 Shree Warana Vibhag Shikshan Mandal,
 Warananagar

Subject: Details of travelling expenditure incurred to get medicinal plants...

Respected Sir,
 With reference to the above cited subject, we are herewith submitting detail expenditure incurred to get medicinal plants for our college herbal garden from Savitribai Phule University, Ganeshkhind, Pune on 14/08/2021 by four wheeler (MH23-AD-9441). The expenditure are tabled as below:

Sr. No.	Particulars	Amount in Rs
1.	Travelling from Warananagar – Pune – Warananagar (490km x Rs.11.00)	5390.00
2.	Breakfast	120.00
3.	Lunch	460.00
4.	Medicinal Plants (93 Plants x Rs.5.00)	465.00
Total		6435.00
Rs. Six Thousand Four Hundred Thirty Five Only		

Sanction your benevolent permission.
 Thanking You.

Mr. V. A. Pharne
 Dr. M. C. Mahantesh
 Coordinator

Dr. J. Dsouza
 Principal

Hon'ble Administrative Officer
 Shree Warana Vibhag Shikshan Mandal,
 Warananagar

Sanctioned Accountant

Sanctioned / Not Sanctioned

Hon'ble President
 Shree Warana Vibhag Shikshan Mandal
 Warananagar



Criteria 7: Institutional Values and Best Practices
Key Indicator 7.1: Institutional Values and Social Responsibilities

VOUCHER V.No. _____

Head of Account _____ Date: 9/3/20

Tatyasaheb Kore College of Pharmacy, Warananagar

Paid to Shri एल.जी.एस. इन्फार्मेशन टेक्नॉलॉजी

by Cash / Cheque, as per following particulars :

Particulars	Amount	
	Rs.	Ps.
ओपची वस्तुची आवाजोबाही सामग्रीची फक्त लिझापीट फक्त अर्थ २११९ एड्रेस गवळण कोठे. (गवळण क्र. १११२३-९५५१)		
(४२०४९९)	५३९०	-
Received Rs. <u>५३९०</u> (Rs. <u>पाच हजार तीनशे नव्वे</u> <u>२१९</u>) Only) as per above particulars	५३९०	-

Accountant _____ O.S. / Registrar [Signature] Principal [Signature]

3. Bills for the purchase of equipment for the facilities created under this metric.



Criteria 7: Institutional Values and Best Practices

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3. Bills for the purchase of equipment for the facilities created under this metric.

RCFC-WR/11580

**FOR THE CANDIDATE
(TO BE PRESENTED AS RECEIPT)**

Bank of Maharashtra
Branch: Union Campus only
Paid in to the Credit of "SAVITRIBAI
PHULE PUNE UNIVERSITY"

The sum of Rs. 4651-
Rupees (in words) Four Thousand and sixty five only.

PARTICULAR	Amount Rs.
Other Advance	410001
Festival Advance	410002
Medical Advance	410003
Sunday Receipt	112004
FINE	112005
RCFC-WR	110225 4651-
TOTAL	

NAME OF THE CANDIDATE
(In Full, in BLOCK Letters) TATYASAHEB KORE
COLLEGE OF PHARMACY
WARANANAGAR
PANHALA, KOLHAPUR
PUNE
AUG 2021
ASHA RECEIVED

Receiving Cashier
Seal of the Bank



Criteria 7: Institutional Values and Best Practices Key Indicator 7.1: Institutional Values and Social Responsibilities

UNDERTAKING FOR QPMs OF MEDICINAL PLANTS REC
RCFC-WR CENTRE

We Tatyasaheb Kore college of Pharmacy have received saplings of medicinal plants from RCFC-WR Centre on date 14/08/2021.

We hereby give undertaking to follow the conditions mentioned below-

1/We will plant the saplings of medicinal plants in my/our home/ agriculture field/ botanical garden/ herbal garden/ institute having survey number (if applicable) 6 in the area of 4.57 acre/hectare at place Warananagar Taluka Panhala District Kolhapur

2) I/We will not resell the saplings received from RCFC center to anyone on any condition.

3) I/We will take care of the planted saplings and maintain their growth till harvesting/maturity.

4) I/We will provide data/report about survival/mortality of the saplings planted in my/our area to RCFC-WR as and when require.

5) I/We will give full cooperation to RCFC-WR Centre when the officials will visit the plantation site.

6) I/We will maintain the planted, cultivated medicinal plants in good and healthy conditions.

7) I/We are fully responsible for collecting the saplings from the allotted nursery up to my/our destination.

8) I/We if fail to obey the above mentioned conditions given in undertaking, the officials of RCFC-WR can take legal action against me/us. The jurisdiction of the court of Pune is acceptable to me.

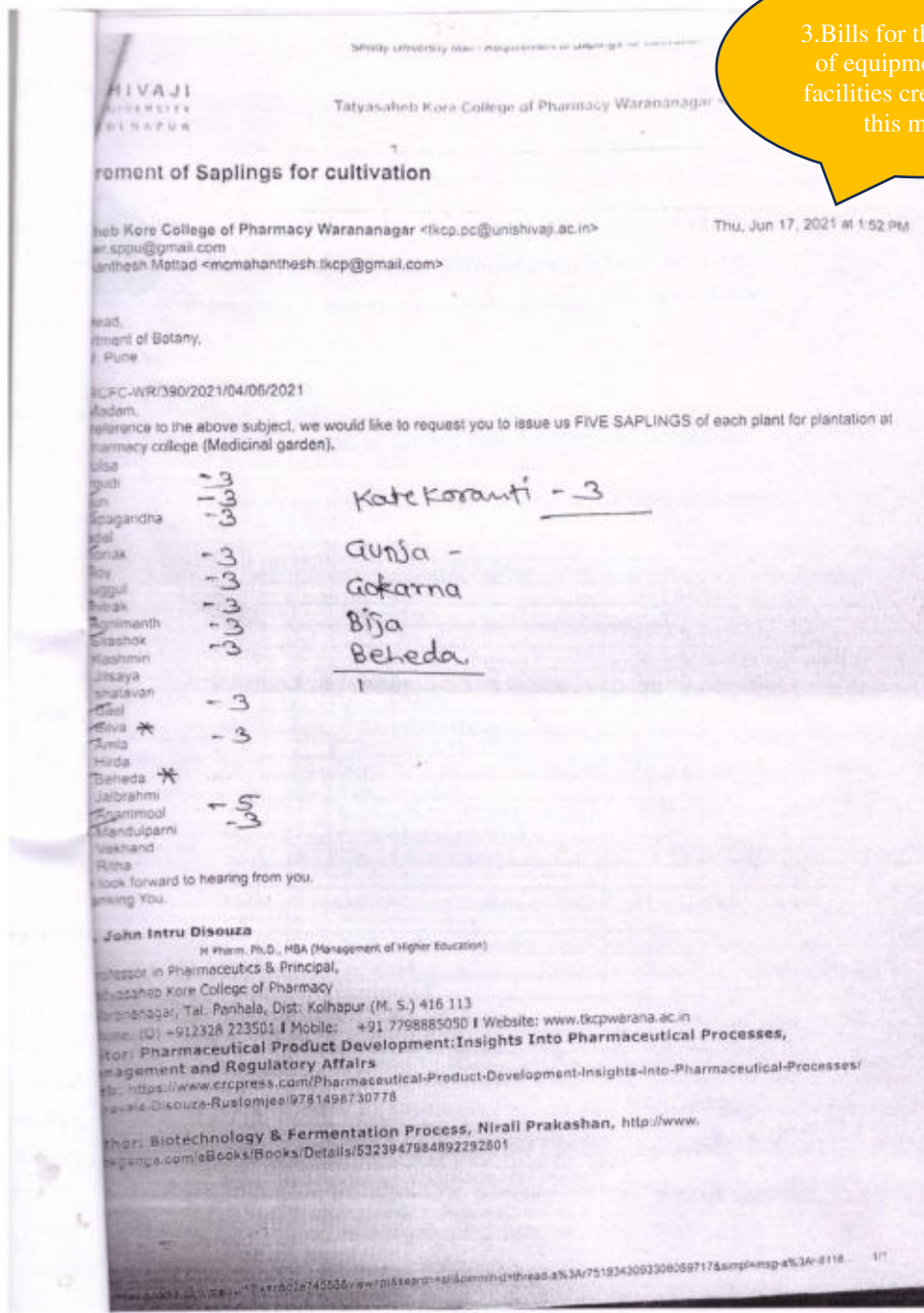
Signature: [Signature]
Name: Tatyasaheb Kore college of pharmacy
Address: Warananagar, Panhala, Kolhapur
Contact No: 7798885050
Adhar No: -
Place: Kolhapur
Date: 14/08/2021

3. Bills for the purchase of equipment for the facilities created under this metric.



Criteria 7: Institutional Values and Best Practices Key Indicator 7.1: Institutional Values and Social Responsibilities

3. Bills for the purchase of equipment for the facilities created under this metric.





Criteria 7: Institutional Values and Best Practices

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3. Bills for the purchase of equipment for the facilities created under this metric.

Regional Cum Facilitation Centre- Western Region (RCFC-WR)
(National Medicinal Plants Board, Ministry of AYUSH, GOI)
Department of Botany, SavitribaiPhule Pune University, Pune

To
The Regional Director,
RCFC-WR, SPPU, Pune

Sub: Requirement of QPMs of Medicinal Plants for cultivation/ conservation.

Dear Sir,

I require saplings of following medicinal plants from your centre for cultivation/ conservation in my field/ farm.

Sr.No.	Name of Saplings	Quantity
1	Nirouli	4+2
2	Artun	4+2
3	Sarpagandha	4+2
4	Shonak (retu)	4+2
5	Giloy	4+2
6	Chitrak	4+2
7	Agnimantha	4+1
8	Shita-ashok	4+1
9	Bael	4+1
10	Amla	4+1
11	Baheda Anantmol	5+1
12	Mandukparni	4+1
13	Katekoranti	4+1
14	Adulsa	4
15	Kunkuphal	4
16	Tamalgoti	2
17	Raktarohida	3
18	Salvan	3
19	Pithvan	3
20	Gunja	2

Thereby signing the undertaking given on the backside page of this application.

Thanking You,
Yours faithfully,

Sign:
(Prishvagnath A. Phorne)
P.T.O (Undertaking)



Vasanti Engineer's and Consultant's Laboratory Services



ISO 9001:2015

vasanti_eclabs@gmail.com

9373421225

Saudamini Building, Behind Hotel Ambassador, Vishrambag Sangli, 416415



No. VECL / GAC / I / 2021-22

Date : 08/03/22

Certificate Green Audit

This is to certify that "Vasanti Engineer's And Consultant's Laboratory Services" has conducted Green audit "Shree Warana Vibhag Shikshan Mandal's Tatyasaheb Kore College Of Pharmacy, Waranagar " in academic year 2021-22. The green audit involves initiatives planning efforts activities implemented in college campus like environmental friendly, environmental promotional activities, water and waste water management, rain water harvesting, tree plantation, energy conservation, paper less technology and various environmental awareness activities. This Green audit is also aimed to assess impact of green initiatives for maintenance of the campus eco-friendly.

The college has submitted necessary data and credential of scrutiny. The activities and measures carried out by the college have been verified on the basis of previous recommendations and were found to be satisfactory. The efforts taken by the management, faculty and students towards environment are highly appreciated.

