"Solutioning" in the Consultation/Training/Auditing

GREEN AUDIT REPORT

AVMC
AARUPADAI VEEDU MEDICAL COLLEGE

VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)

ACCREDITED BY NAAC

Submitted By

TULASI EOHS CONSULTANCY SERVICES

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This is to certify that the following utilities were carried out Green audit in the month of

Details of Facilities Audited: Main college building including: Laboratories, Libraries, Hospital, All departments and Hostel and college Canteen.

Dr. Vanisri Arunachalam **Er. C. Madhan Mohan**

Authorized Signatory

For TULASI EOHS CONSULTANCY SERVICES

Date :

Place : Chennai

Contents

1. INTRODUCTION

"The term 'Green' means eco-friendly or not damaging the environment. This can acronymic ally is called as '**G**lobal **R**eadiness in **E**nsuring **E**cological **N**eutrality' (GREEN).

Green Audit is a process of Systematic identification, Quantification, Recording, Reporting and Analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience. **G**reen audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings.

Educational institutions now a day are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc..

Green audit is defined as an official examination of the effects a college has on the environment. As a part of such practice, internal environmental audit (Green Audit) is conducted to evaluate the actual scenario at the campus.

2. OBJECTIVES

The Green Audit of an institution is self- assessment of the institution which reveals the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since beginning. The non-scholastic effort has not been documented. Hence, the purpose of the present green audit is to Identify, Quantify, Describe and Prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies, and standards. The main objectives of carrying out Green Audit are:

To promote environmental aspects, the institute has initiated steps which includes:

a. campus rainwater harvesting projects,
b. Complete ban on plastics within the campus,
c. Solar water heating systems in all hostels,
d. Treatment of wastewater and its recycling,
e. Percentage of power requirement of the University met by the renewable energy sources Solar panels for street lighting and Solar Energy is used for water heating,
f. The academy is encouraged the faculty and students to use cycles to save environment, prevent air pollution and promote healthy lifestyle.

3. METHODOLOGY

All the campuses of the institution designed eco-friendly and landscaped with extensive gardens, Plantation with recycled water. The entire university campuses are maintained as non-smoking zone. The significant initiatives implemented are:

- Energy Conservation
- Use of renewable energy through solar systems unit.
- Rainwater Harvesting and Sewage Treatment and Recycling Plant

- Carbon neutrality effort by tree plantation, Prevention of pollution, Reduction of paper usage and Plastic free zone.

The purpose of the Green audit is to ensure the commitments mentioned in the Green policies are adhered. This includes:

- Inspection of the campus,
- Document Review
- Interview with Key personnel
- Measurements and recommendations.

4. EXECUTIVE SUMMARY

Sl No	Area	Observation	Remarks
1	Mass Tree Plantation	• Institution has carried out tree plantation activity. • In continuation with the Tree Plantation, National Service Scheme organized Tree Plantation Program during the year 2017, 2018 & 2019, hence totally 472 trees were planted	• Students should plant a tree when they are studying Environmental Science subject. • Planting a large number of trees in the campus is one of the regular features of the NSS Special Camps.
2	Energy conservation	• The steps taken to reduce energy consumption is a great achievement Energy conservation by using energy efficient tube fittings and light sources like CFL and LED bulbs. • Every department faculty is instructed to switch off lights, fans, electronic devices, and AC's when they are not in use. • All the faculties are instructed to use minimal electricity.	• Good support from the institution and Good initiative taken by college towards reduction of energy consumption

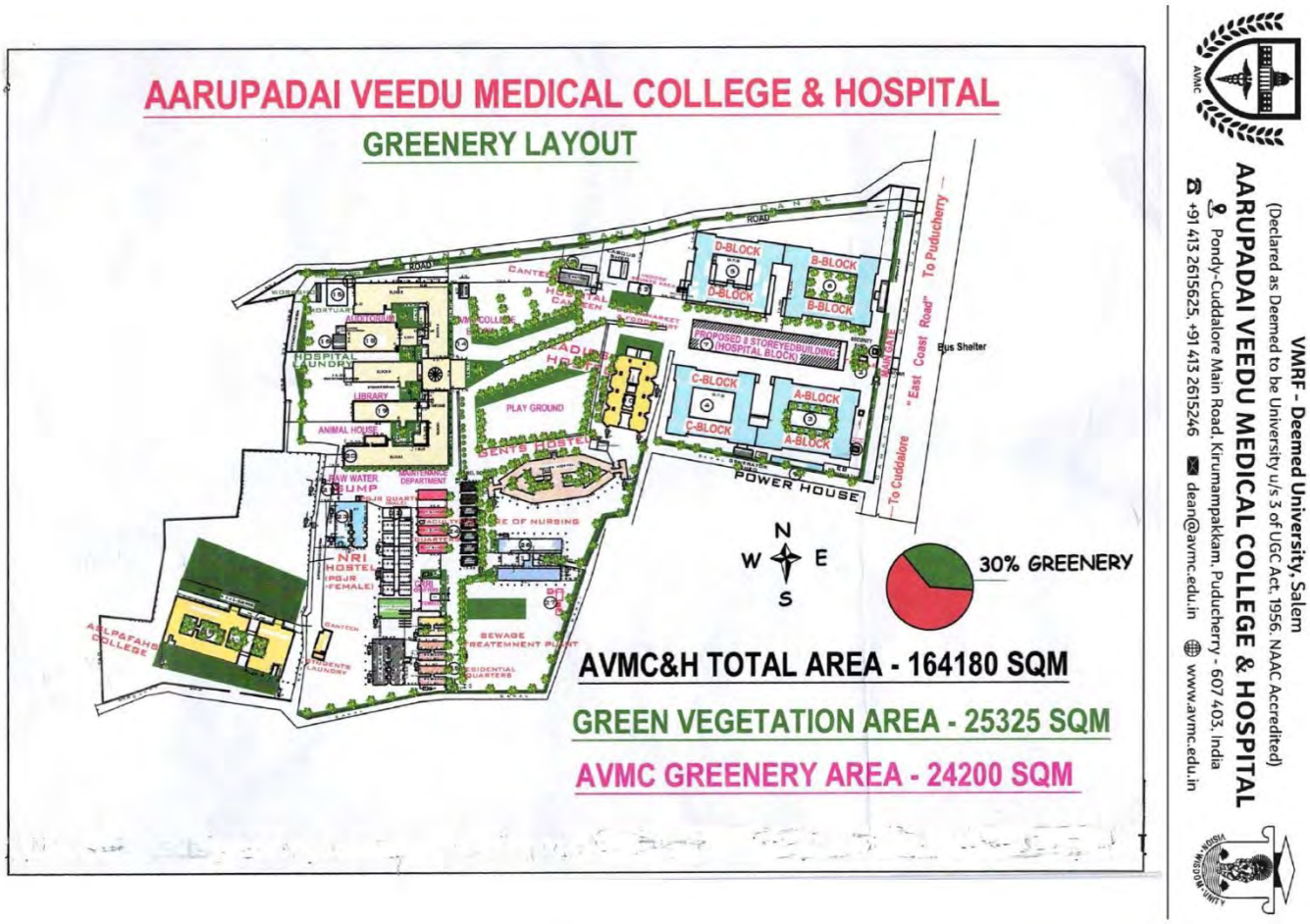
3	Use of renewable and non-renewable energy	Approximately 40% of power requirement of the Institute met by the following renewable energy sources: • Solar energy water heater in all Hostels • Solar energy Steamer in Mess and canteen for cooking foods • 100% of Street lamps, and lights inside the building were replaced using LED lights. • Sensor based energy conservation for led lamps in corridors. • Buildings are constructed in such a way to access to natural sun light and air circulation. • Construction of Building is not more than first floor, so we have Ramps with rails for patients and avoid Electrical operating Lifts. • 5star Air-conditioners with Invertor were used to consume less energy.	• Good initiative taken by institution towards use of renewable energy • The institute practices wastewater management system effectively to keep the campus clean, hygienic and free from any sort of pollution.
4	Water harvesting	Several types of water saving system adhered like • Rainwater Harvesting is installed in the campus to raise the ground water level naturally. • Water source is from Sewage / Recycle Plants which are periodically maintained. • Maintenance of water pipelines.	As a Contribution to environmental awareness / protection, Good initiative taken by college to make the campus eco-friendly
5	Efforts for carbon neutrality	• Tree Plantation • Restricted entry of automobiles beyond parking area inside the campus in order to prevent air and noise pollution and encourage use of Institutional Bi-cycles for internal mobilization.	Good initiative taken by the institution towards prevention of pollution and make the institution a greenery one.
6	Waste management	• Solid wastes, & E-wastes are collected in different color-coded bags as per schedule 1 in adherence to Biomedical Wastes (management & handling) rules 2018. Pondicherry	Initiative taken by the institution to make the campus eco friendly

		solid waste management company Private Limited (PSMPL) is the authorized common biomedical solid waste management facility by Pondicherry Pollution control committee	
7	Effluent treatment and recycling plant	• The institution has a water treatment plant in the campus and the recycled water is used for green campus. • Biogas plant installed in the campus	The institution practices wastewater management system effectively to keep the campus clean, hygienic and free from any sort of pollution
8	Outreach activities	• Segregating of Solid waste into Non-biodegradable and biodegradable waste, Awareness Programme on Cleanliness Proper Hand Washing after using of toilet • Solid Waste Management were educated to the public of Veerampattinam.	The institution has initiated many awareness programs effectively as a part of social wellbeing activities

5. ABOUT THE COLLEGE

This campus includes four colleges named as below:

1. Aarupadai Veedu Medical college (AVMC)
2. Vinayaka Mission College of Nursing (VMCON)
3. School of allied health science(SAHS)
4. School of Physiotherapy (SPT)



VMRF - Deemed University, Salem
(Declared as Deemed to be University u/s 3 of UGC Act, 1956, NAAC Accredited)
AARUPADAI VEEDU MEDICAL COLLEGE & HOSPITAL
Pondy-Cuddalore Main Road, Kirumampakkam, Puducherry - 607 403, India
+91 413 2615625, +91 413 2615246
dean@avmc.edu.in
www.avmc.edu.in

Thirumuruga Kirupananda Variyar Thavathiru Sundara Swamigal Medical Educational and Charitable Trust was started by our Founder Chancellor Dr. A. Shanmugasundaram in the year 1981 to serve the needy in the society.

The Trust established the very first medical college in Pondicherry, Aarupadai Veedu Medical College and Hospital in the year 2000. Initially the Institution was affiliated to Pondicherry University subsequently it came under the ambit of Vinayaka Mission's Research Foundation Deemed to be University, in the year 2004. The first batch of 100 students were admitted for 2000-2001 session, recently nineteenth batch of students have joined. At present 549 undergraduates, 99 postgraduate students are pursuing their studies. AVMC have PG courses in 13 disciplines - 9 Clinical, 2 preclinical 1 paraclinical and and 1 in Faculty of Allied health sciences. AVMC started Bachelors program in

Physiotherapy in November 2017 & second batch of students have joined thereafter. Centre for Yogic Sciences was also established this year.

AarupadaiVeedu Medical College & Hospital situated on the Pondy – Cuddalore NH road **12 kilometer from the Pondicherry town**. It is a subtropical terrain plain to pho land with a campus of **40.57 acres,** it is corrected as one of the Green Educational Institutes in Pondicherry with Flora and Fauna diversity. The campus is now quite clean, green and has much pollution compared to the rest of the city.

