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**GREEN AUDIT REPORT  
FOR  
JKKMMRF'S ANNAI JKK SAMPOORANI AMMAL  
COLLEGE OF PHARMACY  
Ethirmedu, Valayakaranoor Post, Komarapalayam,  
Namakkal Dist., Tamil Nadu, 638183**



**Carried On  
13<sup>th</sup> April 2022**

**Carried Out By**



**ELION TECHNOLOGIES & CONSULTING PVT LTD**

**307, 3<sup>rd</sup> Floor Local Shopping Centre, Lal Market,**

**H Block, Vikas Puri, New Delhi - 110018**

**Tel: +91-11-28531884, +91-11-28541888**

**Web: [www.elion.co.in](http://www.elion.co.in), Email: [safety@elion.co.in](mailto:safety@elion.co.in)**



**Dr. N. SENTHILKUMAR,  
PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 183,  
NAMAKKAL DISTRICT, TAMILNADU.**



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Dr. N. SENTHILKUMAR,  
PRINCIPAL.

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRAMESU, KUMBAKONAM - 638 103,  
NAMAKKAL DISTRICT, TAMILNADU.



## 1. INTRODUCTION

The scope of pharmacy includes more traditional roles such as compounding and dispensing medications, and it also includes more modern services related to health care, including clinical services, reviewing medications for safety and efficacy, and providing drug information. Pharmacists, therefore, are the experts on drug therapy and are the primary health professionals who optimize medication use to provide to patients.

In the year 1992 Bachelor of Pharmacy course was started under the name of JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy. Master of Pharmacy course was started with specializations in Pharmaceutics, Pharmaceutical Chemistry, Pharmaceutical Analysis, Pharmacology and Pharmacy Practice.

### List of courses being offered by the institute:

- B. Pharm
- M. Pharm
- Pharm D

### List of the Facility Building: MAIN Building, PG Building, UG Building

**Total Area:** 2.7 acre

**Green Area:** 0.54 acre

Building Name	Areas	Number of Floors
MAIN BUILDING	53600	G+3
PG BUILDING	31152	G+2
UG BUILDING	32152	1 <sup>st</sup> & 2 <sup>nd</sup> Floor



  
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PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 636 183,  
NAMAKKAL DISTRICT, TAMILNADU.





## 2. ENVIRONMENTAL SETTING

The land use around the campus mainly comprises of residential and commercial area.