Green/Env Audit In charge

(S.S.Patil)



Authorized Sign

(V.S. Sadamate)

(CEO)/Auditor

eSign

Signed by: John Intru
Disouza
Reason: NAAC
Location: Warananagar, India
Date: 02-Jun-2023 (04:48
PM)



Vasanti Engineer's and Consultant's Laboratory Services



ISO 9001:2015

vasanti_eclabs@gmail.com

9373421225

Saudamini Building, Behind Hotel Ambassador, Vishrambag Sangli, 416415



No. VECL / GAC / I / 2021-22

Date : 08/03/22

Certificate Green Audit

This is to certify that "Vasanti Engineer's And Consultant's Laboratory Services" has conducted Green audit "Shree Warana Vibhag Shikshan Mandal's Tatyasaheb Kore College Of Pharmacy, Waranagar " in academic year 2021-22. The green audit involves initiatives planning efforts activities implemented in college campus like environmental friendly, environmental promotional activities, water and waste water management, rain water harvesting, tree plantation, energy conservation, paper less technology and various environmental awareness activities. This Green audit is also aimed to assess impact of green initiatives for maintenance of the campus eco-friendly.

The college has submitted necessary data and credential of scrutiny. The activities and measures carried out by the college have been verified on the basis of previous recommendations and were found to be satisfactory. The efforts taken by the management, faculty and students towards environment are highly appreciated.

Green/Env Audit In charge

(S.S.Patil)



Authorized Sign

(V.S. Sadamate)

(CEO)/Auditor

Green Audit (2021-22)

GREEN AUDIT REPORT

(A.Y 2021-22)



Shree Warana Vibhag Shikshan Mandal's
**TATYASAHEB KORE COLLEGE OF PHARMACY,
WARNANAGAR**



ISO9001:2015

Prepared by

**Vasanti Engineer's and Consultant's Laboratory
Services**



Address: Saudamini Building, Second floor, Behind Hotel Ambassador, Sangli Miraj
Road, Vishrambag, Sangli, Taluka- Miraj, Dist- Sangli 416415
Phone : 91-9373421225 **Email:** vasanti_eclabs@gmail.com

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Green Audit (2021-22)

I. ACKNOWLEDGEMENT

Vasanti Engineer's and Consultant's Laboratory Services Green Audit Team thanks the management "Shree Warana Vibhag Shikshan Mandal's Tatyasaheb Kore College Of B-Pharmacy, Waranagar" for assigning this important work of Green Audit .We appreciate the co-operation to our team for completion of study.

Our special thanks are due to:

Principal of the college - Dr. John Disouza

IQAC Member- Mr. Kiran Patil

Environment Expert at the campus – Mrs. Kimaya Patil

Green Audit coordinator – Prof. Pritesh Lole

Teaching & Supporting Staff of College- Prof. Popat Kumbhar, Mr. Vishwanath Pharne

For giving us necessary inputs to carry out this very vital exercise of Green Audit. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.



2. DISCLAIMER:

Vasanti Engineer's and Consultant's Laboratory Services green Audit Team has prepared this report for "Shree Warana Vibhag Shikshan Mandal's Tatyasaheb Kore College Of B-Pharmacy, Waranagar" based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by audit team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Report by Auditor:

Vasanti S Sadamate

V. Sadamate
08/03/22

Supriya S Patil

S. Patil

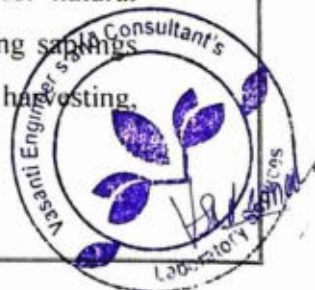


3. CONCEPT

The green audit process was began in the 1970s with an intention of identifying the activities carried out in a given institution or company. Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyse environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. The audit also seeks to identify possible means and methods to save investments, enhance work quality, improve health and safety of their employees, reduce liabilities and reduce the rate of environmental pollution. A continuous process of such audit might result in maintaining the quality of these aspects within the premises of any organisation.

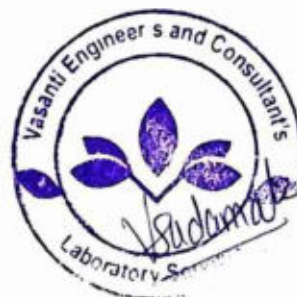
3.1 About Criteria 7 of NAAC

Universities are playing a key role in the development of human resources worldwide. Higher education institutes campus run various activities with the aim to percolate the knowledge along with practical dimension among the society. Likewise, different technological solutions related to the environment are also provided by the higher education institutes. Different types of evolutionary methods are used to assess the problem concerning the environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit, etc. National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier. Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, no vehicle day, Rainwater harvesting,



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etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.



4.INTRODUCTION

- "Shree Warana Vibhag Shikshan Mandal, Warananagar" Warana is a name that distinctively stands ahead in Co-operative Movement and field of Education. It is the name associated to sugar, milk, malted food, paper, and banking & consumer stores. Just 50 years ago Warananagar was an area deprived of all advancements, especially, in the field of education. Today one is astonished to see how this barren land is converted into an exuberating industrial & educational complex. It is still a green valley that smilingly welcomes all.
- The man who had brought about this metamorphosis is late Hon. Shri V. A. alias Tatyasaheb Kore. He sacrificed his personal joys and stood determined to do the best and turned this land, which was once full of dacoits, into a prosperous township, a paradise in true sense. He was born on 17th Oct.1914 as a son of a farmer, in small village Kodoli. Being the eldest in the family, he had to shoulder the family responsibilities. He actively participated in the Quit India Movement of 1942. He was closely associated to late Shri Yashwantrao Chavan, the former Deputy Prime Minister of India. Late Hon. Shri Tatyasaheb Kore rightly realized the need of providing education to the kit and kin of the farmers in rural area. He established Shree Warana Vibhag Shikshan Mandal, in 1964, since then the Shikshan Mandal took upon itself the need based endeavor of making education accessible to the poor and deserving.
- With sprawling campus of 100 acres, the Mandal houses Marathi and English Kindergartens, residential High-school, English Academy, Military Academy, Pharmacy College for Degree & Diploma, Jr. and Sr. Colleges of Arts, Commerce and Science, Institute of Engineering and Technology, Industrial Training Institute and well furnished hostels for boys and girls, quarters for teachers and non teaching staff.



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➤ Vision

- Advancing contemporary educational approaches to student learning. Integrating traditional knowledge and modern sciences with professional disciplines by continually enhancing the campus environment.

➤ Mission

- To excel in professional pharmacy education, through student centered learning, scholarly research and service to society.



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4.1 GREEN AUDIT EXECUTIVE SUMMERY REPORT

1. BRIEF ABOUT COLLEGE:

- Courses offered by the College:

SR No	Courses UG/PG	About College
1	Name of the Institution:	“Shree Warana Vibhag Shikshan Mandal’s TatyaSaheb Kore College Of B-Pharmacy, Waranagar”
2	Courses UG	1
3	No of students	Male-128 Female-166
4	No of teachers	Male-18 Female-08
5	No of Non-teaching staffs	Male-15 Female-05
6	Total campus area	2.5 acres
7	Girls common room	1
8	Garbage collection bins	20
9	Labs	15
10	Class rooms	06

4.2. ENVIRONMENTAL POLICY OF THE COLLEGE :

“Shree Warana Vibhag Shikshan Mandal’s TatyaSaheb Kore College Of B-Pharmacy, Waranagar” is committed to develop its campuses and to promote Sustainable Development by creating awareness with the need for maintaining greenery in the campus for sustainable ambience. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the nearby community and wherever possible.



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4.3 ENVIRONMENTAL POLICY:

College teaching and Non-teaching staff of “Shree Warana Vibhag Shikshan Mandal’s Tatyasaheb Kore College of B-Pharmacy, Waranagar” is committed for carrying out its activity for sustainable development. This we will achieve through the following:-

- ✓ To protect and nurture the Flora and Fauna on the campus
- ✓ To maintain green campus.
- ✓ To reuse of plastics bottles and tins for plantation.
- ✓ Eco-friendly campus
- ✓ Green environment and clean campus
- ✓ Solid Waste Management
- ✓ Renewable Energy



5. OBJECTIVES AND SCOPE

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

GOALS OF GREEN AUDIT

- To assess environmental performance.
- To improve environmental standard
- To sustainable use of natural resources
- To develop responsibility about environment
- The objective of carrying out Green Audit is securing the environment and cut down the threats posed to human health.
- To make sure that rules and regulations are taken care of environment.
- To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost
- To suggest the best protocols for adding to sustainable development

BENEFITS OF GREEN AUDIT

- Would help to prepare plan to project the environment.
- Recognize the cost saving methods through waste minimization and management.
- Point out the prevailing and fourth coming impacts on environment.
- Ensures conformity with the applicable laws.
- Empower the organizations to frame a better environmental performance.
- It portrays a good image of an institution which helps building better relationships with the group of interested parties. Promotes the alertness for environmental guidelines and duties.



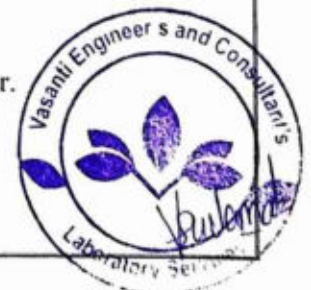
6. CONSTITUTION FOR GREEN AUDIT

In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarise the present status of environment management in the campus:

- ✓ Water conservation and management
- ✓ Waste Management
- ✓ Air Pollution Management
- ✓ Noise Pollution And Illumination Management
- ✓ Energy Use And Conservation
- ✓ Green Belt Area & Bio-Diversity

GOOD POINTS OBSERVED

- College celebrated Swacha Bharat Abiyan clean and green campus premises through NSS.
- College has waste water treatment process and reuse water for gardening purpose.
- College has formed the team of faculty and student which works to maintain biodiversity on the campus and also participates in preventing pollution in society through various drives
- College has prepared Green environmental policy and has taken efforts for sustainable development on the college campus. .
- College has formed the team of faculty and student which works to maintain biodiversity on the campus and also participates in preventing pollution in society through various drives.
- Environment awareness trainings and workshop for faculty and students.
- College cleaning activity twice in day.
- Various tree plantation programs are being organized at college campus and surrounding villages through NSS unit.
- College has to install drip and sprinkling irrigation system to save water.



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- College has conduct tree plantation programme twice in year.
- College faculty and students participated in different environmental awareness programme.

MAJOR RECOMMENDATIONS

- To establish and implement the Water Conservation and Management Plan as per Environment Protection Act 1986.
- PUC certificate for all the vehicles entering the campus to be made mandatory and to be checked by security.
- Display boards for switching off the taps to be put on at appropriate place.
- Display boards for switching off the switch boards to be put on at appropriate place.
- Automatic Leak detection systems for conservation of water.
- To provide incineration system for sanitary napkins.
- To provide dustbin facility for solid waste at appropriate place.
- Display boards for environmental awareness to be put on at appropriate place.
- Display the name of plants.
- Display boards in the library and other places for awareness to maintain silence in the college.
- To provide rain water harvesting system at institute.
- To use maximum no of LED tubes and bulbs.
- To provide solar street light
- To provide Composting pit at institute.



7. ANALYSIS OF GREEN PRACTICES

7.1 WATER CONSERVATION AND MANAGEMENT:

Water is a valuable natural resource for all living organisms. It is freely available depending on the climate and topographic features of a region. Although water is natural freely available but portable (drinkable) water is not available freely for human consumption. In our planet 70% area is covered by water but only 3% of it is fresh water. Around 1.1 billion people of the world face water crisis. Water pollution and wastage plays a vital role in water crisis. Water contaminations are taking place at an alarming rate. Drinking or using contaminated water leads to many diseases or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease. It is also important to conserve protect and manage the water resources availability and usage so that it is sustainably used. Water auditing is conducted for the evaluation of facilities of raw water intake and determining the facilities for water treatment and reuse. A water audit is an on-site survey and assessment to determine the water quality, use and hence improving the efficiency of its use.