The campus is frequently visited several natural enthusiasts to observe the Birds on the campus as well as adjacent to Bahour lake. Campus revealed a wide managing floral diversity. The plants belonging to sawed habits like epiphytes, climbers, Grasses, Herbs, Shrubs and Trees. The plants belonged to 49 different families and total 190 species of Flora in the campus.

All departments are fully equipped with necessary infrastructure. We feel proud to state that this Institute has one of the most equipped, spacious library. AVMC library is equipped with 12,950 books and 100 International and Indian journals. To promote research work library has internet, Wi-Fi and Audio-Visual facilities. AVMC are equally proud to state that they have e - learning centre functioning in their Institution with 30 systems. The campus is Wi-Fi enabled for the convenience of staff and students.. The auditorium can accommodate 750 persons and is equipped with updated technology for theatre like projection.

Vinayaka Mission College of Nursing (VMCON)

The Nursing profession is the noblest of all professions and is in great demand all over the world, offering a highly rewarding career. The evolution of this Pioneer Institution in Pondicherry happened in the year 2002 under Pondicherry University; by 2004 it brought under the ambit VMRF. VMRF was established Aim achieve excellence In Education and Education as a Tool for Social Change for the Betterment of Society under dynamic

leadership of Dr. Shanmugasunderam. Who is the mastermind and helped to propel the institute from the beginning. He is a brilliant entrepreneur and philanthropist by nature.

VMCON is situated in the AVMCH campus cuddalor main road, kirumpakkam 20 km away from Puducherry. Heads its office in unique and own building with 3.15 acres of land. Situated in the unitary building with well-established infrastructure facilities as per the Indian Nursing Council norms.

School of allied health science

Faculty of Allied Health Sciences was started in the year 2004 with a motive of giving the best education and training in the field of Allied health sciences and from then on we are growing enormously not only in student strength but also in terms of its quality and dynamicity.

We at FAHS are dedicated to make our students excel in academic and life skills, the most needed in this fast changing world.

The infrastructure, clinical exposure, hands on training, upgradation of techniques and teaching methodologies are the key to outstanding performances by our students. Extensively available book and international journals opens up the new possibilities in different streams of study.

With a motive to inculcate social responsibility many extracurricular activities like Community outreach programmes, NSS, RRC have been initiated and done successfully.

Join us, be prepared for an exciting college Life and an assured great future!!!

Our Strengths

- Strict adherence to curriculum j Qualified and experienced faculties
- All around and integrated development plan
- Comprehensive study materials and notes

- Collaboration with industry for new courses to serve the demand of industry
- Allied healthcare job opportunities continue to increase every year
- Can learn practical medical techniques that advance your education and skills when getting trained for other medical careers.
- Short training programs make these careers suitable for people who are looking for a career change.
- Training for allied health professions is often less expensive than a traditional college education

School of physiotherapy

Approved by Government of India, Government of Puducherry and UGC. Recognized by Indian Association of Physiotherapists. A constituent College of VMRF Deemed to be University. Upgraded with Post Graduate Programme in 6 specialties.

FACULTY OF PHYSIOTHERAPY, PUDUCHERRY-Established in 2017. Situated on Pondy - Cuddalore Main Road, Kirumampakkam, Puducherry. Healthy rural atmosphere and a beautiful campus. One of the pioneer Physiotherapy Colleges in the State & Country.

Attracting students from all over India and abroad. 150 students on rolls. Spacious building, well equipped laboratories, demonstration & classrooms. Well-equipped main library with over 2000 books and more than 50 Indian journals. Departmental libraries.

Separate hostel for boys and girls. Indoor, Outdoor games facilities. Students' activities including Cultural and Art Clubs and NSS. Excellent results in the University examinations. Physiotherapy department extends a good service to the public.

Exercise therapy department with Parallel Bar, Quadriceps Table, Mariner Wheel, Staircase, Stationary Bicycle, Rowing Machine, Re-education Table, Suspension Apparatus, Overhead Pulley etc.,

6. VISION & MISSION STATEMENT

NAME	VISION	MISSION
AVMC	*"Imparting quality medical education for the betterment of the society."*	*A center of excellence offering medical education for the students & contributing to the society, nation & the world*
VMCN	*Attain excellence in nursing education through preparation of committed professional nurse to excel quality care in global perspectives.*	*This institution is committed to prepare graduates in nursing. In various levels like diploma, undergraduates and post graduates to render quality health care services in preventive, promotive, curative and rehabilitative aspects of health care at the national and international level with global perspectives*
SAHS	*The FAHS strives to become a highly recognized, state of the art, self-sufficient professional comprised of exceptional faculty, staff, students and alumni who are recognized nationally and internationally for their leadership excellence in health care.*	*To provide allied health sciences students with the knowledge, skills, and behavior to achieve their academic, professional and personal goals as competent health care practitioners and active, effective citizen in their respective communities. Special attention is given to the recruitment and graduation of rural school leaving and destitute students with high academic potential. Students are prepared to assume leadership roles and provide health services to the underserved and global communities*

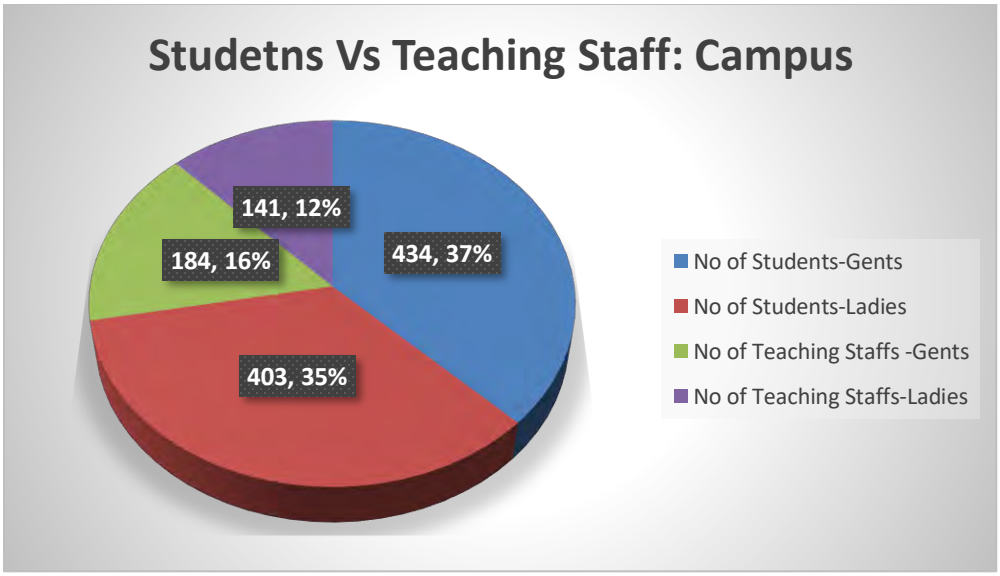
SPT	*To achieve excellence in the field of Physiotherapeutic education and service and thereby contribute to development of National Health care delivery.*	- *To impart knowledge, skill and develop attitude through innovative and creative approaches in a comprehensive way to meet global standards* - *To follow a holistic approach for the overall development of the personnel.* - *To deliver value-based education and thereby make them understand ethical values and morals in life*

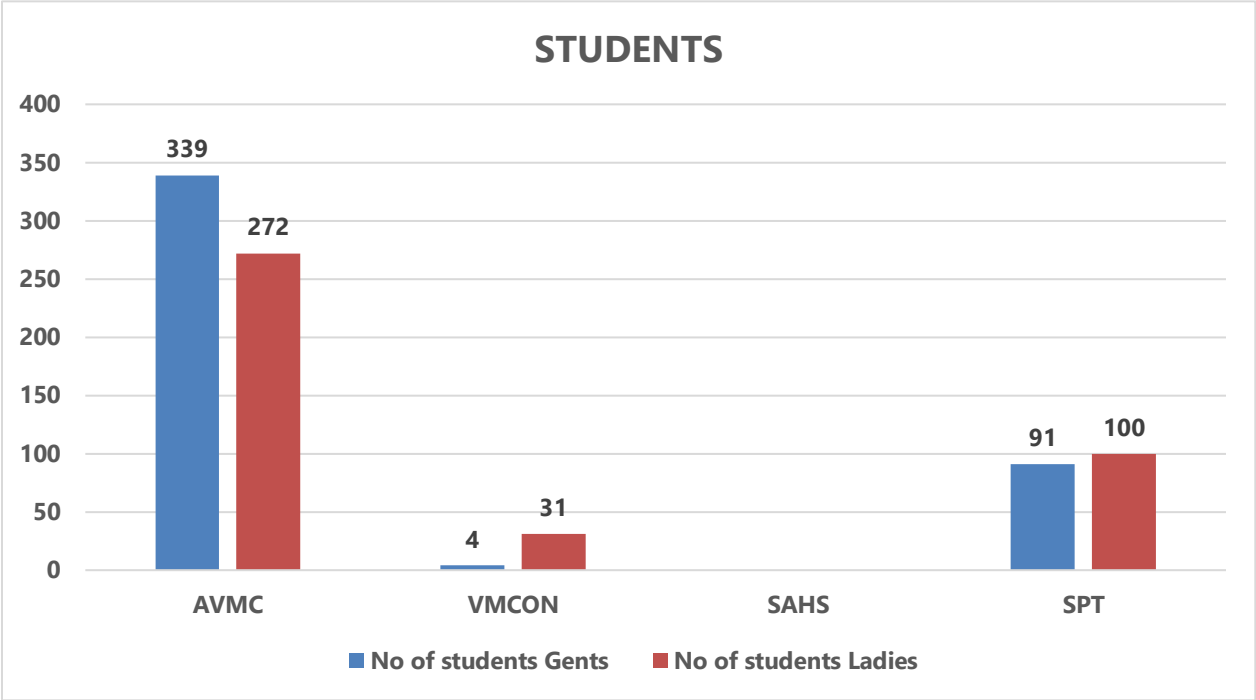
6.1 Total Campus

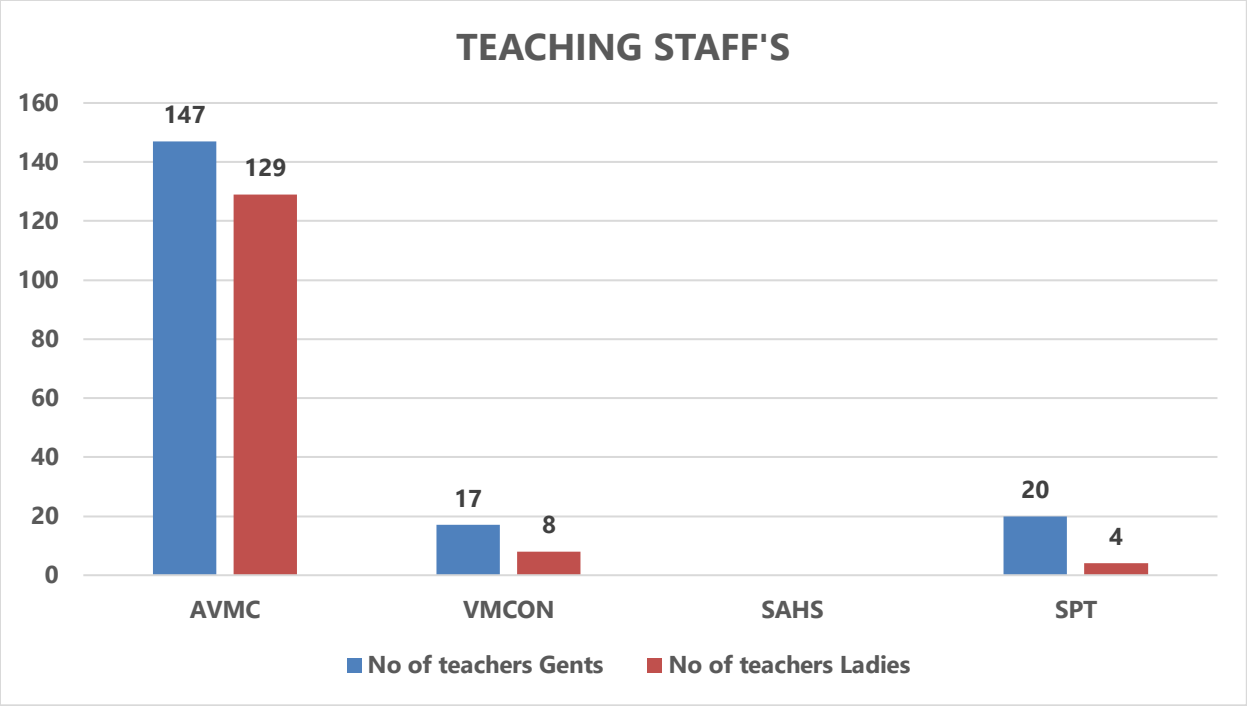
Colleges	Built up Area in Sqm
AVMC	74805.76
VMCON	12763.94
SAHS	27668.23
SPT	26887.9