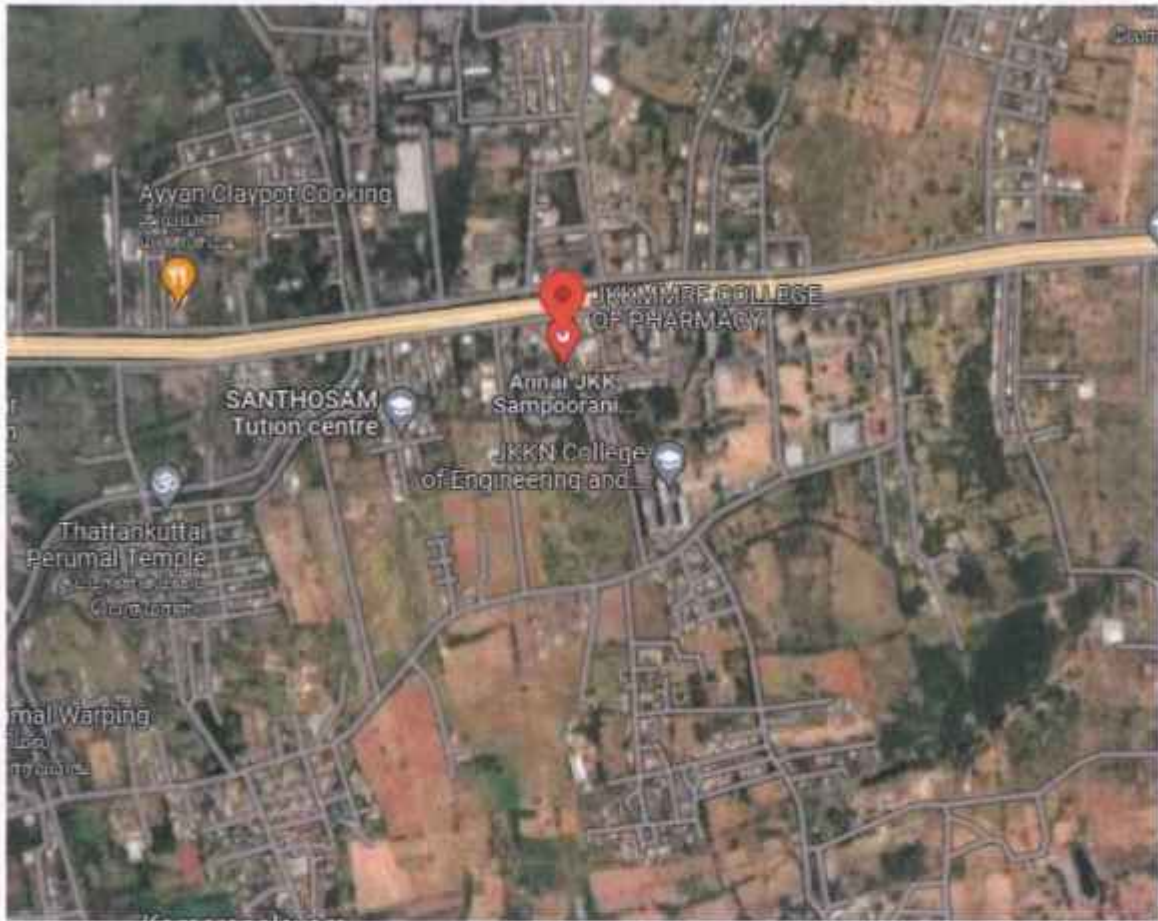


JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy Campus



**Dr. N. SENTHILKUMAR,**  
PRINCIPAL

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 193,  
NAMAKKAL DISTRICT, TAMILNADU.



Location of JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy



**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 636 183,  
NAMAKKAL DISTRICT, TAMILNADU.





### **3. GREEN AUDIT**

For Green Audit following 13 major areas (including their subsections) were covered and compliance/ initiatives under these areas were verified/ validated.

- a) Good Daylight Design and Ventilation
- b) Water Efficiency
- c) Wastewater Management
- d) Indoor Air Quality
- e) Energy Efficiency
- f) On-site Energy Generation
- g) Temperature and Acoustic Control
- h) Paper Waste Management
- i) E-Waste Management
- j) Canteen and Solid Waste Management
- k) Universal Access and Efficient Operation and Maintenance of Building
- l) Green Belt
- m) Green Programs (Green initiatives)

#### **3.1 Good Daylight Design and Ventilation**

- a) Corridors are wide with good ceiling height. All the corridors receive good daylight.
- b) Curtains are provided on some of the windows to avoid glare.
- c) Washrooms and laboratories are provided with exhaust fans to disperse heat, fumes and odours.
- d) Stair cases receive daylight through windows provided at various levels.
- e) Classrooms, Labs and Library have large windows. Windows are kept open to adequate daylight.
- f) Classroom walls, corridors and labs are white-washed, this enhances the daylight received.

#### **3.2 Water Efficiency:**

- a) Bore well is used for water supply in the campus.
- b) Underground & Overhead tanks are used for water storage inside the campus.
- c) For drinking, 4 numbers of water coolers are available at prominent locations in the campus.
- d) Rain water harvesting system is available in the college campus.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY.



- e) Normally mops are used for floor cleaning and hose is used for cleaning once a week
- f) Dual flushing system is provided in some of the washrooms.
- g) Signages are provided in washrooms emphasizing water conservation.
- h) Water from air conditioning unit and reject water from water purifiers is reused within the institute.

### 3.3 Wastewater Management:

- a) Sewage Treatment Plant is not available in the campus.

### 3.4 Indoor Air Quality:

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, as it relates to the health and comfort of building occupants. Some common indoor pollutants are listed as below:

- Molds and other allergens – This may arise from water seeping into the building envelope or skin, plumbing leaks, condensation due to improper ventilation, or from ground moisture penetrating a building part.
- Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions etc.
- Carbon monoxide – Sources of carbon monoxide are incomplete combustion of fossil fuels.
- Carbon dioxide – Due to human respiration
- Particulate matter – Due to construction and maintenance activities

Major observations under indoor air quality are as below:

- a) In classrooms the mode of ventilation is natural (through windows) and also classrooms are provided with Air conditioners.
- b) Green belts have been set up in campus area and the area is surrounded by lush green environment.
- c) Heating Ventilation and Air Conditioning (HVAC) system does not exist.
- d) Indoor plants are seen in the College. Indoor plants can be plotted not only for the aesthetic appearance but also for health benefits. Refer **Annexure 1** for details.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRAMEDU, KOMARAPALAYAM - 610 183.