- **USES AND MANAGEMENT**

- **SOURCE OF WATER:**

SR. NO.	PARAMETERS	RESPONSE
1	Source of water	River
2	Water reserve /Storage tank	04
3	Capacity of tank	5000lit

- **WATER USERS IN CAMPUS :**

SR No.	Person in different section	Strength (No. of person)
1	Staff	31
2	Non teaching Staff	30
3	Visitors	25



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The visitors of the College vary with respect to different activities conducted in the College campus. During admission and different competitive exam conducted in the college campus.

QUANTITY OF WATER USED IN DIFFERENT SECTIONS OF THE CAMPUS

Sr. No.	Sections	Water Use (Litter/day)
1	Academic building	39654
3	Canteen	4000
4	Urinals and Toilets	13680
6	Laboratories	1500
7	Garden	2000
8	Drinking	684
9	Hostel	9690
11	Leakage	2000



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WATER CONSUMPTION IN DIFFERENT ACTIVITY IN COLLEGE CAMPUS

Activity	Water used per activity (in Litter)	No. of times Activity performed in a day	Average water used Person/Day	No. of people using water	Total water consumption per Day (L)
Hand and face wash	4-6 L	4	16-24L	380	7600
Drinking Water	0.2-0.4L	6	1.2-2.4L	380	684
Toilet Flush	8-10L	4	32-40L	380	13680
Bath	30-40 L	1	30-40 L	34	1190
Cooking & Washing In canteen	150-250L	2	300-500L	10	4000
Cooking & Washing Hostel	350-450L	2	700-900L	10	8000
Cloth Washing	100-200L	1	100-200L	30	4500
Total					39654



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- **MAJOR OBSERVATIONS IN REGARD OF WATER USAGES AND CONSERVATION PLAN**

1. Drip irrigation and sprinklers are used for watering the garden. The garden is also watered with water pipe, two times a day for 1.5 hours each time.
2. Hazardous liquid waste disposed by authorised agency.

- **RECOMMENDATIONS**

College administration may consider theses on top priority:-

- ✓ To establish and implement the Water Conservation and Management Plan as per Environment Protection Act 1986
- ✓ The water Conservation Awareness Program to be conducted on World Water Day on 22nd March every year
- ✓ Display boards for switching off the taps to be put on at appropriate place
- ✓ Automatic Leak detection systems for conservation of water.
- ✓ 80 % of total quantum of ground water extracted shall be recharged to ground either by Artificial Recharge Structures within the college premises
- ✓ Special Internal Water Audit to be conducted quarterly.
- ✓ To install Rain water harvesting system to use for gardening and agricultural purpose.



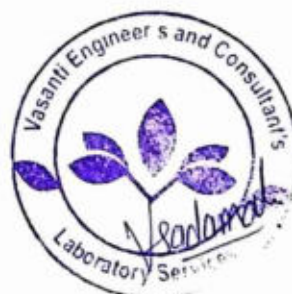
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7.2 WASTE MANAGEMENT:

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, glass, dust etc. reuse and recycling. Furthermore, solid waste often includes wasted material resources that could be channelled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.

- **DIFFERENT TYPES OF WASTE GENERATED IN THE COLLEGE AND THEIR DISPOSAL.**

Types of waste	Particulars	Disposal method
E-Waste	Computers, electrical and electronic parts	Authorized disposal agency
Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc	Municipal
Solid wastes	Damaged furniture, paper waste, paper plates, food wastes	Municipal
Chemical wastes	Laboratory waste	Neutralize with water and treatment
Glass waste	Broken glass wares from the labs	Municipal
Sanitary Napkin	Napkin	-
Bio medical waste	catheters, syringes, IV bottles, Blood sample, medicines, infectious waste, cotton, bandages	Authorized disposal agency



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- **MAJOR OBSERVATIONS IN REGARD OF WATER USAGES AND CONSERVATION PLAN :**

1. At present total solid waste collected in the campus is 20 Kg/day, Waste generation from tree droppings, canteen and lawn management is a major solid waste generated in the campus.
2. Other solid waste directly disposal to municipal corporation.
3. Organized special camp, rally under NSS activity for solid waste management.
4. College spread the message of recycling waste in the community.

- **RECOMMENDATIONS:**

- ✓ Dustbins should be providing at classrooms and campus premises.
- ✓ Incineration provide for disposal sanitary napkins.
- ✓ Vermin-compost pit should be provide at institute for Vegetable waste and other leaf were used to feed and the resulting vermin-cast is used as manure in the garden.



7.3 AIR POLLUTION MANAGEMENT :

• **PERIODIC AWARENESS PROGRAMME FOR STAFF, STUDENTS AND SOCIETY**

Every day there are 38 Two wheelers and 10 four wheelers are coming in college premises but there is no system observed to check for PUC certificate, Vehicle Exhaust Gas Analysis and Vehicular movement noise and vibration pollution. The air pollution at the time of ignition off and on is more than it is in riding mode.

RECOMMENDATIONS

The college may consider these on top priority:-

- ✓ World environment day to be celebrated in college premises every year on 5th june and whole college students and staff shall get involved and take oath for environment conservation not only in college but also in every span of life.
- ✓ College shall monitor the Ambient Air Quality as per the guidelines of "Air (Prevention and Control of Pollution) Act 1981
- ✓ Use of bicycle in campus to be promoted.
- ✓ Vehicular exhausts shall be examined regularly in the collage as per Central Motor Vehicle Act 1988
- ✓ Vehicular movement shall be restricted by putting boundary limit and beyond that limit bicycles usage shall be promoted to all students and staff.



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7.4 NOISE POLLUTION AND ILLUMINATION MANAGEMENT :

- MAJOR OBSERVATIONS IN REGARD OF NOISE POLLUTION AND ILLUMINATION MANAGEMENT

1. SILENCE ZONES IN THE COLLEGE

Various display boards have been not placed in the library and other places for awareness to maintain silence in the college.

- NOISE STUDY:

Noise level monitoring was carried out using Noise Level Meter. The noise level survey was carried out two locations, at outside as well as inside.

Noise Monitoring.

Location		Time (pm)	1	2	3	4	5	Noise Level Readings dB(A)
Outside		12.30	55.2	57.1	60	55.6	63.5	58
		1.35	50.4	55.6	60.2	52.8	57.6	55.32
Inside	Class	12.35	57.2	54.2	63.1	63.4	59.00	59
	Laboratory		57.3	62.2	65.2	58.1	59.54	59.54
	Library		50.9	62.4	55.4	60.4	58.10	58.10
	Class	1.35	51.3	50.7	49.4	51.1	50.59	50.59
	Laboratory		49.2	50.2	52.4	50.4	51.30	51.30
	Library		1.36	50.2	50.3	50.4	50.7	50.78
As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules 3(1) and 4(1))								
Area Code			Area Type		Limits in dB (A) weighted scale			
					Day (6am to 10pm)		Night (10pm to 6am)	
B			Commercial		65		55	

It is observed that noise level of the campus is within limit as per the noise pollution regulations and control rules 2000.



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• ILLUMINATION STUDY

The illumination study was carried out using Lux Meter. The illumination study was carried out at two locations, in Classroom and Laboratory.

Sr. No.	Location	Time (pm)	Lux Level Reading (Lux)					Average
			1	2	3	4	5	Lux
1.	Classroom	12.30	98	103	109	127	139	115.2
2.	Classroom	12.30	182	120	298	299	116	203
3.	Laboratory	12.35	151	379	405	407	400	348.4
4.	Laboratory	12.35	159	349	347	412	409	335.2
5.	Library	12.40	105	115	120	98	87	105

All results of Illumination Study (Classroom and Laboratory) found within limits as per MF Rules- Section-35, Schedule B.

RECOMMENDATIONS

The College administration may consider on top priority

- ✓ The College adopts no honking policy and prevents use of any honk and noise in campus. Certain areas like library, classrooms are declared as silence zone and noise pollution is kept to minimum on college campus.



7.5 ENERGY USE AND CONSERVATION

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

- MAJOR OBSERVATIONS IN REGARD OF ENERGY USE AND CONSERVATION :**

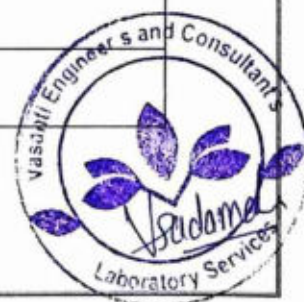
Table shows the energy consumption pattern of the college for a month. The college has consumed an average of 38674 kW/hr electricity in a month the one year electricity bill amount was 657458 /-

Sr.No.	Instrument Name	Quantity
1	Environmental Test Chamber	1
2	Disintegration Test Apparatus	2
3	Dissolution Test Apparatus	2
4	Friability Test Apparatus	3
5	Digital Balance	5
6	Rotary Shaker	1
7	Over Head Stirrer (Lab Stirrer)	4
8	Shaker Incubator	1
9	Multistage Magnetic Stirrer	1
10	Ball mill	2
11	High Pressure Homogenizer	1
12	Cooling Centrifuge	2
13	Centrifuge	1
14	CO2 Extractor	1
15	Refrigerator (Remi)	2
16	Laboratory Spray Drier	1
17	Ultrasonic Probe Sonicator	1
18	Over Head Stirrer (Lab Stirrer)	1
19	Centrifuge	3
20	Magnetic Stirrer	19
21	Laboratory Oven	5
22	Refrigerator (I.G)	1
23	Hot plate	3
24	Deep Freezer	2
25	Ultra Turrex	1



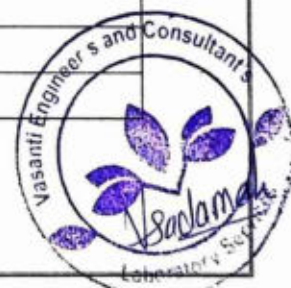
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26	Vacuum Oven	1
27	PH Meter	5
28	HPLC	2
29	F.T.I.R.	1
30	Ampoule clarity apparatus	2
31	Rheometer Brook field	1
32	UV- Visible Spectrophotometer	3
33	Auto Analyzer	1
34	Digital Microscope	2
35	Sonicator	1
36	Digital Tablet Tester	1
37	PH/Iron Meter	1
38	Lyophilizer (Freeze Drier)	1
39	Sieve shaker	2
40	Bulk density apparatus	2
41	Distillation Apparatus	1
42	Rotary Evaporator	1
43	Polarimeter	2
44	Autoclave	2
45	Vacuum pump	4
46	Flourimeter	2
47	Turbidity meter	3
48	Fumming hood	1
49	Conductivity meter	3
50	Digital Potentiometer meter	3
51	Karl-Fisher Apparatus	2
52	Spectrophotometer	1
53	Bath Sonicator	1
54	Flame Photometer	2
55	Projection Microscope	1



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56	Water bath	1
57	Heating metal	9
58	Mixture	1
59	Lab Incubator	1
60	B.O.D. Incubator	1
61	Colony Counter	1
62	Student organ bath	11
63	Rotating drum	5
64	Colorimetry	2
65	C.B.C. counter	1
66	Analgesimeter	1
67	Actophotometer	1
68	Plythesmometer	1
69	Rota rod	1
70	Convelsiometer	1
71	Pole climbing Apparatus	1
72	Elisa plate reader	1
73	Co ₂ Incubator	1
74	Laminar air flow	3
75	All purpose instrument	1
76	Tablet polishing & coating pan	1
77	tablet punching machine (8 th Station)	1
78	Tray dryer	1
79	Melting point apparatus	1
80	Muffel furnace	1
81	Exhaust fan	1
82	Tube light	67
83	Fan	61
84	A.C.	6
85	Computer	57
86	Printer	6
87	Projector	5
88	Led bulb/tube	30
89	Led tv	1
90	Xerox Machine	2
91	UPS	2
92	CCtv	37



7.6 GREEN BELT AREA & BIO-DIVERSITY:

The Green Belt Area is meant for conservation of nature and aesthetic value of the College premises. The Green Area in the College includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

- **MAJOR OBSERVATIONS IN REGARD OF GREEN BELT AREA & BIO-DIVERSITY**

Campus is located in the vicinity of approximately 50 types (species) flora and fauna. Various tree plantation programs are being organized during the month of June and October at College campus and surrounding villages through NSS unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various types of indigenous species of ornamental and medicinal.