6.2 STRENGTHS

College	No of students		No of teachers		No of Non-teaching staff	
	Gents	Ladies	Gents	Ladies	Gents	Ladies
AVMC	339	272	147	129	Data needed	Data needed
VMCON	4	31	17	8	Data needed	Data needed
SAHS	Data needed	Data needed	Data needed	Data needed	Data needed	Data needed
SPT	91	100	20	4	2	


Studetns Vs Teaching Staff: Campus
141, 12%
434, 37%
184, 16%
403, 35%
No of Students-Gents
No of Students-Ladies
No of Teaching Staffs -Gents
No of Teaching Staffs-Ladies


STUDENTS
400
350
300
250
200
150
100
50
0
339
272
4
31
91
100
AVMC
VMCON
SAHS
SPT
No of students Gents
No of students Ladies



7. CAMPUS INFRASTRCTURE

Student hostel

The Institution has hostel facility for boys and girls in individual blocks each with the hostel in mess caters to the requirement of all the inmates with both North Indian and South Indian food varieties in their regular menu. Student's activities including cultural clubs and art clubs. Well-equipped hostels and student's gym, play areas & sports facilities, ATM, shopping complex, food court and transport facilities

Library, ICT and Physical Infrastructure / Instrumentation

- Fully air-conditioned library with books, Journals and e-resources.
- Library equipped with computers with internet facilities.
- Journal available online.
- Library automated for demonstrating the procedures to the students
- Digital classroom Available.

- Common halls for boys and girls for reading.
- Library Committee evaluates utilization statistics & plan for improvements.
- Well-equipped hostels and student's gym play areas & sports facilities, ATM, shopping complex, food court and transport facilities.
- Equipment purchase by purchase committee, AMC for equipment/ SOP for all instruments.
- Establishment of Students Grievance Redressal Cell to redress all issues of the students.
- Establishment of Anti – Ragging and Anti – Sexual Harassment Cell to ensure student Safety and well – being in the campus.
- Separate Hostel for Girls available in the campus.
- All students are covered under the student Group Health Insurance Schemes.
- Free Medical facilities for all the students.
- Wi-Fi enabled network for free access to internet facilities in all campus and hostels.
- Sponsorship for presentation of best research papers.
- The students having facilities of getting trained in Yoga for a healthy mind.
- Encouragement of students to participate in Inter University/Inter Collegiate competitions in co- curricular and extracurricular activities.
- Transport facilities from residence to the institution.
- Industrial visits, Educational and Cultural Tours organized regularly for better exposure and experience.
- First aid center, pharmacy, food kiosks, gymnasium, sport amenities, and visitor rooms.

24 X 7 FACILITIES

- Electricity is provided.
- CCTV's are available.
- Security guards are available.
- Residential Gent's and Ladies warden, student councilors are available.

7.1 **Mess/ Canteen facilities -** A clean and hygienic mess for everyone, with all kind of food for all. Separate mess for girls and boys.

7.2 **FOOD: -**Healthy, wholesome food and a variety of dining options are available for the hostel students. Given the great diversity of tastes and cultures, students have access to multi-cuisine catering services that serves vegetarian, non-vegetarian and International food. A balanced menu is prepared every month by the student mess and Menu committee in consultation with the hostel administration.

7.3 **SPORTS COMPLEX -** Indoor and outdoor sports facilities are available for Men & Women.

7.4 **LIBRARY –**

The Central Library of AVMC is the knowledge hub of the college and disseminates knowledge wide and deep. Library is automated {Integrated Library Management System (ILMS).

SL NO	LIBRARY SERVICE	BOOKS
1	Textbooks	9023
2	Reference Books	4603
3	e-Books	896
4	Journals	84
5	e-Journals	5357
6	Digital Database	5
7	CD & Video	496
8	Library automation	1
9	Others (specify)	6

Last 10 years question papers available in library.

• Fully air-conditioned library with books, Journal's and e-resources.

• Library equipped with computers with internet facilities.

• Library automated for demonstrating the procedures to the students

• Digital classrooms are available.

• Common halls for boys and girls for reading.

• Library Committee evaluates utilization statistics & plan for improvements.

7.5 **STUDENTS MENTORING** - Mentor-mentee Activity Guidelines

• It is vital that all students receive regular and informed guidance, have a wide range of experiences and understand where to get further information and advice. This will be evident through a number of initiatives, including.

- Citizenship lessons.
- Individual learning reviews and target setting.
- Careers guidance.
- Further and Higher Education guidance.
- Workplace learning experiences offered.
- Regular internal communications with students (e.g. through student newsletters).
- 'Thought of the day' and soft skill' reinforcement initiatives.
- Community involvement opportunities.

• In some cases the relationship between the mentor and the mentee may be the only stability student knows, and the only time anyone spends quality time with them. Therefore, the Institute stipulates that a student mentor spend a minimum of one hour every month with their mentee.

7.6 **BANKING FACILITY -** The Institution have an ATM at our Campus. This 24 hours ATM facility helps all our Students and Faculty to do a safe transaction whenever its needed.

7.7 **INTERNET -** AVMC has dedicated Internet Leased line which is accessed from anywhere in the campus which helps the student in their academics

7.8 **NSS -** The NSS provides the youth, during this interregnum, avenues for indulging in creative and constructive work suited to their educational background and aptitude.

NSS Activities 2019: "**Tree Plantation - 23rd November 2019**, **World Environment Day - 05th June, 2019**

8. GREEN AUDITING

8.1 Benefits of green auditing

- To safeguard the environment and natural resources used in the institution.
- Address current or potential future problems that may arise during the course of action.
- To provide basis for improved sustainability.
- To create a green campus.
- To enable waste management through reduction of waste Generation, solid- waste and water recycling.
- To create plastic free campus and evolve health consciousness among the stakeholders.
- Providing an opportunity for management to give credit for good environmental performance.
- Empower the organizations to frame a better environmental performance.
- Impart environmental education through systematic environmental Management approach and improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the College and its environment.
- Enhancement of college profile.
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management & monitoring of environmental and sustainable development programs of the college.

8.2 Target areas of green auditing

Basically, Green Audit involves the inspection to assess the total environmental impact of its activities. It indicates what type of carbon footprints organizations are leaving on the planet & also suggest ways to reduce it.

Accordingly, Green Audit mainly emphasizes the following key areas:

1. Energy Conservation
2. Saving Water
3. Greening the workplace
    a. Efforts of carbon neutrality
    b. Plantation – Botanical or Medical Significance
    c. Non-conventional Energy sources-solar panels
4. Waste Management
    a. Bio- Hazardous
    b. E-Waste
5. Effluent Treatment and Recycling plant

.

8.3 Methodology of Green Auditing

8.3.1 Data Collection

8.3.2 Data Analysis

8.3.3 Observation

8.3.4 Recommendation

8.3.5 Review of Documents and Records

8.3.1.1 Data collection

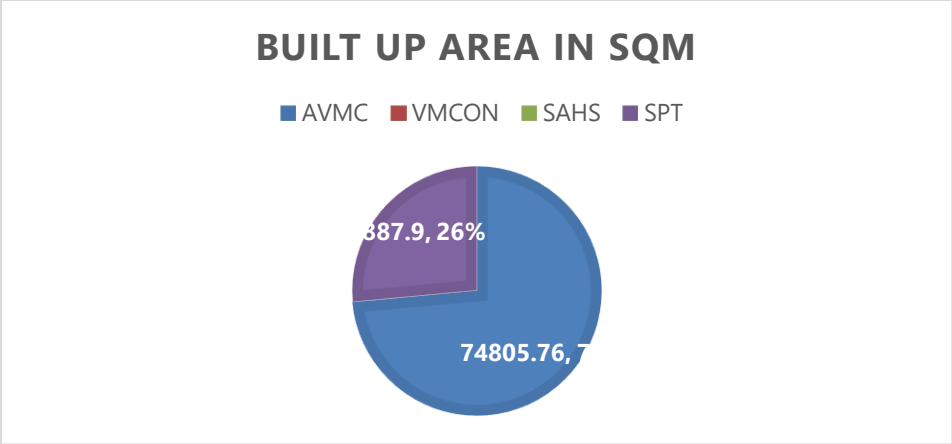
In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

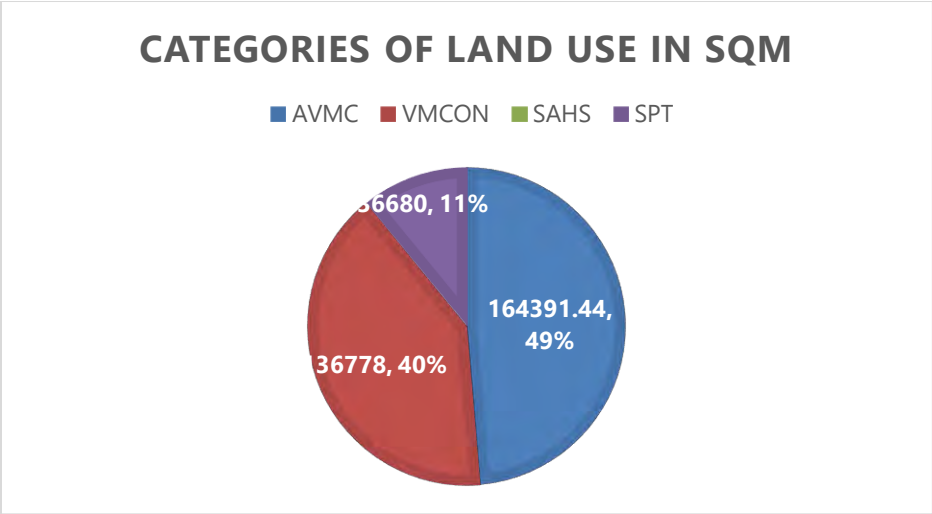
Following steps were taken for data collection:

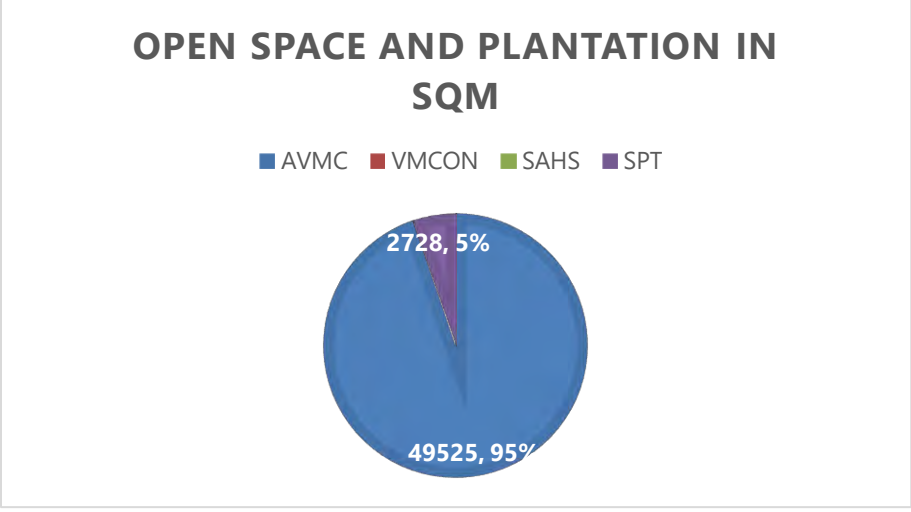
- The team went to each department, Library, canteen etc.
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

8.3.1.2 GEOGRAPHICAL LOCATION WITH CAMPUS MAP IN SCALE

Colleges	Built up Area in Sqm	Categories of land use in Sqm	Open space and plantation in Sqm
AVMC	74805.76	164391.44	49525
VMCON	12763.94	136778	2976
SAHS	27668.23	36662	2678
SPT	26887.9	36680	2728


BUILT UP AREA IN SQM
AVMC
VMCON
SAHS
SPT
387.9, 26%
74805.76, 7

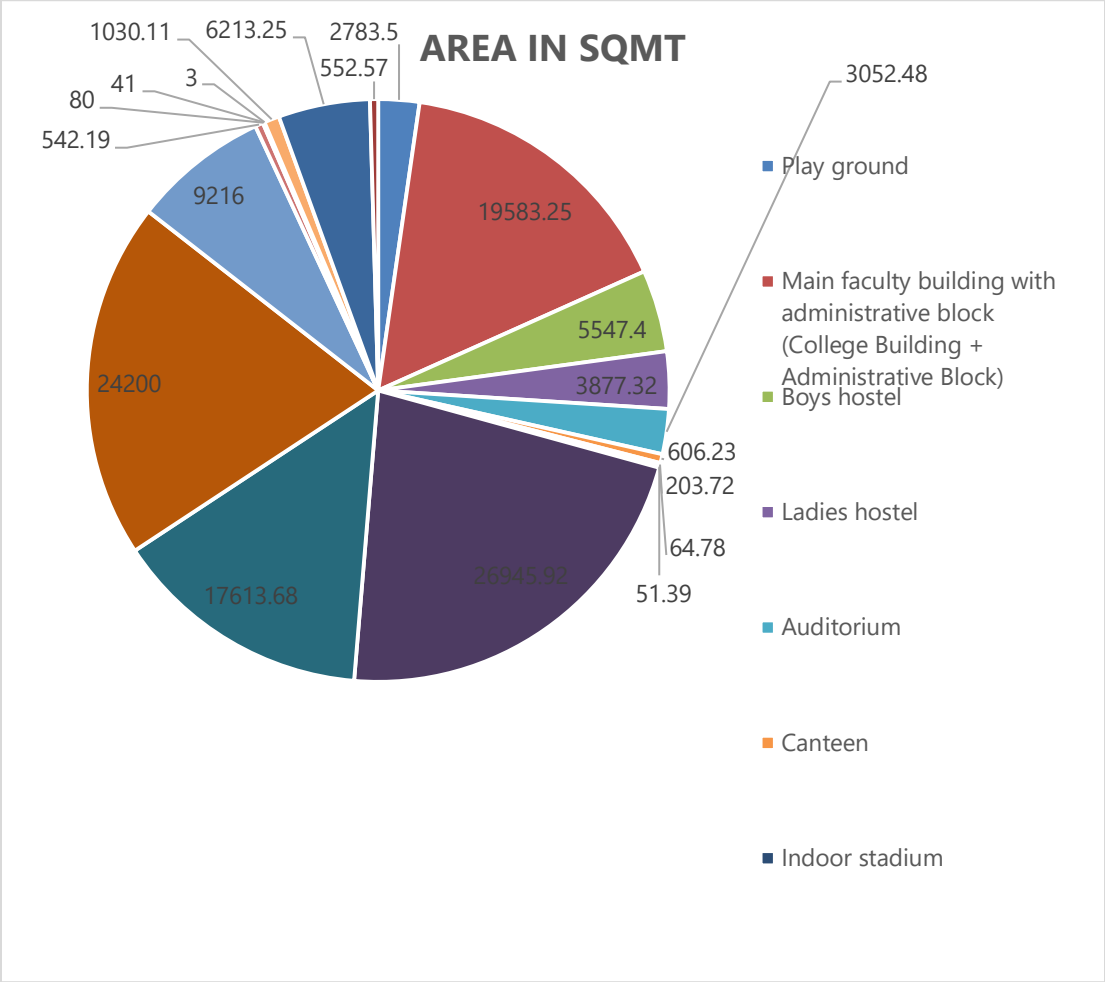

CATEGORIES OF LAND USE IN SQM
AVMC
VMCON
SAHS
SPT
36680, 11%
164391.44, 49%
136778, 40%


OPEN SPACE AND PLANTATION IN SQM
AVMC
VMCON
SAHS
SPT
2728, 5%
49525, 95%

8.3.1.3 CATEGORIES OF LAND USE (BUILT UP AREA)

DESCRIPTION	AVMC	VMCN	SPT	SAHS
Play ground	2783.5	2783.5	15680	
Main faculty building with administrative block (College Building + Administrative Block)	19583.25	43.603	26887.9	
Boys hostel	5547.4	NA	5547.4	
Ladies hostel	3877.32	10000	3877.32	
Auditorium	3052.48	3052.48	0	
Canteen	606.23	606.23	606.23	
Indoor stadium	203.72	203.72	0	
Lab	64.78	500	1008	
Toilets	51.39	100	0	
Etc Hospital	26945.92	0	0	
Etc (Quarters)	17613.68	0	0	
Garden area	24200	24200	2728	
Playground area	9216	9216	0	
Kitchen	542.19	542.19	0	
Toilets (number)	80	43	2	
Number of class rooms	41	11,810	4	
Garbage dump (number)	3	3	0	
Laboratory	1030.11	4450	0	
Car/scooter shed area	6213.25	6213.25	0	
Office rooms	552.57	7000	504	

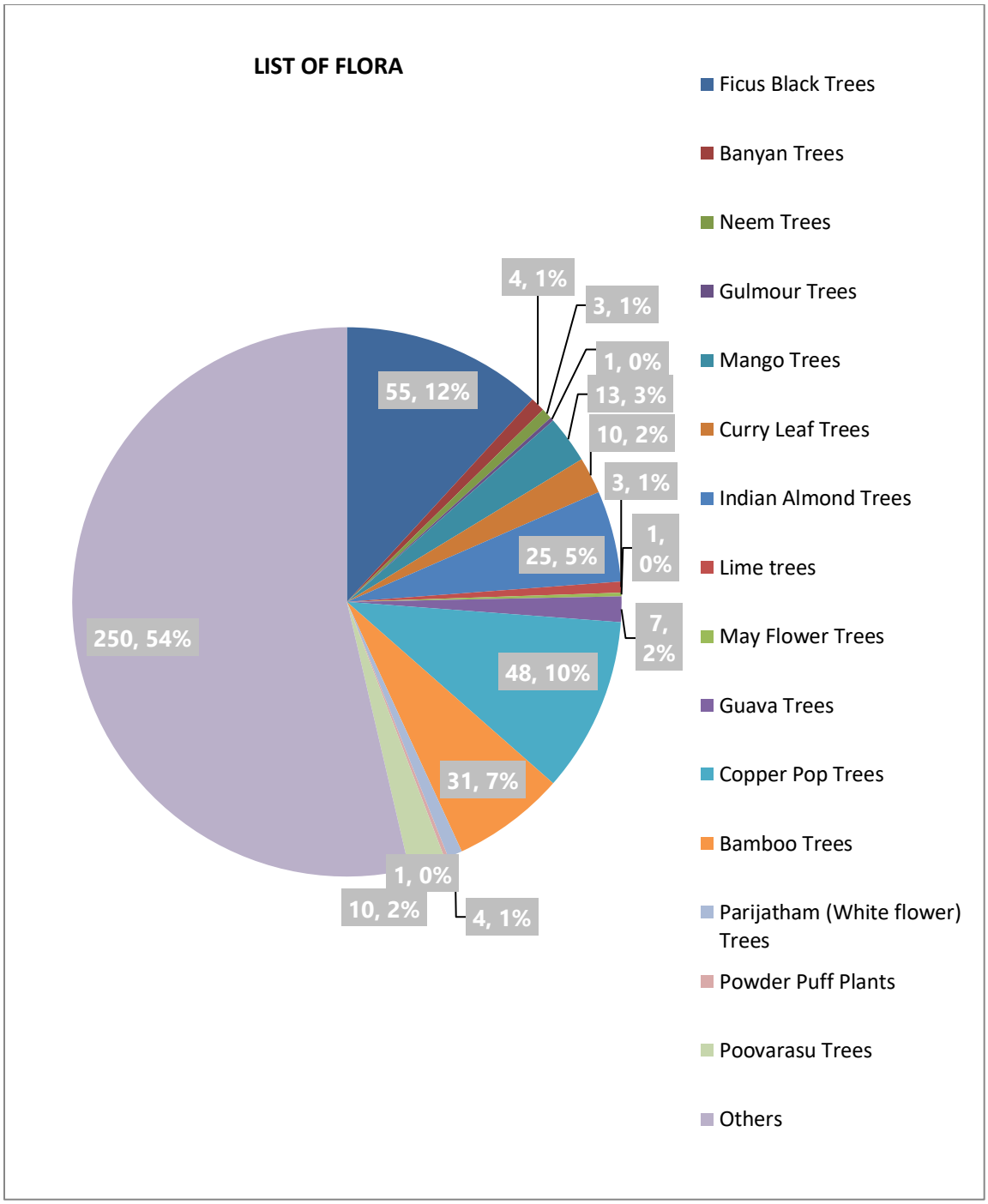
Total	**122208**	**80723.37**	**56844.9**	



8.3.1.4 FLORA & FAUNA

DESCRIPTION- FLORA	QTY
Ficus Black Trees	55
Banyan Trees	4
Neem Trees	3
Gulmour Trees	1
Mango Trees	13
Curry Leaf Trees	10
Indian Almond Trees	30
Lime trees	3
May Flower Trees	1
Guava Trees	7
Copper Pop Trees	48
Bamboo Trees	31
Parijatham (White flower) Trees	4