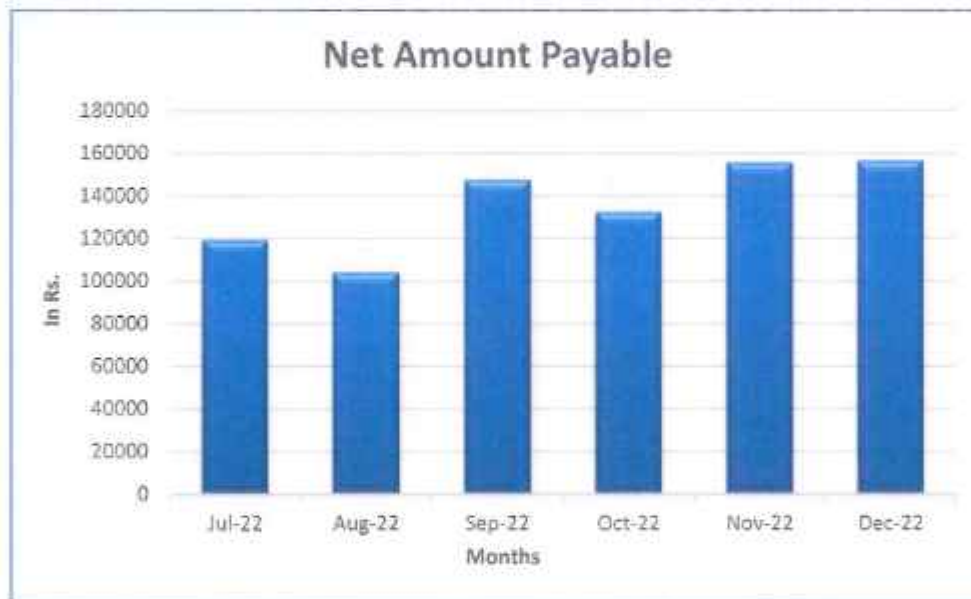


- e) Exhaust fans are provided in labs and washroom.
- f) IAQ awareness signage was missing in college. Information on sources, impacts and mitigation of indoor air pollution to be displayed within college for increasing awareness about indoor air pollution.
- g) Indoor Air Quality tests have not been carried out.

### 3.5 Energy Efficiency:

#### Electricity:

Power is supplied by Tamil Nadu Generation and Distribution Corporation Limited. The major electricity consuming equipment installed in the campus are Motors, air conditioners, Desktop, Printer, Fan, Tube light, LED Bulb and Street Lights.



It was observed that:

- a) Solar power plant of capacity 5KW is installed in the campus.

### 3.6 On Site Energy Generation (usage of LPG/ Natural Gas):

- a) LPG is used in canteen and hotel mess for cooking.
- b) Back Up diesel generators are available.



Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI ANMAL COLLEGE OF PHARMACY,  
ETHIRIMEDU, KOMARAPALAYAM - 635 183.  
NAMAKKAL DISTRICT, TAMILNADU.





### 3.7 Temperature and Acoustic Control

- a) White washed rooms & corridors and white/ off-white flooring improve the lighting conditions.
- b) The entire campus has green area.
- c) There is no noise pollution in the campus.

### 3.8 Paper Waste Management:

Being academic institution, waste paper is the main solid waste generated in the premises. The College has taken steps to minimize and avoid paper usage. It was observed that:

- a) Prints and photocopies are taken on both sides of the pages to avoid excess paper usage. Rather than photocopy, digitalization (scanning) is practiced.
- b) Old papers are reused in the campus.
- c) Paper notices are displayed on the notice boards.
- d) Internal notices and communications are through E-mail/SMS and paper both.

### 3.9 E-Waste Management:


- a) Policy for disposal of e-waste exists.

### 3.10 Solid Waste Management:

It was observed that:

- a) Wet waste and dry waste segregation is practiced in the premises. Separate bins are provided for wet biodegradable and dry recyclable waste.
- b) Waste is collected and disposed through Municipality Waste disposal vehicle.