No. of trees planted in campus:

- Garden plant

Sr. no	Plant type/name	Quantity	Tree	shrubs
1	Plembago	3		S
2	Godrej Akilepa	2		S
3	Golden Duranda	11		S
4	NudaAkilepa	7		S
5	Hemikonia (kardal)	2		S
6	Tikoma	2	T	
7	Golden Akilepa	1		S
8	Sankeshwar	1	T	
9	Chafa	3	T	
10	FycusBlakina	11	T	
11	Cycus palm	2	T	
12	SitaAshoka	1	T	
13	Sonchafa	2	T	

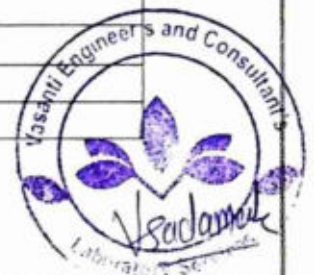


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14	Bakul	1	T	
15	Christina	2	T	
16	Brasia	1	T	
17	Petra	2	T	
18	Extura	1		S
19	Brasia	1	T	
20	Areca Palm	43	T	
21	Minicher Palm	1	T	
22	Parijat	1	T	
23	Kaneri	3		S
24	Amlamor	1	T	
25	Ratra rani	1		S
26	Tagar	2	T	
27	Jatropa	2	T	
28	Mogra	1		S
29	Jaswand	1		S
30	Neem	6	T	
31	Pimpal	4	T	
	Total	122	20	11

Herbal garden Plant

Sr. no	Plant type/name	Quantity	Tree	shrubs
1	Neem	2	T	
2	Bale	1	T	
3	Amla	2	T	
4	Jai	1		S
5	Coconut	3	T	
6	Eucalyptus (Nilgiri)	2	T	
7	Bitter Almond (Badam)	2	T	
8	Insulin	1		S
9	LasunWel	1		S
10	Sandal wood (Chandan)	3	T	
11	Mango	2	T	
12	Coffe	2	T	
13	Vasaka (Adulsa)	1	T	
14	Arjuna	1	T	
15	Custerd Apple (Sitafal)	2	T	
16	Bor	2	T	
17	Apta	1	T	
18	Guava (Peru)	2	T	
19	Jatropa	2	T	
20	Chikoo (Khirani)	1	T	
21	Ratrani	1		S
22	Dalchini	1	T	
23	Saptarni	1	T	



Green Audit (2021-22)

24	Hibiscus (Jaswand)	4		S
25	Jambol (jaman)	1	T	
26	Kapur (Camphor tree)	1	T	
27	Kadhamb	1	T	
28	Ritta	1	T	
29	Ashoka	1	T	
30	Palas	1	T	
31	Mahu	1	T	
32	Vad	1	T	
33	Kannhera	1	T	
34	Vinca (sadafuli)	1		S
35	Humbur	1	T	
36	Taman	1	T	
37	Parijatak	1	T	
38	Ramphal	1	T	
39	Indian gajberi	1	T	
Sr. no	Plant type/name	Quantity	Tree	shrubs
40	Bitti	2	T	
41	Surangi	1	T	
42	Austrelianbabhal	1	T	
43	Bakul	1	T	
44	Chinch (Tamarind)	1	T	
45	Sagvan	1	T	
46	Fanas (Jackfruit)	1	T	
47	Bhehda	1	T	
48	Pimphal (peepal)	1	T	
49	Karanji	1	T	
50	Cartenrepar	1		S
51	Papaya	1	T	
52	FycusBlakina	3	T	
	Total	62	45	7

• RECOMMENDATIONS

The Management of College may consider on top priority that

- ✓ The Biodiversity is to be maintained while considering the plantation in future
- ✓ The selection of trees species to be based on environmental conservation and carbon sequestration value
- ✓ Artificial nests and water ponds are recommended to attract different birds in their migrating and breeding season
- ✓ Watering schedule to be planned according the season.



Green Audit (2021-22)

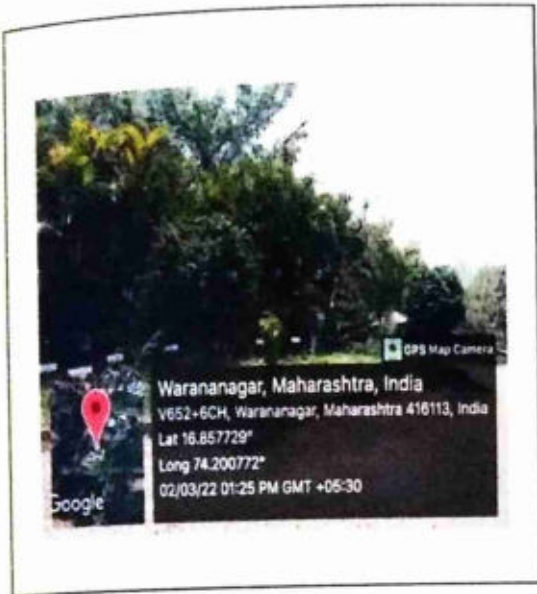
✓ Display the name of plants.

- **Animal Welfare**

More than 20 Squirrels are found in the campus, Approx. 6 dogs, 2 owl, 9 green bee-eater, 10 Black sparrow, 1 crow pheasants, 20 pigeon, 1 Crow pheasant and others including butterflies, insects, bees, earthworms, etc. are there in campus.



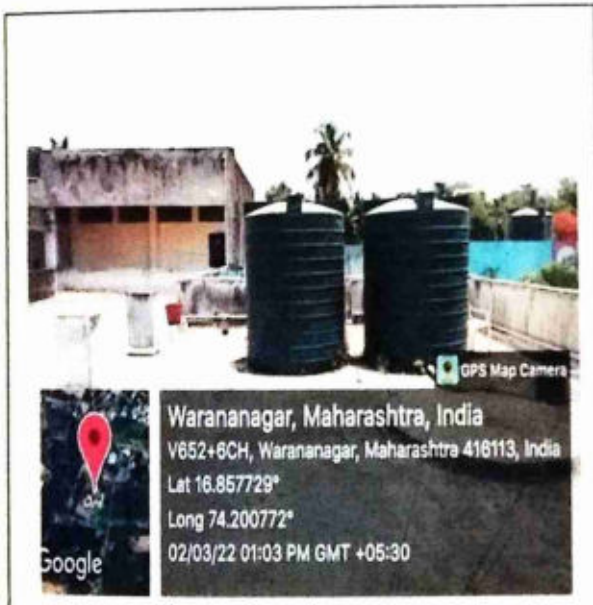
8. ANNEXURE PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS



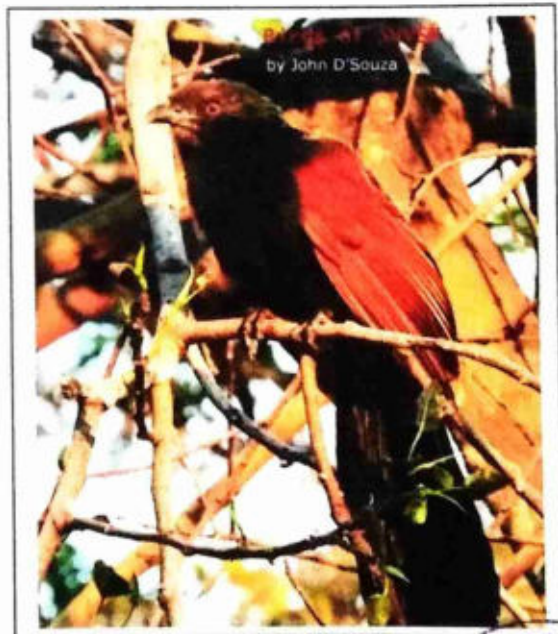
Green Campus



Botanical Garden



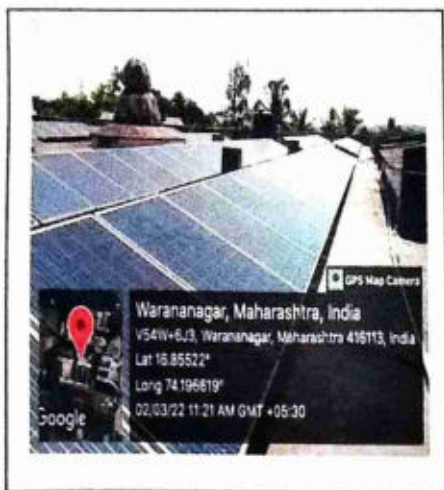
Water Storage Tank



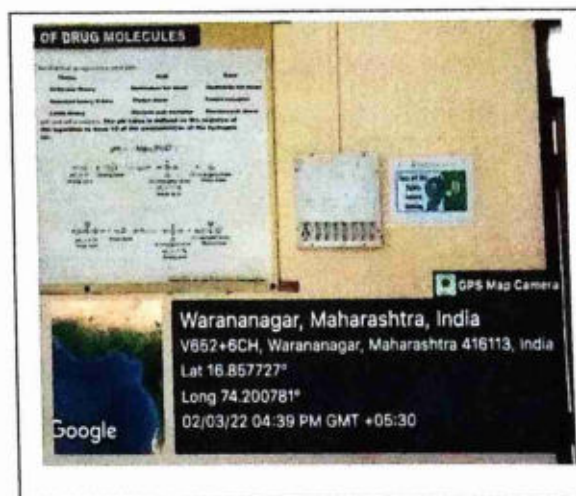
Bird at institute



Green Audit (2021-22)



Solar Panels at campus



Switch of drill at Institute



9. CONCLUSION

Considering the fact that the institution is the installation of solar panels, paperless work system and waste water treatment. Besides, environmental awareness programmes initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using eco friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development. As part of green audit of campus, we carried out the environmental monitoring of campus includes Illumination, Noise level, Ventilation and Indoor Air quality of the class room. It was observed that Illumination and Ventilation is adequate considering natural light present. Noise level in the campus well within the limit. College authority forms a committee for the plantation program and environmental awareness; this committee continuously work throughout the year with the help of NSS students. College appointed NSS students for the awareness of tree plantation.



2968

DTE Institute Code : 6217



Estd 2009

Shri Balasaheb Mane Shikshan Prasarak Mandal's
ASHOKRAO MANE GROUP OF INSTITUTIONS

Address : Vathar Tarf Vadgaon, Tal. Hatkanangale, Dist. Kolhapur - 416 112 (Maharashtra)

Phone : (0230) 2407740, 2407760 **Fax :** (0230) 2407750 **Email :** director@amgoi.edu.in **Website :** www.amgoi.org

Approved by : AICTE, New Delhi No. F-No. MS (Newint) 2009 / 08, Higher & Technical Education Department, Govt. of Maharashtra, Directorate of Technical Education, Mumbai. **Affiliated to :** Dr. Babasaheb Ambedkar Technological University, Lonere - Raigad. (B.Tech. & M.Tech. Programs), Shivaji University, Kolhapur. (MBA Program).

Accredited by NAAC with 'A' Grade CGPA 3.08

Founder President
Late Shri. Ashokrao Mane

Director
Dr. H. T. Jadhav, M.E., Ph.D.