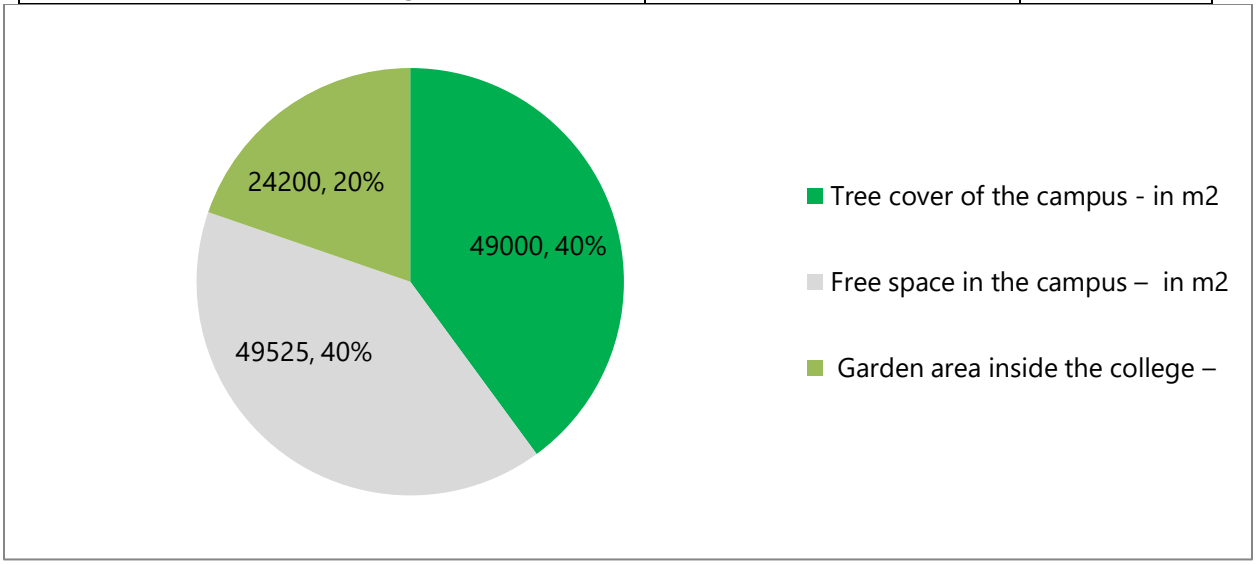
Powder Puff Plants	1
Poovarasu Trees	10
Total	**472**
DESCRIPTION- FAUNA	**Zoological name**
SPIDERS	**Araneae**
Reptiles	Reptilia
Birds	Aves
Mammals	Mammalia


LIST OF FLORA
Ficus Black Trees
Banyan Trees
Neem Trees
Gulmour Trees
Mango Trees
Curry Leaf Trees
Indian Almond Trees
Lime trees
May Flower Trees
Guava Trees
Copper Pop Trees
Bamboo Trees
Parijatham (White flower) Trees
Powder Puff Plants
Poovarasu Trees
Others
55, 12%
4, 1%
3, 1%
1, 0%
13, 3%
10, 2%
3, 1%
25, 5%
1, 0%
7, 2%
48, 10%
31, 7%
1, 0%
4, 1%
10, 2%
250, 54%

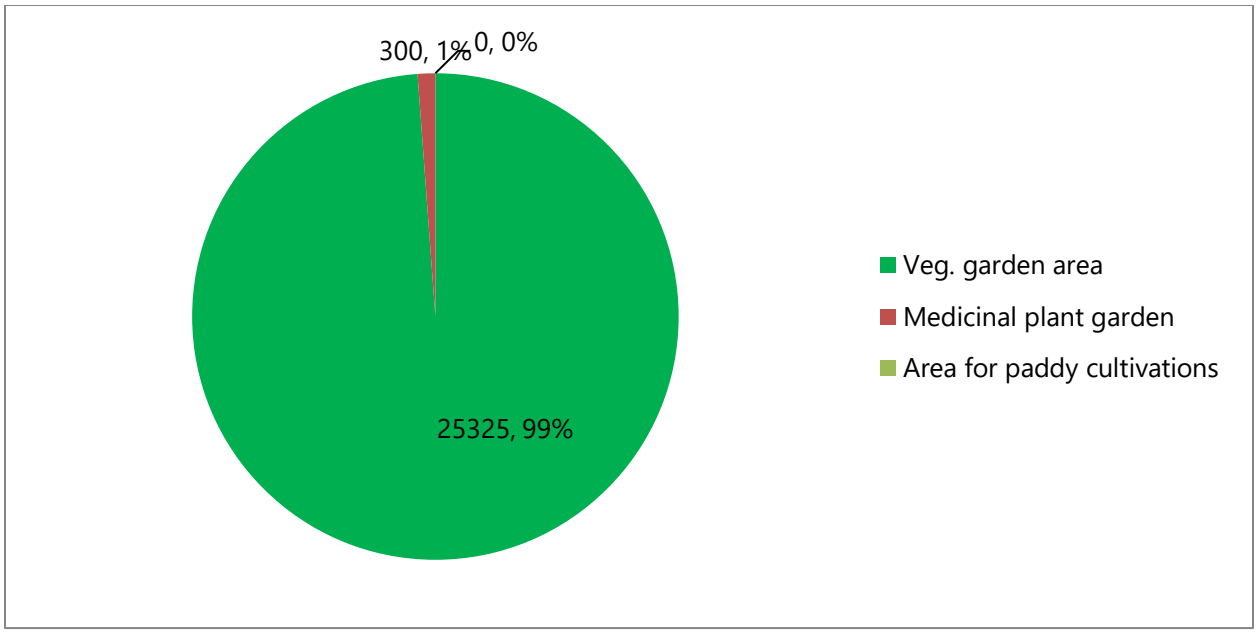
	List of Trees at AVMC, VMCN, SAHS & SPT					
Sl No	**Tree Names**		**16-17**	**17-18**	**18-19**	**19-20**
1	Tamarind Trees		30	15	10	0
2	Avenu Trees		1	1	2	0
3	Neem Trees		1	1	0	1
4	Jack Fruit Trees		0	1	0	0
5	Mango Trees		5	4	5	2
6	Coconut Trees		5	4	7	5
7	Jamoon Trees		15	10	5	0
8	Amla Trees		2	1	0	0
9	Singapore Cherry Trees		0	10	11	10
10	Champak Trees		3	3	0	1
11	Jungle Trees		20	10	18	0
12	Teak Trees		15	10	6	0
13	Panner Trees		2	1	0	1
14	Bagan Villa Plants		0	1	0	0
15	Teak Wood Trees at Sy. No. 18		5	3	2	0
16	Pick Cross		150	80	20	0
17	Egrow		0	0	1	0
	TOTAL		**254**	**141**	**72**	**5**

8.3.1.5 Green Campus

DESCRIPTION	AVMC, VMCN & SAHS	SPT
Tree cover of the campus - in m2	49000	66116
Free space in the campus – in m2	49525	50571
Garden area inside the college – in m2	24200.	1500



TOTAL AREA FOR CULTIVATION:-	**Area in SQ meters**
Veg. garden area	25325
Medicinal plant garden	300
Area for paddy cultivations	0

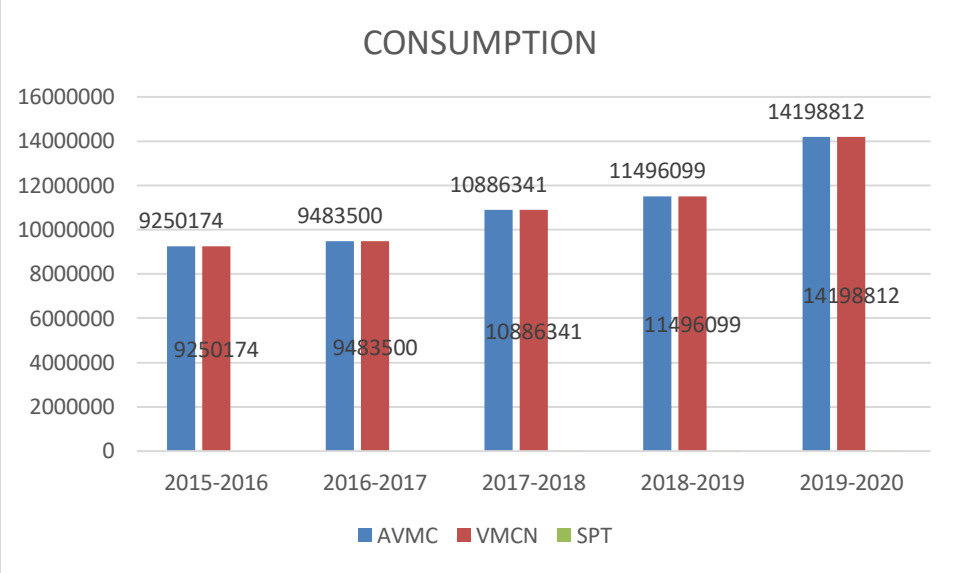


8.3.2 DATA ANALYSIS

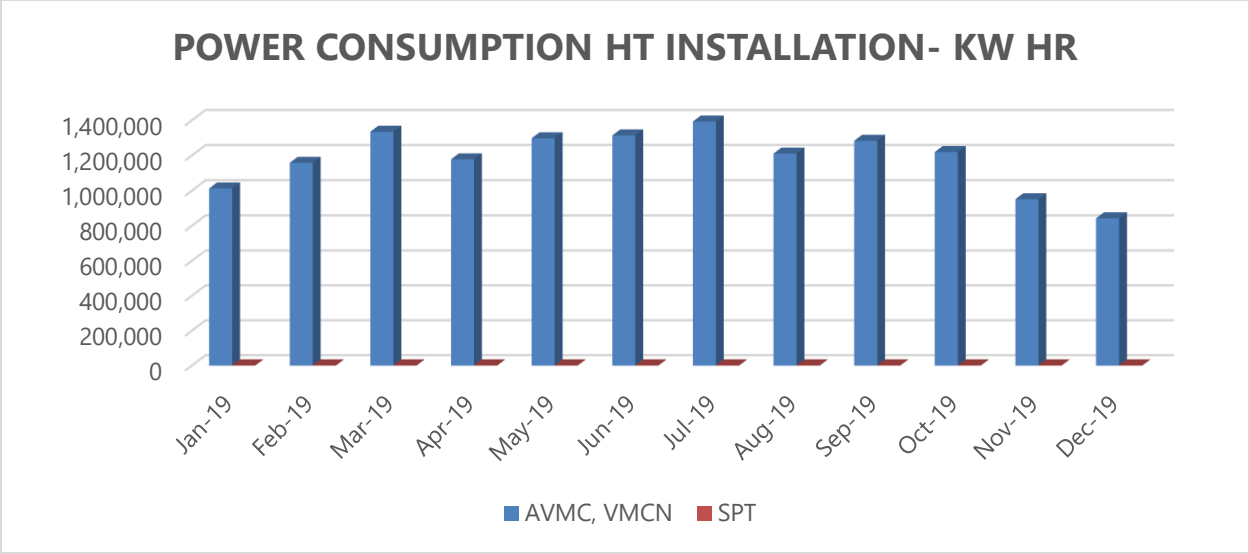
Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan provided by the Tamil Nadu State Electricity Board Data related to water usages were also analyzed using appropriate methodology.