President
Hon. Shri. Vijaysinh A. Mane

Ref. No. :

Date :

Certificate of Energy Audit

This is to certified that **Tatyasaheb Kore College of Pharmacy, Warananagar.**

Tal: - Panhala, Dist.: - Kolhapur has successfully undergone **Energy Audit on**

22 May 2023 and assessed the electrical energy conservation, energy saving

measures and sustainability in compliance with the applicable regulation, policies

and standards in the campus were found to be **excellent.**

Place- Vathar Tarf Vadgaon

Jadhav
Dr. H. T. Jadhav
Director AMGOI, Vathar
Certified Energy Auditor (BEE),
Reg. No. - EA - 3023

eSign

Signed by: John Intru
Disouza
Reason: NAAC
Location: Warananagar, India
Date: 02-Jun-2023 (04:42
PM)

2986

DTE Institute Code : 6217



Shri Balasaheb Mane Shikshan Prasarak Mandal's
ASHOKRAO MANE GROUP OF INSTITUTIONS

Address : Vathar Tarf Vadgaon, Tal. Hatkanangale, Dist. Kolhapur - 416 112 (Maharashtra)

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Place- Vathar Tarf Vadgaon

Dr. H. T. Jadhav

Director AMGOI, Vathar
Certified Energy Auditor (BEE)
Reg. No. - EA - 3023

2901

DTE Institute Code : 6217

Shri. Babasaheb Mane Shikshan Prasarak Mandal's

ASHOKRAO MANE GROUP OF INSTITUTIONS

Address : Vathar Tarf Vadgaon, Tal. Hatkanangale, Dist. Kolhapur - 416 112 (Maharashtra)

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Date :

Certificate of Energy Audit

This is to certified that **Tatyasaheb Kore College of Pharmacy, Warananagar.**


Tal: - Panhala, Dist.: - Kolhapur has successfully undergone **Energy Audit on**

20 May 2021 and assessed the electrical energy conservation, energy saving

measures and sustainability in compliance with the applicable regulation, policies

and standards in the campus were found to be **excellent.**

Place- Vathar Tarf Vadgaon


Dr. H. T. Jadhav,
Director AMGOI, Vathar
Certified Energy Auditor (BEE)
Reg. No. - EA - 3023

ENERGY AUDIT REPORT

Client Name	Tatyasaheb Kore College of Pharmacy, Warananagar. Tal: - Panhala, Dist.: - Kolhapur Maharashtra, India, Pin 416113
Project Name	Tatyasaheb Kore College of Pharmacy, Warananagar. Tal: - Panhala, Dist.: - Kolhapur Maharashtra, India, Pin 416113
Date	Year 2021-22
Submitted by	Department of Electrical Engineering Ashokrao Mane Group of Institutions Vathar Tarf Vadgaon, Tal- Hatkanangale, Dist.-Kolhapur (Maharashtra state)



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ACKNOWLEDGEMENT

We appreciate the interest and participation of Honorable Management and Principal and Faculty in carrying out the energy audit at **Tatyasaheb Kore College of Pharmacy, Warananagar. Tal: - Panhala, Dist.: - Kolhapur.** Our special thanks to Technicians and Staff involved for college who have extended their co-operation and courtesy to the energy audit team during the audit. Our Special thanks to Honorable Management and Director of Ashokrao Mane Group of Institutions Vathar Tarf Vadgaon for continuous support and providing facilities regarding the energy audit.



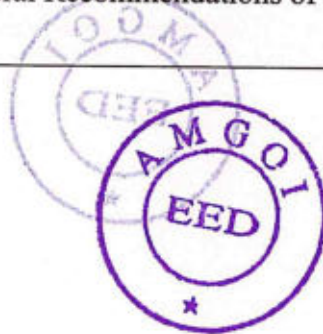
THE ENERGY AUDIT TEAM

Team Member	<p data-bbox="619 450 1238 689">Dr. H.T. Jadhav Certified Energy Auditor Bureau of Energy Efficiency Director AMGOI, Vathar Tarf Vadgaon.</p> <p data-bbox="687 775 1166 947">Mr.R.S.Pukale Assistant Professor AMGOI, Vathar Tarf Vadgaon.</p>
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3	Summary of analysis of current energy Scenario	11
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6	Conclusion and General Recommendations of the Audit	21



1. EXECUTIVE SUMMARY (Lighting Load):

Recommendations	Monthly present expenditure in Rs.	Investment for the saving of expenditure in Rs.	Savings per month in Rs.	Payback period in years.
Instructional Building. Replace 40W Copper choke tube set by 20 W LED Tube set. Quantity -66 no Replace 80W old fan by energy efficient fan. Quantity -56 no	Rs.21787.2/-	LED Tub set=450*66 =29700/- Fan -3500*56 =196000/- Total=225700/-	Cost of energy Rs.10036.8 Saving= Rs.21787.2- Rs. 10036.8 = Rs.11750.4/-	1.60 yrs.

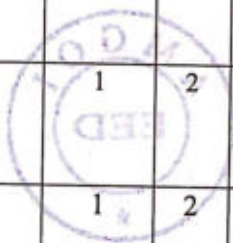


2. SUMMARY OF SAVINGS POTENTIAL OF COLLEGE

Instructional Building														
	No. of Tube light	No. of Fan	No of AC	Projector	No of Computer	LED Bulb	T.V	Printer	Xerox machine	Gas Geyser	Electric Motor	C.C.T.V.	Inverter	
Principal cabin	2	1			1		1	1						
Office no.1	3	2			3			1				1		
Office no.2	2	1			2							1		
Store Room	1	1			1			1				1	1	
library	2	3			2							1		
Student Reading Room	2	1										1		
Exam strong Room	2	1			1			1	2			1		
Girl common room	1	1				2								
Computer Lab	3	3			26			1				1		
Class Room 1	3	2		1	1							1		
Class Room 2	4	2		1	1							1		
Class Room 3	2	1		1	1							1		
laboratories 1 (chemistry-1)		2			1							1		
laboratories 2 (chemistry-2)	4	2										1		
laboratories 3 (machine room)	5													



laboratories 4 (pharmacology)	2	2			1							1	
laboratories 5 pharmaceutics 1	2	3										1	
laboratories 6 pharmaceutics 2	2	2			1							1	
laboratories 7 microbiology	1	2										1	
laboratories 8 cell culture			2		1	7		1					1
laboratories 9 Ph 1 m.pharm	1	1			1	2						1	
laboratories 10 Ph 2 m.pharm	1	1			1	2						1	
laboratories 11 CFC	2	2	1		6	2						2	
laboratories 12 P.A. lab	2	1			1	2						1	
M.pharm store	3				1	1						1	
laboratories 13 Pharmacognosy lab	2	2			1							1	
laboratories 14 CO2 Ext.		2				4							
Conference hall	2	1		1	1								
Auditorium hall	4	14		1		4						2	



Ground floor porch	4											4	
1 st floor porch	2											2	
2 nd floor porch						4						2	
Total	66	56	3	5	55	30	1	6	2	0	0	33	02



1) Instructional Building :

Sr.no	Particulars	Wattage (W)	Quantity	Run Time (Hr/Day)	Load (KW)	Energy consumed per day kWh/day	Recommendation
1	Tube light (copper choke)	40	66	6	2.64	15.84	Replace 40W tube set by 20W LED tube set.
2	Fan	80	56	6	4.48	26.88	Replace 80W old fan by energy efficient fan.
3	Air Conditioner	1070	3	6	3.21	19.26	Nil
4	Projector	300	5	6	1.5	9	Nil
5	Computer system	250	55	6	13.75	82.5	Nil
6	LED bulb	20	30	6	0.6	3.6	Nil
7	T.V	60	1	6	0.06	0.36	Nil
8	Printer	40	6	4	0.24	0.96	Nil
9	Xerox Machine	1500	2	4	3	12	Nil
10	Geyser	3000	0	0	0	0	Nil
11	Electric Motor	3728.5	1	4	3.7285	14.914	Nil
Total					33.2085	185.314	
Total Lighting load =			3.24	Qty=	96		
Led lighting load =			0.6	Qty=	30		

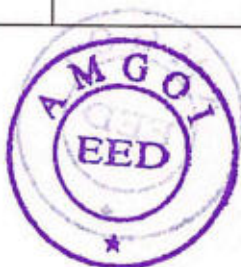


3. SUMMARY ANALYSIS OF CURRENT SCENARIO

3.1 ANALYSIS ENERGY METER.

As per MSEDCL 147 HT-VIII B

Consumption Slab (kWh)	Fixed/ Demand Charge Rs./kVA / month	Wheeling Charge (Rs/kWh)	Energy Charge (Rs./kWh)	
All Units	174650	0.60	10.79	
TOD Tariffs (In addition to above base tariffs)				
TOD Tarrifs	Rate% (Rs./Unit)	Units	Demand	Charges Rs.
00.00 Hrs – 06.00 Hrs.	-1.5000	11058	135.00	-16587.00
22.00 Hrs – 06.00 Hrs.				
06.00 Hrs – 09.00 Hrs.-	0.0000	0	172.00	0.00
12.00 Hrs – 18.00Hrs.				
09.00 Hrs – 12.00 Hrs.	0.8000	0	104.00	0.00
18.00 Hrs – 22.00 Hrs.	1.1000	9486	141.00	10434.60



Approx. Unit charges including taxes: - Rs.17/- Unit

Maximum Consumption in year 2022-23 = Jul-22 (37020 units)

262029205021'				
Sr.No	Month	Unit Consumed in KWh	Bill Demand (KVA)	Bill Amount, Rs.
1	Mar-23	18180	325	419620
2	Feb-23	14029	325	366678
3	Jan-23	22405	325	467563
4	Dec-22	35740	325	645845
5	Nov-22	32870	325	610866
6	Oct-22	36474	325	644432
7	Sep-22	19131	325	425491
8	Aug-22	20183	325	436919
9	Jul-22	37020	325	637717
10	Jun-22	32318	325	583044
11	May-22	29372	325	497343
12	Apr-22	25272	325	453466
	Total	3,22,994		61,88,984
	Maximum	37020		645845
	Minimum	14029		366678
	Avarage	26,916		5,15,749



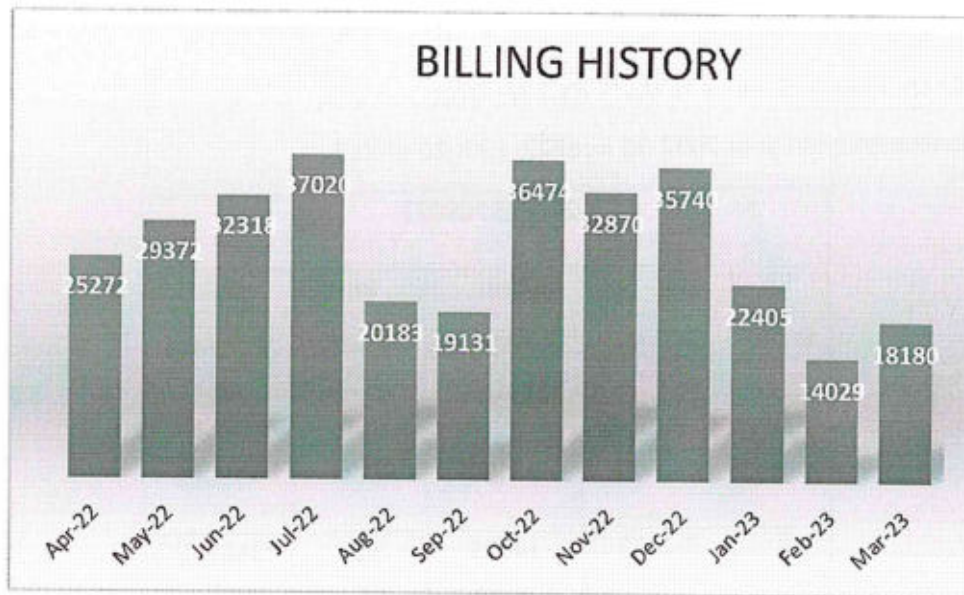


Fig 1: Monthly unit Consumption 2022-2023





श्री वारणा विभाग शिक्षण मंडळ, वारणानगर



प्रा. डॉ. वासंती रासम, प्रशासकीय अधिकारी

ग्रामदार डॉ. विनय वि. कोरे, प्रमुख

संदर्भ क्र.:

दिनांक :

१०/५५९/२०२२-२४.

३१/०३/२०२३.

प्रति,
ग्रामी प्राचार्य,
तात्यासाहेब कोरे कॉलेज ऑफ फार्मसी (बी),
वारणानगर.

विषय : बीज बिलाच्या रकमेबाबत..

महोदय,

आमचे शिक्षण मंडळ परिसरांतर्गत खर्च झालेल्या बीज बिलापैकी आपले महाविद्यालयाकडून खाली दिलेल्या तपशीलाप्रमाणे बीज बिलाची रकम आपलेकडून शिक्षण मंडळास देय होत आहे. तरी सदरच्या रकमेचा चेक इकट्टील कार्यालयाकडे जमेल पाठवून देणेत यावा व त्याप्रमाणे आपलेकडील रेकॉर्डला हिशोबी जमाखर्च करणेत यावा.

रकम रुपये ६,५७,४५८/- (अक्षरी रुपये सहा लाख सत्तावन्न हजार चारशे अठ्ठावन्न आणि पैसे शून्य फक्त)

अ.न.	तपशील	बीज युनिट	बीज दर प्रती युनिट	रकम
१	बीज बिल - (माहे मार्च, २०२२ ते माहे फेब्रुवारी, २०२३ अखेर)	३८६७४	१७.००	६,५७,४५८/-
	एकूण..			६,५७,४५८/-

ये.काळावे,

आपली विरवासू,

(डॉ. वासंती रासम)

प्रशासकीय अधिकारी

श्री वारणा विभाग शिक्षण मंडळ
वारणानगर, ता. पन्हाळा, जि. कोल्हापूर

• ता.पन्हाळा, जि.कोल्हापूर-४१६ ११३, फोन: ०२३२८-२२४०३०, २२३५६१ •

• E mail. aoswsm@gmail.com vasanti.rasam@gmail.com •



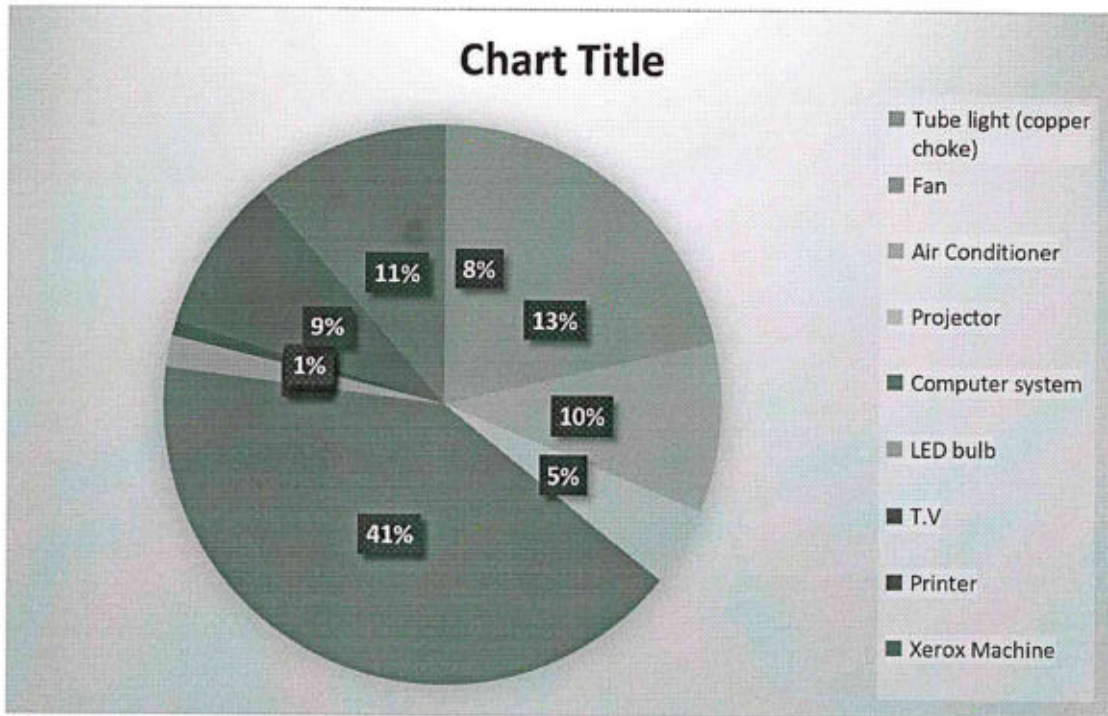


Fig 2: Building wise Connected load distribution

3.2 INSTITUTE IN PROCESS TOWARDS ENERGY CONSERVATION:

- Step by step replacing the 40 Watt i.e. T12 Fluorescent Tube Lights in the class rooms and Laboratory rooms and using 12W LED which gives almost same luminous flux.
- Replacing the 80W ceiling fan in class rooms and laboratories by energy efficient fans of 35 w is much help to save the energy.



4.0 SCOPE OF WORK:

1. Detailed examination of the existing energy uses of the facility.
2. Measurement and analysis of demand and power factor, energy meter to reduce the energy bill.
3. Detailed examination of lighting system and other electrical equipment in laboratory and class rooms.
4. Survey report of lighting system in overall institute.



5. METHODOLOGY:

5.1 MEASURED LUX LEVELS:

Sr.no.	Location/ Area/ Room	Measured Lux	Recommended Lux Level
01	Principal cabin	300	300-500
02	Office no.1	200	300
03	Office no.2	85	100
04	Store Room	150	300
05	library	100	300
06	Student Reading Room	95	100
07	Exam strong Room	150	300
08	Girl common room	150	300
09	Computer Lab	150	300
10	Class Room 1	200	300
11	Class Room 2	175	300
12	Class Room 3	175	300
13	laboratories 1 (chemistry-1)	175	300
14	laboratories 2 (chemistry-2)	170	300
15	laboratories 3 (machine room)	180	300-500
16	laboratories 4 (pharmacology)	200	300-500
17	laboratories 5 pharmaceutics 1	190	300-500
18	laboratories 6 pharmaceutics 2	175	300-500
19	laboratories 7 microbiology	150	300-500
20	laboratories 8 cell culture	165	300-500
21	laboratories 9 Ph 1 m.pharm	175	300-500
22	laboratories 10 Ph 2 m.pharm	175	300-500
23	laboratories 11 CFC	200	300-500



24	laboratories 12 P.A. lab	180	300-500
25	M.pharm store	180	300-500
26	laboratories 13 Pharmacognosy lab	190	300-500
27	laboratories 14 CO2 Ext.	175	300-500
28	Conference hall	175	300-500
29	Auditorium hall	175	300-500
30	Ground floor porch	175	300-500
31	1 st floor porch	150	300
32	2 nd floor porch	175	300-500



5.2 SAVING POTENTIAL CALCULATION IN EACH CLASS ROOM AND LABORATORY:

Assumptions: - Working hours of class room, laboratory and office = Approx.6hrs
Unit for institute energy bill = Approx. Rs.17/ kwh

Specimen calculation for Principal Cabin :

Sr.no	Particulars	Wattage (W)	Quantity	Run Time (Hr/Day)	Load (KW)	Energy consumed per day kWh/day	Recommendation
1	Tube light (copper choke)	40	2	6	0.08	0.48	Replace 40W tube set by 20W LED tube set.
2	Fan	80	1	6	0.08	0.48	Replace 80W old fan by energy efficient fan.
3	Air Conditioner	1070	0	6	0	0	Nil
4	Projector	300	0	6	0	0	Nil
5	Computer system	250	1	6	0.25	1.5	Nil
6	LED bulb	20	0	6	0	0	Nil
7	T.V	60	1	6	0.06	0.36	Nil
8	Printer	40	1	4	0.04	0.16	Nil
9	Xerox Machine	1500	0	4	0	0	Nil
10	Geyser	3000	0	0	0	0	Nil
11	Electric Motor	3728.5	0	4	0	0	Nil
Total					0.51	2.98	
Total Lighting load =			0.08	Qty=	2		
Led lighting load =			0	Qty=	0		

Specimen calculation for tube set :- Energy consumption of conventional tube light set :- 40Watt capacity tube set used for 6hrs per day so unit consumed by tube is $\frac{40\text{Watt} \times 6\text{hr}}{1000} = 0.24\text{kwh}$ per day and monthly unit consumed by tube set = 0.24×30 days = 7.2 kwh / month. Energy consumption of one tube in terms of rupees = 7.2 kwh x Rs.17 = Rs.122.4/-.

Specimen calculation for Fan :- A old fan capacity is 80W and used for 6 hrs. day so unit consumed by fan is $\frac{80\text{Watt} \times 6\text{hr}}{1000} = 0.48$ kwh per day and monthly unit consumed by fan = 0.48×30 days = 14.4 kwh / month. Energy consumption of fan in terms of Rs. = 14.4 kwh x Rs.17 = Rs.244.8/-.

Staff room has one old ceiling fan. So monthly expenditure due to fan is Rs.244.8/-.



If old fan will have replaced by new energy efficient (BEE star rating) it will consume energy Rs. 100.8/- for one month.

Computer lab :- Replace 80W old fan by energy efficient fan (1no)	Cost of energy Rs.244.8/-	Investment for BEE star rated Fan - Rs.3500	Cost of energy Rs.107.1 Saving=Rs.244.8. -Rs. 107.1 = Rs.137.7	Payback period 2.12 yrs.
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Tube set type	Cost Rs.	Payback	Life	Efficacy
T-8 LED tube light 1.00 inch	1600-2000	3-4 Yrs	10-15 Yrs.	@100-120 Lumens / watt
T-5 LED tube light 0.625 inch	500	6 month-1yr.	3-4 yrs.	110 lumens /watt

Evolution of BEE 5 star rated Fan

Speed	1	2	3	4	5
Wattage	13 W	24 W	30 W	40W	55W

Cost: - Rs. 1700 -2000 and Life: - 10-15 yrs.

Evolution of regular rated Fan

Speed	1	2	3	4	5
Wattage	14 W	26 W	39 W	48 W	76 W

Cost: - Rs. 1000 -1500 and Life: - 5-10 yrs.

A typical desktop computer uses about up to 250 watts and 20-40 watts for an LCD monitor and don't forget related devices like cable modem uses 7 watts, D-Link DI-604 router uses 4.5 watts,

To calculate your costs, use this formula:

$$\frac{\text{Watts x Hours Used}}{1000} \times \text{Cost per kilowatt-hour} = \text{Total Cost}$$

One LCD computer consumes 1.5Kwh (Unit) per day i.e. 9Rs. Per day (300 W x 5 hrs.)