8.3.2.1 Electricity

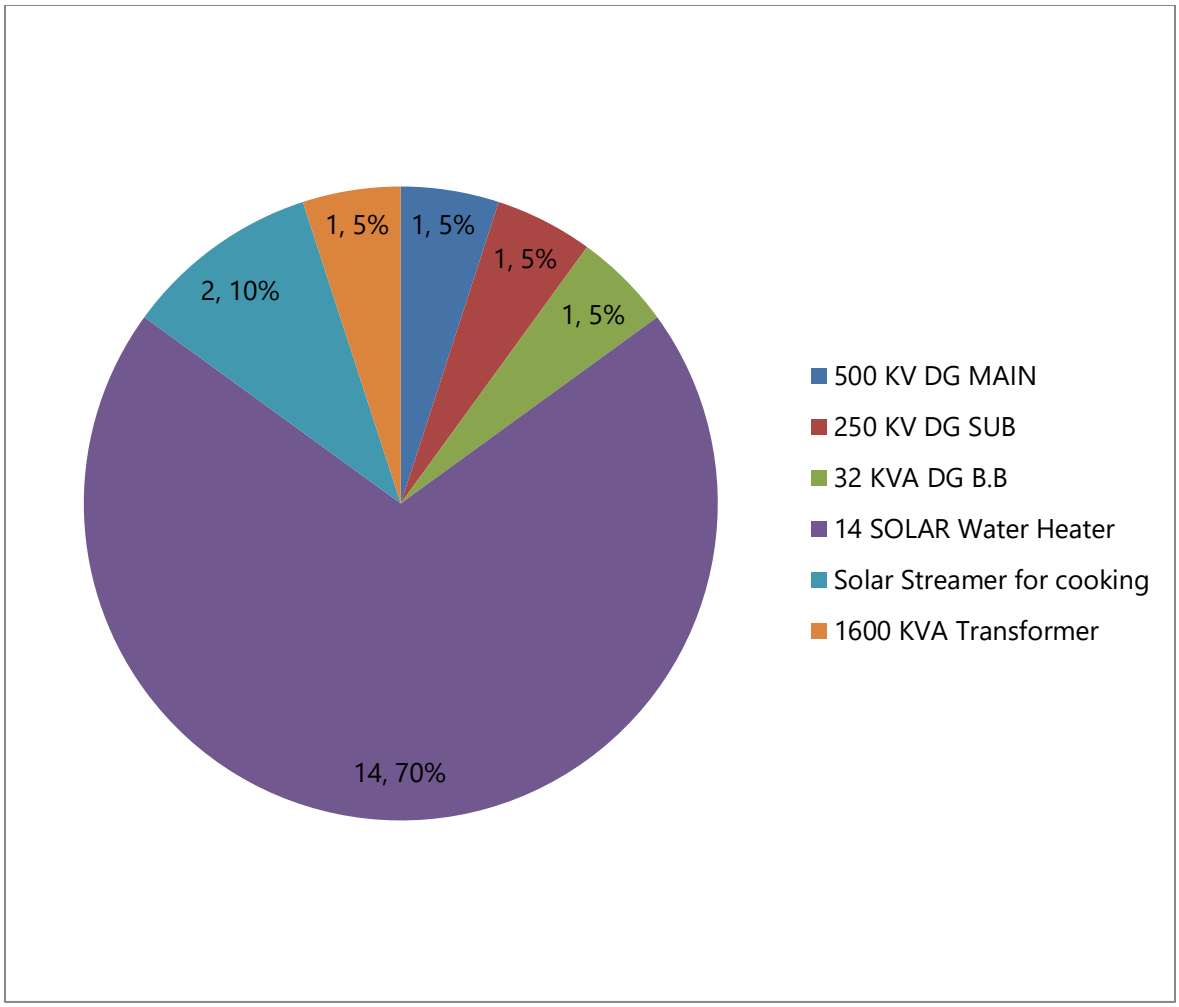
Consumption of Electricity per year in kW-hr				
YEAR	**AVMC**	**VMCN**	**SPT**	**SAHS**
2015-2016	9250174	9250174	0	
2016-2017	9483500	9483500	0	
2017-2018	10886341	10886341	23952	
2018-2019	11496099	11496099	23840	
2019-2020	14198812	14198812	10790	
Total 5 Yrs.	**55315926**	**55315926**	**58582**	



Electrical Power Consumption for the year of 2019. HT Installations			
YEAR	**AVMC, VMCN**	**SPT**	**SAHS**
Jan-19	10,12,440	1,996	
Feb-19	11,58,520	1,796	
Mar-19	13,35,180	1,808	
Apr-19	11,77,940	1,709	
May-19	12,98,110	1,788	
Jun-19	13,14,280	1,790	
Jul-19	13,93,370	1,798	
Aug-19	12,10,896	1,988	
Sep-19	12,83,796	1,976	
Oct-19	12,19,752	1,995	
Nov-19	9,51,480	1,885	
Dec-19	8,43,048	1,790	
Total	**14198812**	**223129**	

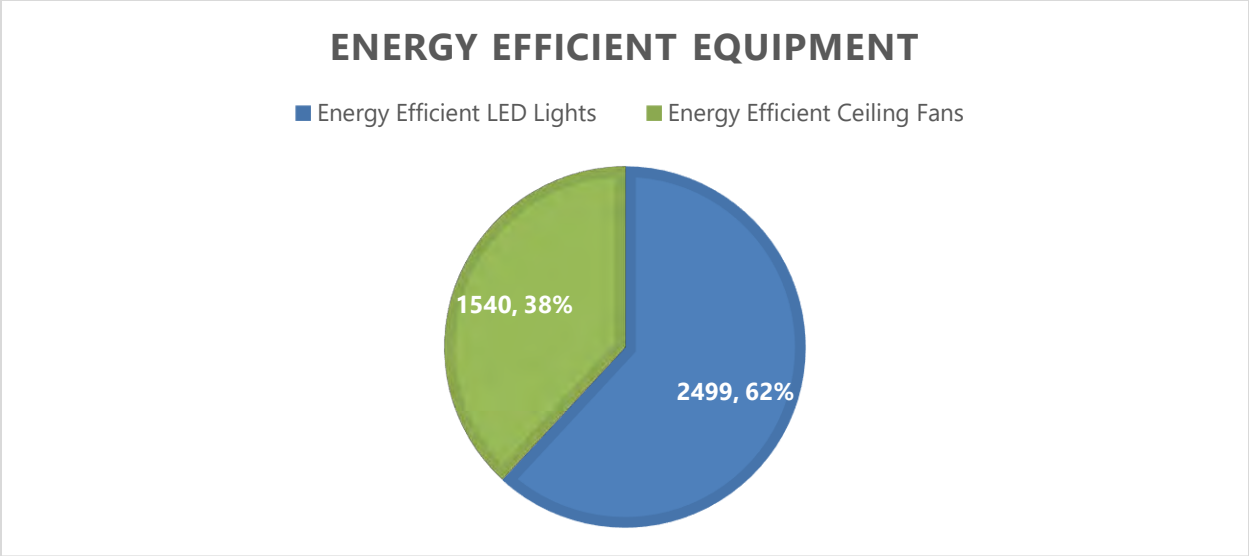


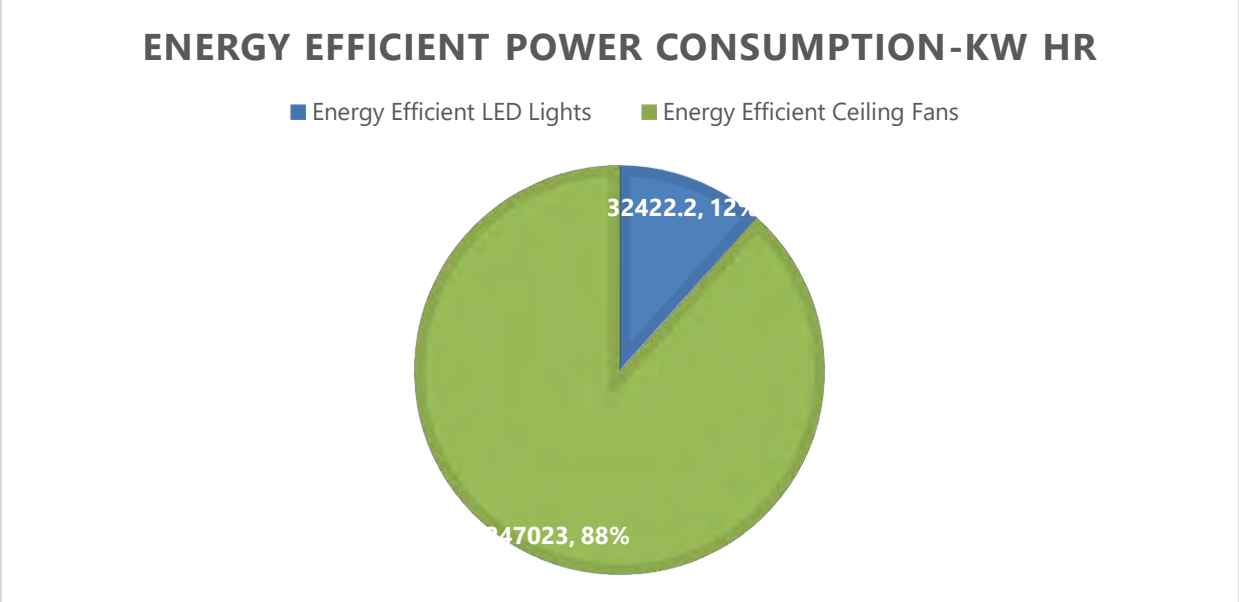
Details of Electrical Equipment & Generators	**Qty.**
500 KV DG MAIN	1
250 KV DG SUB	1
32 KVA DG B.B	1
14 SOLAR Water Heater	14
Solar Streamer for cooking	2
1600 KVA Transformer	1



BUILDINGS AND ENERGY EFFICIENT EQUIPMENT

SL NO	CATEGORIES	QTY	POWER CONSUMPTION-in units per annum
1	Energy Efficient LED Lights	2499	28966.2 kWh
2	Energy Efficient Ceiling Fans	1540	247023 kWh





8.3.2.2 REPORTS

1. AIR QUALITY REPORT

12 parameters tested on the air quality in the main entrance and Bore well college block@ the ambient, temperature of Min 27 deg C and Max 36 deg C, RH Min 48% and max 88%.

And observed that, all the results were within the limit of CPCB standards

Note: Refer Annexure for detailed report

2. WATER QUALITY REPORT

WATER QUALITY REPORT	CHENNAI METEX LAB PRIVATE LIMITED	
Parameter/ WHO Permissible Level	Observed Value	Method
	Under Permissible Limit	**Protocol IS – 3025**
Water Quality Report as Follows		
Sample Nature/Name: Bore well water		
Description:- Colourless, Odourless, Transparent liquid.		

TESTS	**RESULTS**	**Maximum Acceptable Limits (In Mg/l)**	**Maximum Permissible Limits (In Mg/1)**	**Protocol**
		(As per IS 10500:2012)		**IS-3025**
Colour, Hazen Units	**1 Hazen**	5	15	IS: 3025: Part: 4 - 1983 (Reaff: 2012)
Odour	**Agreeable**	Agreeable	Agreeable	IS: 3025: Part: 5 - 1983 (Reaff: 2012)
Turbidity, NTU	**less then 0.5 NTU**	1 NTU	5 NTU	IS: 3025: Part: 10 - 1984 (Reaff: 2012)
pH Value	**6.59**	6.5-8.5	NR	IS: 3025: Part: 11 - 1983 (Reaff: 2012)
Total Hardness as $CaCO_3$, mg/1	**134 mg/l**	200 mg/l	600 mg/l	IS: 3025: Part: 21 - 2009 (Reaff: 2014)
Calcium as Ca, mg/1	**39 mg/l**	75 mg/l	200 mg/l	IS: 3025: Part: 40 - 1991 (Reaff: 2014)
Magnesium, as Mg, mg/1	**8.7 mg/l**	30 mg/l	100 mg/l	IS: 3025: Part: 46 - 1994 (Reaff: 2014)
Chloride as Cl, mg/1	**69 mg/l**	250 mg/l	1000 mg/l	IS: 3025: Part: 32 - 1988 (Reaff: 2014)
Total Dissolved solids, mg/1	**348 mg/l**	500 mg/l	2000 mg/l	IS: 3025: Part: 16 - 1984 (Reaff: 2012)
Sulphate as SO_4, mg/1	**5.4 mg/l**	200 mg/l	400 mg/l	IS: 3025: Part: 24 - 1986 (Reaff: 2014)
Nitrate as NO_3, mg/1	**13.4 mg/l**	45 mg/l	NR	IS: 3025: Part: 34 - 1988 (Reaff: 2014)
Fluoride as F, mg/1	**0.18 mg/l**	1.0 mg/l	1.5 mg/l	APHA - 22nd Edn. 2012 - 4500 F,D

Iron as Fe, mg/1	**0.02 mg/l**	1.0 mg/l	NR	IS: 3025: Part: 53 - 2003 (Reaff: 2014)
Chromium as Cr6+, mg/1	**Nil**	Nil	Nil	Nil
Copper as Cu, mg/1	**Nil**	Nil	Nil	Nil
Manganese as Mn , mg/1	**12 mg/l**	30 mg/l	100 mg/l	IS: 3025: Part: 46 - 1994 (Reaff: 2014)
Residual Free Chlorine, mg/l	**Nil**	Nil	Nil	Nil
Total Alkalinity as "CaCO3, mg/1	**124 mg/l**	200 mg/l	400 mg/l	IS: 3025: Part: 23 - 1986 (Reaff: 2014)
Aluminum, as Al, mg/1	**Nil**	Nil	Nil	Nil
Escherichia colli	**Absent / 100 ml**	Shall not be detectable in any 100 ml sample		IS: 15185 - 2016
Note: The above water sample complies with permissible limit of drinking water specification as per IS: 10500: 2012 with respect to above parameters tested. BDL: Below detection limit DL: Detection limit				

`Ambient air quality standards in respect of Noise

Area	Limits in dB(A) Leq	
	Day time	**Night Time**
OPD area	47 dB	36 dB
College Block	42 dB	32 dB
Hostel	48.8 dB	34 dB
Quarters	40 dB	30 dB
Entrance	49.4 dB	38 Db

Level of disturbance near by the institution (Scale 1 to 9)

Level of disturbance it creates for the college	Scale
Municipal dump yard	NA
Garbage heap	NA
Public convenience	NA
Sewer line	NA
Stagnant water	NA
Open drainage	2
Industry – (Mention the type)	NA
Bus / Railway station	NA
Market / shopping complex / Public halls	NA

8.3.2.3 ANALYSIS OF WASTE GENERATION AND DISPOSAL

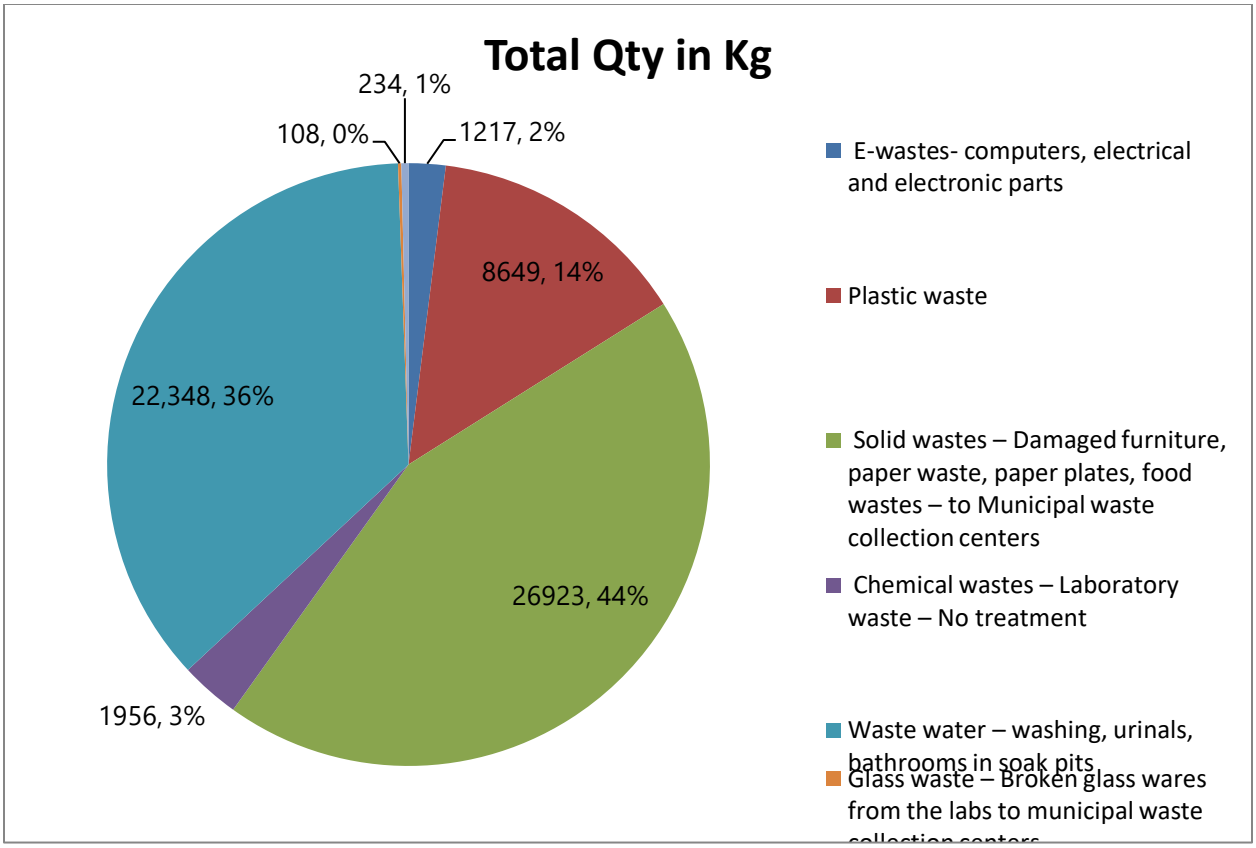
Department /block	Solid waste in	Plastic dry waste /day	E-Waste in kg / day	Packing material in kg/day	Bio—medical waste	Organic wastes inkg /day	Paper waste in kg / day	General waste in kg /day	Bio-medical waste in kg /day	Garbage in kg/ day	Radio-active bio-	Non-biodegradable	Waste Management	Mode of disposal	Remarks
Canteen	**10**	**12**		**8**		**813.7**	**10**	**20**		**15**				**Pondicherry Solid Waste Management Company Private Limited**	Biodegradable / Non-biodegradable
Library	**5**	**3**					**0.5**			**1**					Biodegradable / Non-biodegradable
Store	**3**	**2**		**3**			**0.5**	**3**		**1**					Biodegradable / Non-biodegradable
Office		**2**		**2**			**2**	**3**		**3**					Biodegradable / Non-biodegradable
Garden	**5**	**4**		**5**			**15**	**15**		**5**					Biodegradable
Auditorium															
Bathrooms								**12**		**3**					
Class rooms		**2**					**2**	**2**							
Lab		**1.5**		**6**			**4**	**2**		**1**					Biodegradable
Premises	**10**					**25**		**110**							
	33	**26.5**		**24**		**838.7**	**34**	**166**		**29**					

Total

DESCRIPTION	AVMC, VMCN	SPT
Total Biodegradable waste in kg/ day	1151.2	852.7
Non-biodegradable waste in kg/ day	21759	33
Hazardous wastes in kg/day	1573	0

Types of wastes

Description	AVMC, VMCN, SAHS	SPT	Mode of disposal
E-wastes- computers, electrical and electronic parts	1217	5	Pondicherry Solid Waste Management Company Private Limited
Plastic waste	8649	6	
Solid wastes – Damaged furniture, paper waste, paper plates, food wastes – to Municipal waste collection centres	26923	6	
Chemical wastes – Laboratory waste – No treatment	1956	5	
Waste water – washing, urinals, bathrooms in soak pits	22,348	5000	
Glass waste – Broken glass wares from the labs to municipal waste collection centres.	108	2	
Napkin incinerators	234	10	



Methods used for managing waste generation

METHODS	PLEASE TICK
Composting	
Recycling	
Reusing	
Others	✔

Note: Mode of disposal through Pondicherry Solid Waste Management Company Private Limited

ANALYSIS ON RECYCLING TREATED WATER

SL NO	CAPACITY in KLD	TREATED WATER USAGE	IS POLLUTANTS ARE REMOVED FROM THE TREATED WATER			REMARKS
			PHYSICAL	BIOLOGICAL	CHEMICAL	
1	500	240	PH-7.4	BOD-350	COD-450	SEWAGE WATER
			PH-7.9	BOD-3.5	COD-23.7	TREATED WATER

REQUIREMENT OF WATER PER DAY

SL. No.	Buildings	No of Occupants	Total Consumption	Actual Per Capita
1	Hospital, Hostel and Residential-AVMC	3258	100890.6	30.96
2	Hospital, Hostel and Residential-VMCN	0	0	0
3	Hospital, Hostel and Residential-SAHS	650	10676.3	16.42
4	Hospital, Hostel and Residential-SPT	0	0	0

8.3.3 Major Audit Observations

- Observed that college has promoted environmental aspects, has initiated steps which include in campus rainwater harvesting projects.
- Practiced complete ban on plastics within the campus.
- Observed solar water heating systems in hostel.
- Treatment of wastewater and its recycling is as per regulations.
- Renewable energy sources like solar panels used for street lighting and solar energy is used for water heating hence the Percentage of power requirement of the University met.
- The academy is encouraged the faculty and students to use cycles to save environment, prevent air pollution and promote healthy lifestyle.
- The future goal is to make the institution, a paperless organization.

- Hence the AVMC promotes the eco-friendly initiatives include energy conservation, use of solar / renewable energy, rain-water harvesting, sewage treatment plant, domestic waste and biomedical waste management and air pollution control.
- Electronic wastes are collected, and they are disposed to the agencies recommended by the Pollution Control Board.

8.3.4 Recommendation

On the basis of results of data analysis and observations, some steps for reducing power, water consumption, greening the workplace, waste management and effluent treatment and recycling plant were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health

Target Areas of green auditing in Detail

8.3.4.1 Energy Conservation – This includes energy audit where the auditors identifies way to save electric, natural gas, and other forms of power that are inefficient or being wasted in the organization. This is done by recommending more efficient electric heating & cooling etc.