Old version computer consumes 2.5kwh(unit) per day i.e.15Rs. per day (500 W x5hrs)



Dr. H. T. Jadhav
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6.0 CONCLUSIONS AND GENERAL RECOMMENDATION OF THE AUDIT

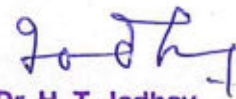
- a) Replace conventional tube light fittings of 40W with T-5 LED Tube light for 400 – 500 lumens light efficacy. Replace 80 W old fan by energy efficient fans.
- b) Replace old version computer system with energy efficient LCD monitor and new generation energy efficient computer systems.
- c) Ensure maximum natural daylight and natural ventilation in class rooms, Labs and staff rooms i.e. when it's bright outside in the daytime, turn off the light and open blinds of windows.
- d) In fact, try to turn on lights in our cabin, labs only after the sun sets. Do your reading and writing near a window or natural illumination.
- e) Installing occupancy sensors to turn ON-OFF lighting and fan can save considerable energy.
- f) Overhead projectors, computers and UPS all use electricity for power. Be sure to unplug these types of items when they're not in use can achieve energy saving considerably.
- g) Use power "saving option" (hibernate mode) for computer and possibly switched off when not in use.
- h) Consider planting trees and shrubs in strategic locations to help to reduce the temperature and airflow in Laboratory, classroom etc. Trees planted on the west and south sides of buildings help to keep the buildings shaded during hotter weather.
- i) to promote Green Energy and Energy Conservation a roof-top Solar PV plant can be useful.
- j) Suggested to protect all Transformer, Generators and UPS with fencing and keep the awareness boards and safety signs on 'Dangers' and 'Warnings, etc.
- k) Advised to cover Electrical wires, switch boxes, inverters, and stabilizers not to cause any problem to the staff and student members.
- l) Advised to replace old generation computers and TVs with LED monitors and old incandescent (tungsten) bulbs with LED lights and install automatic street solar lights.
- m) Suggested to install Roof top solar power plants.



Mr.R.S.Pukale

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Reg. No. - EA - 3023



**Nature Based Wastewater Treatment System for
Composite Sewage (Reed Bed System)
At TKIET Campus, Warnanagar, Kolhapur**



A Project By



**In partnership with
Natural Solutions**



Project: Nature Based Wastewater Treatment System at TKIET Campus, Warnanagar

Document: Project Handover Report

Date: November 2022

Authors: Centre for Environmental Research & Education (CERE) in partnership with Natural Solutions

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About CERE

The Centre for Environmental Research and Education (CERE) is a Mumbai-based not-for-profit organization that works to promote environmental sustainability through action-oriented education, awareness and advocacy. CERE has successfully completed projects in both urban and rural India having worked closely with different government departments, educational institutions, multinational companies and civil society organizations. CERE also runs a Carbon Map & Cap program which helps corporate clients measure and mitigate their carbon footprint. In the past CERE has worked with partner organisations to facilitate the implementation of energy conservation, energy efficiency, solar and afforestation projects.

Disclaimer

CERE has taken all reasonable care to ensure that the facts stated as a part of this document are true and accurate in all material aspects as at the date of preparation and as per the information and data supplied by all stakeholders.

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1. General Information

Tatyasaheb Kore Educational Campus, Warnanagar, founded by Hon. Tatyasaheb Kore is a premier institute in the region, giving multidisciplinary modern education for several decades.

An alumnus of the Engineering College, Mr. Anup Deshmukh, heads operations of Parker Lord in India. Through his initiative and coordination, and leadership from Dr. (Ms.) Rashneh Pardiwala of the Center for Environment Research and Education, a project to make the engineering college campus zero discharge, was initiated.

Due to high capital and operating costs, in the current situation, it was concluded that even the most advanced electro-mechanical system will not be viable. A suitable alternative was needed which would be economical to install, remain functional at low operating and maintenance cost, as well as add to the sustainability and aesthetic appeal of the campus.

Hence, based on the site topography and geomorphology a nature based assisted system was conceptualized and executed by Natural Solutions. This system has been in operation for the last four months and has not only succeeded in treating the incoming wastewater but has also digested the old accumulated sludge in the well.

While designing and executing the system care has been taken to create several different kinds of niches and conditions on which the students can conduct their projects and experiments.

In the next three years it will also become a food forest and a biodiversity refuge area.

Overall this will be a model system for many institutions to follow in the future. Given below are physical, electromechanical and biological details of the system. Also added are details on Dos and Don'ts and contact details of the service providers.

We will be present periodically, in the coming year, to oversee the AMC, as per the contract.

2. Components of the Nature-Based Treatment System.

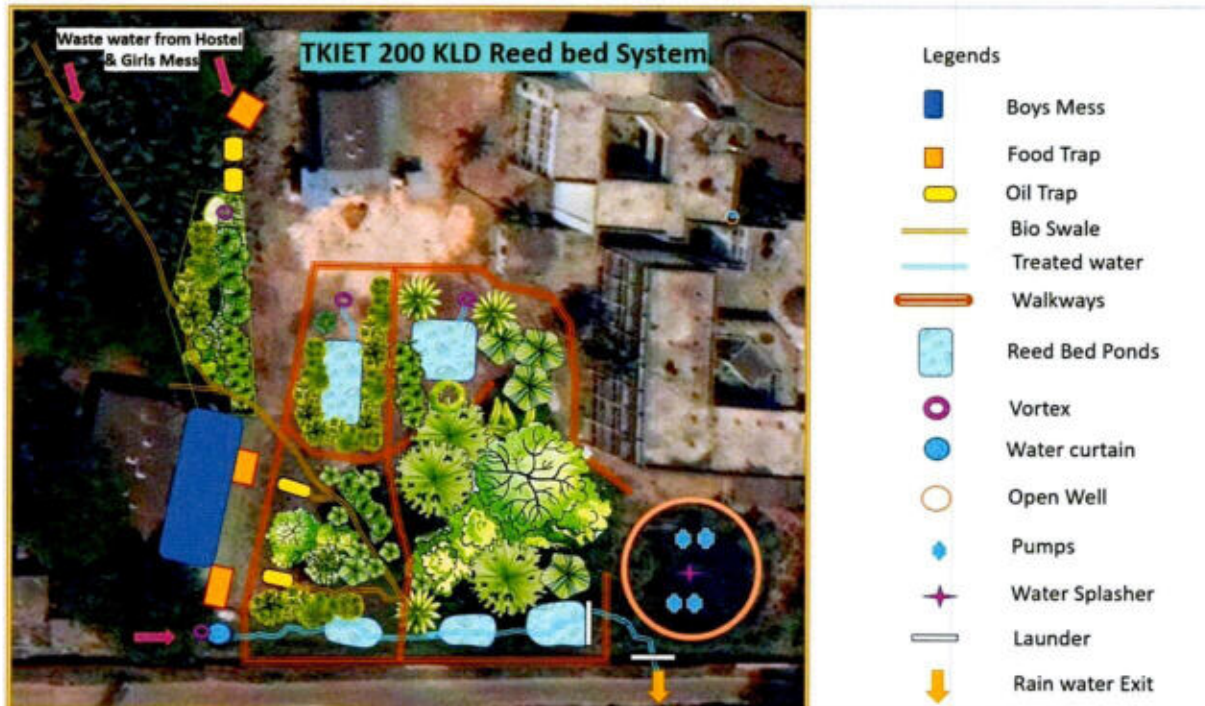
1. Bio Swales for starting the treatment of wastewater locally, from old hostels
2. Food traps for canteen utensils cleaning area, for both canteens.
3. Food trap tray for trapping bigger size food particles entering into food trap.
4. Oil trap for avoiding the entry of waste oil from the utensils area after washing, into the stream.
5. Reed Bed section 1

6. Culvert, for surface runoff from hostel area during the rainy season as well as wastewater from the hostels.
7. Reed bed section 2
8. Reed bed section 3
9. Wastewater treatment ponds within reed beds.
10. Launder for water retention and even flow movement, and water curtain aeration for addition of oxygen into the wastewater.
11. Conversion of old dilapidated Bio-Gas Chamber Tankage for additional treatment of wastewater with Vortex.
12. Micro aeration device with cascading.
13. Various range of rotameters, installed on Vortex pipe line for study purpose.
14. Recirculation system – Vortex system pump (1W+ 1S) 1 set, with automatic control panel and pumps floats.
15. Usage pump (1W+ 1S) 1 set with automatic control panel and pumps floats.
16. Water Splasher / Fountain with time based control.
17. Disc Filter for avoiding of silt or any kind of particles into the sprinkler system.
18. Sprinkler / Recirculation system with 18 no's impact sprinkler and 8 no's spray nozzles.
19. Usage water pipe line and interconnection with existing irrigation pipe line network.
20. Assorted species of acclimatized reed plants.
21. Bio-culture

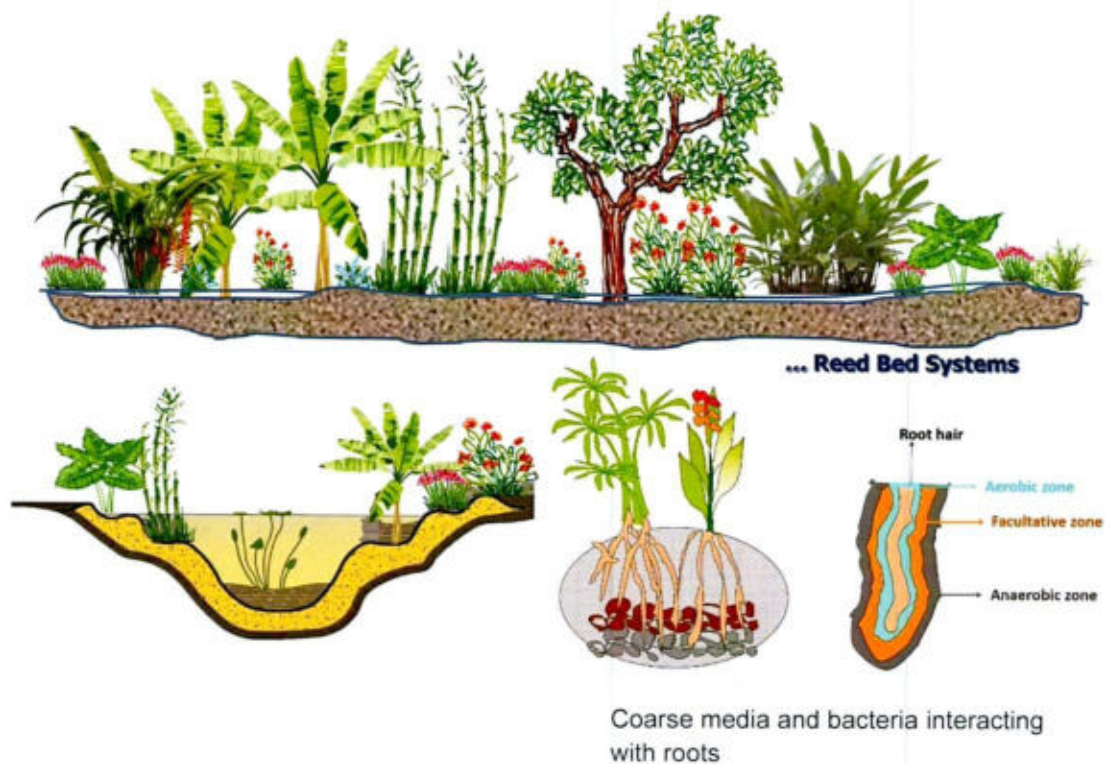
3. Acclimatized Plants Introduced As Per Niche on the Site

Sr. no	Reeds	Sr. no	Reeds
1	Lilium Type 1	31	Jasmine 5 Variety
2	Wedelia chinensis	32	Cestrum nocturnum
3	Lantana non-invasive 3 types	33	Carica papaya
4	Cana indica	34	Blood Grass / Pumpass
5	Phragmites australis	35	Gardenia ananta
6	Vetiveria zizanoides	36	Ranjai
7	Vinca Rosea	37	Bougainvillea
8	Cyperus alternifolius	38	Peltophorum
9	Acorus calamus	39	Colocasia Elephant Ear
10	Ipomoea batatas	40	Nyctanthes arbor-tristis
11	Acalifa	41	Moringa oleifera
12	Alamenda	42	Cassia fistula
13	Money Plant	43	Sonchafa Dwarf
14	Mulberry	44	Hibiscus
15	Curcuma amada	45	Millingtonia hortensis
16	Portulaca umbraticola	46	Golden Bamboo
17	Teccoma orange	47	Dev Chafa
18	Adhatoda Vasica	48	Pongamia pinnata
19	Cymbopogon citratus	49	Spathodia
20	Heliconia	50	Jakranda
21	Murraya paniculata	51	Citrus Lemen(kagzhi)
22	Rosa Centifolia	52	Cascabela Thevetia,
23	Nerium oleander	53	Phyllanthus emblica (Desi Amla & Rai Amla)
24	Ocimum kilimandscharicum	54	Bird cherry
25	Jatropha	55	Alstonia scholaris
26	Stachytarpheta	56	Guava
27	Caesalpinia	57	Jam
28	Banana Desi	58	Jamun
29	Sugarcane	59	kadamba
30	Murraya koenigii	60	Jackfruit

4. Schematic Layout of the Nature Based Reed Bed System



5. Schematic View of Nature Based Reed Bed System



Thus, in a Reed Bed, all the types of microbes are properly maintained.