Approximately 40% of power requirement of our Institute met by the following renewable energy sources:

The following are steps taken to ensure the energy conservation

- Solar energy water heater in Hostels
- Solar energy Steamer in Mess and canteen for cooking foods
- 100% of Street lamps, and lights inside the building were replaced using LED lights.
- Sensor based energy conservation for led lamps in corridors.

- Buildings are constructed in such a way to access to natural sun light and air circulation.
- Construction of Building is not more than first floor, so we have Ramps with rails for patients and avoid Electrical operating Lifts.
- 5* Air-conditioners with Invertor were used to consume less energy

Recommendation

- Light fittings are needed to be cleaned regularly to ensure optimal lighting.
- Windowpanes are to be cleaned regularly to allow in more day light.
- All air conditioners are with local control and are used only when necessary. They are needed to set at comfortable 25 degrees.
- All computers, printers, photocopiers and other equipment are have to be switched off at the end of the day.
- Standby settings on LCD projectors, printers and computers are to be avoided.
- No of Energy efficient ceiling fans has to be increased to conserve more power
- Ensure Fridges are not placed next to heat sources.

SL NO	CATEGORIES	QTY	POWER CONSUMPTION in units per annum
1	Energy Efficient LED Lights	2499	32422.2 kWh
2	Energy Efficient Ceiling Fans	1540	247023 kWh

8.3.4.2 Saving water- This involves educating the employees on ways to save, recycle & reuse precious water resources both inside & outside the premises. The basic emphasis should be to reduce water consumption.

Steps taken to conserve water are as follows:

Rain Water Harvesting System is installed to collect rain water from roof top of the buildings and allow it to flow to the nearest open well. Rain water is not taken for recharging ground water because of the unfavorable soil conditions

8.3.4.3 Greening the work place

This is achieved by the following activities of designing a greener office space like:

1. **Efforts for carbon neutrality**-

a. Prevention of pollution

b. Tree Plantation,

c. Reduction of paper usage

d. Plastic free zone

2. Use of renewable energy sources

a. Solar Energy

3. Waste Management

a. E-Waste and Solid wastes

b. Bio-waste

4. Water recycling

In one year, a single mature tree will absorb up to 48 pounds of carbon-di-oxide from the atmosphere and releases its oxygen. The amount of oxygen that a single tree produces is enough to provide one day's supply of oxygen for people

a. Efforts of carbon Neutrality

Current Practice

SL NO	ACTIVITIES	Encouraging of bi-cycles	PUC vehicles are only allowed	Car pool	PUC stickers available	Saplings	One side printing	judicious use of printers	Online application forms	Discouraged use of polythene
1	Prevention of pollution	✓	✓	✓	✓					
2	Tree sampling					✓				
3	Reduction of paper usage						✓	✓	✓	
4	Plastic free zone									✓

- Tree Plantation, Restricted entry of automobiles within campus, wastewater (240kLD) is treated in a treatment plant and treated water is

used for watering the trees, plants, shrubs, and grass etc., and hence equivalent carbon credit is achieved by this.

- Campus revealed a wide managing floral diversity.
- 472 different kind of plants were planted inside the campus and sustain it more.
- The campus is frequently visited by several natural enthusiasts to observe the Birds on the campus as well as adjacent to Bahour lake
- The plants belonging to sawed habits like epiphytes, climbers (4 nos), Grasses (Korean grass covers 7000 Sq.Mt; St.Augustian grass covers), Herbs (878 nos), Shrubs (7046 nos covers 2944 Sq,Mt), Tree saplings (120 nos) and Trees (1021 nos covers 19449 Sq.Meter).
- The plants belonged to 49 different families and total 190 species of Flora in the campus
- All internal circulars in the Institute are sent through E-mails, in order to save papers and also all Departments are encourage to reutilize the one side printed papers for printing various other material.

Recommendation

- Buses shall be fitted with pollution free stickers (emission test to be done)
- The staff is also encouraged to use carpool to reduce consumption of fuel, pollution and reduce carbon footprint.
- The university vehicles are to be checked by the RTO and provided with (CNG) pollution-free stickers.
- The future goal is to make the institution, a paperless organization.
- Recommend to, use Environment friendly jute bags to the delegates during the undergraduate conferences or any other occasions
- The use of polythene covers is not to encourage on campus instead everyone is encouraged to use paper bags / cloth bags.

b. Use of renewable Energy source

- **Solar Energy**

- 25 solar water heating panels has been setup and 2650 watts of energy conserved per day. To that extent EB consumption has been reduced and hence nonrenewable energy consumption to generate 2650Watts is reduced and also CO^2, SO^2, SPM emissions reduction have been achieved.

The Institution has facilities for alternate sources of energy and Energy Conservation Measure:

Solar Energy

Energy	Solar Water Heating Panels	Energy Generated Per Day	Energy conserved Per Year Considering 250 Days
Solar Energy	25	2650 Watts	654000 Watts

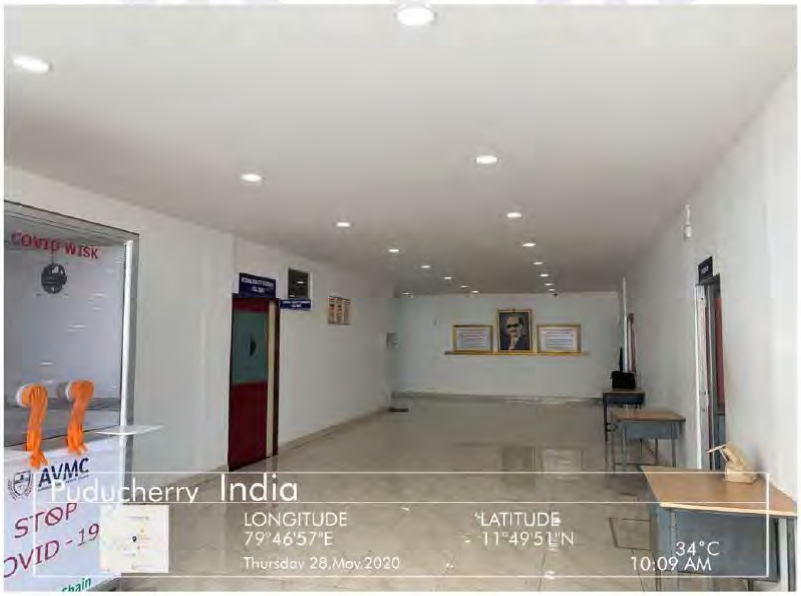
Statement of Energy Conserved in AVMC Campus during the year of- 2019

Department / Area	No of panels	Energy conservation by each solar water heater panel in Kw	Total energy savings by solar water heater per day in Kw	Total Electrical Power savings in year approx 250days in Kw	Cost per unit in Rupees
Ladies hostel		10.6 kw/solar water panel			
New Ladies Hostel	4		42.4 kw	10600 kw	94340
senior Ladies Hostel	3		31.8 kw	7950 kw	70755
NRI Ladies Hostel	2		21.2 kw	5300 kw	47170
Junior Ladies Hostel	3		31.8 kw	7950 kw	70755
P.G Ladies Hostel	3		31.8 kw	7950 kw	70755
Boys Hostel					
UG Men's Hostel	4		42.4 kw	10600 kw	94340
Interns Hostel	2		21.2 kw	5300 kw	47170

NRI Boys Hostel	2		21.2 kw	5300 kw	47170
PG Boys Hostel	2		21.2 kw	5300 kw	47170
Total	**25**		**265 kw**	**66250 kw**	**529625**

LED Street Lights

Sensor based energy Conservation - 1



Facilities for alternative sources of energy and energy conservation measures devices

c. Waste Management-

- **Bio medical waste-**
  - Bio medical waste generation (BMW Authoriztion-No1-8/PPCC/BMW/AUTHO/JSA(PPCC)/2018/923 dated 25/10/2018
    Qty of waste generated or disposed in Kg per annum as follows**:**
  - Yellow category: 7998.65 kg/A
  - Red category: 10126.45 kg/A
  - Blue category: 1430.55 kg/A
  - General Solid waste : 170000 kg/A
    No of persons trained on BMW - 7
    No of training conducted on BMW Management- 5
- **E-Waste**

Current Practice

i. The details of authorized e-waste recyclers, registered with PSMPL were also collected. As a result of computers, electrical and electronic parts of 1217 kg were disposed off in an environment friendly manner to Government authorized agency as per E-Waste Management Rules 2016.

Bio-medical wastes, Solid wastes, & E-wastes are collected in different color-coded bags as per schedule 1 in adherence to Biomedical Wastes (management & handling) rules 2018, Pondicherry solid waste management company Private Limited (PSMPL) is the authorized common biomedical solid waste management facility by Pondicherry Pollution control committee.

Recommendation

ii. To inculcate environment awareness among the students and to urge them to recycle waste materials, they are encouraged to actively participate in competitions on 'Junk Art'; making art from waste etc

iii. Green computing through implementation of energy-efficient central processing units (CPUs), servers and peripherals and all the equipment in the laboratories and departments are under Annual Maintenance Contract (AMC) to ensure their optimum functioning.

iv. Minor repairs are set right by the staff and the Laboratory

v. Assistants and the major repairs are to be undertaken by the professional technicians and the equipment is reused.

vi. Separate e - waste bins are to be maintained in the campus.

vii. An e-waste management policy can be introduced.

d. Sewage Treatment Plant and recycling plant

Current Practice

i. Effluent sewage water treatment was done on daily basis @ 500 KLD (5, 00,000 liters capacity), and was utilized for watering the trees, plants, shrubs, and grass etc.

ii. The sewage water has pH 7.4, Biological oxygen demand -350 and Chemical Oxygen demand 450 and Treated water has pH 7.9, Biological oxygen demand -3.50 and Chemical Oxygen demand 23.7.

iii. The institution practices wastewater management system effectively to keep the campus clean, hygienic, and free from any sort of pollution.

8.3.4 Review of Documents and Records

Documents such as admission registers, registers of electricity and water charge remittance, furniture register, laboratory equipment registers, purchase register, audited statements, and office registers were examined, and data were collected.

College calendars, college magazines, annual report of the college etc. were also verified as part of data collection

9. AUDIT STAGE

Objective: Meeting of the team with the appropriate personnel of the unit

The 3 primary functions on site activities are

- Record & documentation review.
- Interview with staff.
- Physical inspection of the facilities.

Data collection was done in the sectors such as Energy, Waste, Greening and Water use. College records and documents were verified several times to clarify the data received through survey and discussions.

10. CONCLUSION

Although the concept of Green Auditing is being implemented & appreciated, it should overcome the following challenges:

- Reducing power, Water consumption, Greening the workplace, Waste management were recommended
- Encouraging responsible water use through posters/placards/ incentives/ contests/ awards.
- Meters needs to measure the water consumption from the resources.
- College may calculate the water footprint to compare its performance with national and international consumption standards.
- AVMC is excellent with respect to the usage of day lighting. Buildings are constructed in such a way to access natural sun light and air circulation

inside. A General Survey recommended undertaking with employees with respect to lighting efficacy and identifying any complaints if any.

- The Electrical Equipment's are well operated. Redundant operations are avoided.
- The Institute practices wastewater management system effectively to keep the campus clean, hygienic and free from any sort of pollution.
- The students, staff members and guests have access to clean, safe and potable water.

11. ANNEXURES

i. Requirement of water per day

WATER REQUIREMENT PER D

ii. Air Quality Report

AVMC Campus- Air Quality Report .pdf