6. Schematic Layout of the Nature Based Reed Bed Pipelines



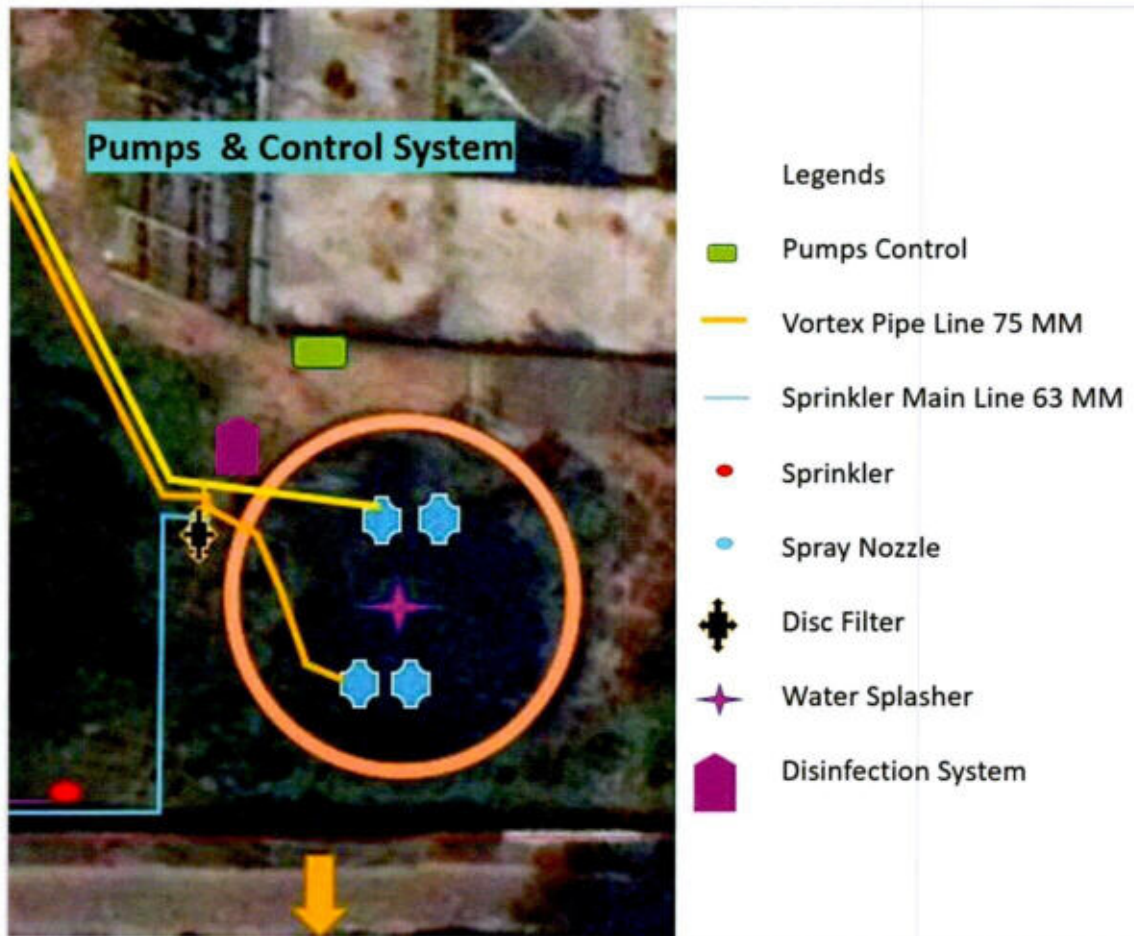
- Legends
- Pumps Control
 - Kitchen waste water Line 160 MM
 - Usage Pipe Line 75 MM
 - Vortex Pipe Line 75 MM
 - Sprinkler Main Line 63 MM
 - Sprinkler Submain 50 MM
 - Sprinkler Submain 40 MM
 - Sprinkler
 - Spray Nozzle
 - ⬇ Disc Filter
 - Disinfection System

7. Schematic Layout of the Nature Based Reed Bed Usage Pipelines



- Legends
- Usage Pipe Line 75 MM
 - Sub Main Usage Line 65 MM
 - ▼ User Points for further irrigation
 - Reed Bed usage Line interconnection with existing Irrigation Line Control Valve
 - Pump Control
 - Pumps
 - Open well

8. Schematic Layout of the Nature Based Reed Bed Pumping Devices



9. Component and Equipment Sizing As Well As Technical Details

Sr. No	Items	Size / Technical Details	QTY
1.	Food Trap (Girls Mess)	2 M x 2 M x 0.5 M	1
2.	Food Trap (Boys Mess)	1 M x 3 M x 0.5 M	2
3.	SS food Trey for trapping food particles	1 M x 1 M x 0.1 M	6
4.	RCC Pipe Oil Trap	Dia 1.2 M L 2.5M	4
5.	Bio Swale for partially treating wastewater from old hostels	150 M x 1.5-2 M	1
6.	Nature based filling media arrangement Reed bed Zone 1	220 SQ. M	1
7.	Culvert for surface runoff		4
8.	Nature based filling media arrangement Reed bed Zone 2	1100 SQ. M	1

9.	Nature based wetland Reed Bed Zone 3	1000 SQ. M	1
10.	Waste water Treatment ponds	Total 450 Sq. M	5
11.	Granite Stone Launder	2.5 M & 2 M	2
12.	Existing Bio-Gas Chamber Tankage for additional treatment of wastewater with Vortex.	Diameter 3.5 M	1
13	Micro Aeration device with Cascading	6, 8, 12, 12 Inches	4
14	Various range of rotameter		4
15	Recirculation- Vortex Pumps Type: Open well Submersible, Make: Lubi, Model No: LHL 9 BG, Phase : 3 Phase DOL	Outlet: 50 NB Head: 35 MWC, Flow: 40000	2(1W +1S)
16	Usage Pumps Type: Open well Submersible, Make: Lubi, Model No: LHL 9 BG, Phase : 3 Phase DOL,	Outlet: 50 NB Head: 35 MWC, Flow 40000	2(1W +1S)
17	Water Splasher Pump: Open well Submersible, Make: Lubi, Model No: , Phase : 3 Phase DOL,	Outlet: 40 NB Head: 15 MWC, Flow: 3500	
18	Pumps Floats, MOC: PVC container Filled with PU Foam,	Connector Pipe: 50 NB Threaded piece SS 304	1
19	Disc Filter, MOC: HDPE, Disc: 130 Micron	Flow: 40 m ³ / Hr., 50 NB threaded connection	1
20	Sprinkler. Adjustable Impact Make: Krishi, MOC: HDPE & Brass, Flow: 600LPH Regular Impact Make: Jain, MOC: HDPE & , Flow: 600LPH Spray Nozzle Make: Hunter MOC: HDPE, Flow: 150LPH	Adjustable: 6-9 M Dia, Regular: 6-9 M Dia , Spray Nozzle: 3 M Dia	9 9 8
21	PVC Pipe Make: Finolex,	160MM, 75 MM, 63 MM, 50 MM, 40 MM all 6 KG	
22	Dosing Pump	Flow: 4 LPH @ 4 KG / Cm ²	1
23	Dosing tank	1000 LTR	

10. Dos and Don'ts for the Best Output from the System

This system is treating the composite sewage using natural principles. It is not using any chemicals for treating the wastewater. Other than a few pumps it does not have any other artificial mechanical devices for the treatment.

The system has several sub-systems which are working in gestalt way along with natural processes. They will keep working on their own and keep treating the wastewater. In time, it will grow into a mixed forest like vegetation, with many different kinds of biological niches.

In order to make it look like a food forest type of garden, some simple activities will need to be done at certain frequency. Most of them are basic like garden maintenance. The activities related to the pumps and control panel will need an electrician and appropriate supervision over the electrician's work.

Actions to be done daily:

1. Cleaning the food trap nets

In order to keep the dining hall surroundings clean, simple activities like cleaning of the food traps and not dumping waste material into the old biogas tank are to be done daily. This has been informed and shown to the staff of the dining halls. They are currently following it fairly well.

Actions needed monthly:

2. Checking the oil trap and removing the oil, if it has reached over 4 inches in depth.

Actions needed as per function:

3. The valves of the Sprinklers, Vortices and other pipelines are set to meet the requirements of the system. Please do not change them. In case for some particular reason you need to change them, please do so in consultation with Natural Solutions.
4. Currently one pump is working and one is on standby. If any change is to be done it should be done in consultation with Natural Solutions.
5. At present the Pumps used for Sprinklers and Vortex as well as usage pumps are on automatic mode under the control panel. Timer in the control panel has been set as under:
 - A. Fountain: Morning 8am to 10am and afternoon 1pm to 3pm
 - B. Sprinkler and Vortex: Morning 8am to 10am, afternoon 1pm to 3pm and night 7pm to 9pm
 - C. Garden: Morning 7am to 7.20am

These timings can be changed for appropriate reason after consultation. It is recommended to never run the pumps on manual mode. This can put the pumps under undue stress and the pumps / panels may get damaged.

6. If there is something wrong with the pumps or control panels, these need to be rectified through appropriate electrician or engineer. It is requested to keep Natural Solutions informed.
7. Do not change the valve settings of the Rotameters attached to Vortex pipeline.
8. If the system is to look like a garden, it should be trimmed from time to time. However, do not remove the plants altogether. Some of the plants may look like weeds, but they could be carrying out an important function in the system and supporting bees, beetles and butterflies.
9. Visitors to the System should take care not to harm the plants, bees, beetles, butterflies or even the snakes in the system. The snakes have been there and we have not meddled with them.
10. Take care that the goats, sheep, cattle etc. do not graze in the System area.
11. No plastic or any refuse should be thrown in the garden land or in the water.
12. Do not spray any pesticides, herbicides, insecticides, etc. on this planted system.
13. Please make sure nothing is discarded from pharmacy building into the system.
14. Only confirmed weeds are to be removed from the system. Never use weedicide, or matchstick (fire) to remove the weeds, wet and/or dry. This could trouble other plants.
15. Note: this system is matched to the inflow coming from the existing hostels and dining facilities. Increasing the volume or concentration could change the functioning of the system.

16. Vortex is made of acrylic. It is aerating the wastewater. Since the wastewater would have nutrients, it is possible that it would develop algae. These can be cleaned once in a while, with brush and lime / soap.
17. If dosing is needed, please keep the dosing pump and tank operational.

11. Contact Details

For all official correspondence:

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Phone: 9619967726

For Technical Issues with the Pumps: 18004193055

For Technical Issues with the Control Panel: Pump Guru 022 40560920

For any issues with the Vortex Acrylic / FRP: Mr. P D Patil 9823173641 Wathar