  
**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI ANIMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 620 182,  
NAMAKKAL DISTRICT, TAMILNADU.



### 3.11 Universal Access and Efficient Operation and Maintenance of Building:

It was observed that:

- a) College is easily accessible. Staircase is provided for staff and students.
- b) Ramps are provided for specially abled.
- c) Fire extinguishers and hydrants are provided in the campus.
- d) There are signages for emergency fire exit present. This is of crucial importance during emergency.
- e) Since the access and staircases are wide and uncluttered, it is possible to have a safe evacuation during emergency.
- f) Fire Safety Training is given to the staff regularly.

### 3.12 Green belt/ Landscaping:

- a) Large trees are planted in the premises. Plantation also helps maintaining lower temperatures of the area. .
- b) Potted plants are also kept around the campus.
- c) Indoor plants are also kept along the corridors and entrance of the building.

### 3.13 Green Initiatives:

College is regularly celebrating Environment Day, Yoga Day, Festivals and other Cultural programs.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRIMEDU, KOMATAPALAYAM - 638 183.  
NAMAKKAL DISTRICT, TAMILNADU.



## 4. RECOMMENDATIONS/ SUGGESTIONS

### 4.1 For Improving Energy Consumption:

- a) Every classroom and lab with central switch board can have a diagram linking location of a tube light, fan etc. with corresponding switch. This will ensure that correct fitting is switched on/ off and can save time & unnecessary operation.
- b) Installation of automatic lights with sensors can be considered.
- c) Standard Operation Procedures (SOPs) should be prepared and followed for green purchasing. Equipment with star rating, using eco-friendly materials; with safe disposal policy to be preferred. Policy of returning equipment at the end of life span to the supplier to be preferred.
- d) Conduct energy audit every two or three years and determine the lux levels within College. Energy audit can help in reduction in number of light fittings/ energy usage in the College.
- e) For purchasing new electronic appliances, star rating provided by Bureau of Energy Efficiency (BEE) should be considered. The equipment which has maximum star ratings could be purchased, which will consume less energy, ensure environmental sustainability and also operate at low cost.
- f) Usage of light reflectors is recommended as the reflectors can spread light to relatively large areas.
- g) Notices/ signages can be put up/ displayed near switches and on notice boards, informing students and staff to switch off all electricals when not in use.
- h) If possible, computers should be switched off from main power connections.
- i) Control sensors can help to reduce consumption by automatically dimming lights when people are not around, and keeping blinds open to use natural light & reduce energy consumption.
- j) Raise awareness:
  - Encourage students to help in monitoring energy consumption & implement corrective actions
  - Integrate energy education into classroom learning.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF HEALTH SCIENCES  
ETHIRMEDU, KOTTARAPALAYAM - 629 125,  
NARAIKAL DISTRICT, TAMILNADU.





#### 4.2 Water Conservation:

- a) Provide information on water usage and savings to students/ staff through notices, screen savers in computer labs.
- b) Dry sweep or use a sponge broom when possible, instead of using a hose to clean floors, sidewalks, or other hard surfaces.
- c) Minimize/ reduce water usage by installing water saving faucets such as pressmatic taps, tap aerators, jet sprays etc.
- d) Grey water/ sewage recycling system can be installed for flushing toilets. This will reduce the fresh water footprint.
- e) Installation of waterless urinals can be considered to reduce water consumption.
- f) Water balance diagram can be prepared to quantify the water consumption by installing water meters at key points. Based on data gathered, appropriate measures can be taken to reduce the water consumption.

#### 4.3 Paper and other Solid Waste Reduction:

- a) Inventories of all solid waste generated in the premises must be maintained.
- b) Enhance recycling. This can be done by creating a group where students can recycle books, personal clothes and other material to needy students. This can be an initiative under green program.
- c) Standard Operating Procedures (SOP) for Solid and E-waste management and for recycling of waste should be prepared & practiced. The SOP's may include collection, segregation and reuse of different types of wastes, if any (e.g. biodegradable waste for composting). This will help in safe disposal of waste to recycle agencies.
- d) The college can introduce online app, which can be useful for conducting internal exams, assignment/ reports submission. This system can also be used for displaying important notices, timetables.
- e) Paper usage shall be monitored to understand the impact of digitization in the facility.
- f) Training as well as awareness programs should be organized on segregation of biodegradable waste and recycling of waste. Efforts should be taken to inform students about recycling options and signs should be posted on appropriate bins indicating what could be dumped in each bin.



Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF HEALTH SCIENCES  
ETHIRMEDU, NAMAKKAL DISTRICT, TAMIL NADU. 12



#### 4.4 Others:

- a) Environmental advisory committee could be formed. The discussions/information sharing among different departments can generate lot of ideas and awareness on green issues.
- b) Since each student uses computer lab, the screen savers can be set up for creating environmental awareness. (Ergonomics, water conservation etc.). Short 30 second pop up can be displayed on computer screens when they are on standby mode. Or wallpapers informing students about environment conservation can be created.
- c) Maintain minutes of meetings of environmental committees; evaluate the effectiveness of various environmental programs conducted by the institutes. Set annual targets for Green Initiatives & monitor them closely. Create 'Green Champions'.
- d) Consider detailed energy audit (energy consumption, thermal emission, visual comfort) and water audit.
- e) Adopt environmentally responsible purchasing policy, and work towards creating and implementing a strategy to reduce environmental impact of its purchasing decision.



Dr. N. SENTHILKUMAR,  
PRINCIPAL.

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANIAMMAL COLLEGE OF PHARMACY  
ETHIRNEDU, NAMAKKAL, TAMIL NADU - 638 193  
NAMAKKAL DISTRICT, TAMILNADU.









## ANNEXURE 1

### INDOOR GARDENING DETAILS

Indoor plants are commonly used for their aesthetics benefits but they also have vital role reducing airborne pollution. The right choice of plants can be an excellent way of improving indoor air quality and general health. Local landscape contractor can be contacted for supply and rotation of these plants.





Plants	VOC it removes	Indoor source of VOC's	Plant care
 <b>Aloe Vera</b>	Formaldehyde, Trichloroethylene and Benzene	Chemical based cleaners and paints	Easy to grow with enough sunlight
 <b>Bamboo Plant</b>	Formaldehyde, Trichloroethylene and Benzene	Paints, Plastics, Wood products etc.	Thrives under low light conditions as well as easy to maintain
 <b>Chinese Evergreen</b>	Benzene	Paints	Low maintenance plant that prefers low light conditions.
 <b>English Ivy</b>	Formaldehyde, Benzene, Air borne fecal matter particles	Wood, Paper products, Air borne fecal – matter particles from pests	Easy to maintain




  
**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**









 <b>Janet Craig</b>	Formaldehyde, Benzene and Trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 <b>Golden Pothos or Devils Ivy</b>	Formaldehyde, Cleanses air	Exhaust fumes, carpeting materials, panelling and furniture products made with particle board	Extremely easy to maintain under low to bright light conditions. Fast growing and grows well under Fluorescent light.
 <b>Mass Cane</b>	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 <b>Snake plant</b>	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety Of light conditions. Hard to damage or kill.



  
**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SANPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYASI - 638 183.  
NAMAKKAL, DISTRICT, TANJAVUR 15



 <p><b>Peace Lily</b></p>	<p>Formaldehyde, benzene and trichloroethylene</p>	<p>Paints, Plastics, Wood products etc.</p>	<p>Relatively easy to maintain. Survives in low light conditions.</p>
 <p><b>Red-edged Dracaena</b></p>	<p>Formaldehyde and trichloroethylene</p>	<p>cooking fuels, wood products, facial tissues, personal care products and waxed papers</p>	<p>Drought resistant and Tolerates a variety of light conditions. Hard to damage or kill.</p>
 <p><b>Spider Plant</b></p>	<p>Formaldehyde, benzene, carbon monoxide and xylene</p>	<p>cooking fuels, wood products, Printing</p>	<p>Easy to maintain under medium to bright light condition.</p>
 <p><b>Parlor Palm</b></p>	<p>Purifies indoor air</p>	<p>-</p>	<p>Easy to maintain</p>



**Dr. N. SENTHILKUMAR,**  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI ANIMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 193,  
NAMAKKAL DISTRICT, TAMILNADU.

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ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 183,  
NAMAKKAL DISTRICT, TAMILNADU.**

**ELION TECHNOLOGIES & CONSULTING PVT LTD  
307, 3<sup>rd</sup> Floor Local Shopping Centre, Lal Market,  
H Block, Vikas Puri, New Delhi - 110018  
Tel: +91-11-28531884, +91-11-28541888  
Web: [www.elion.co.in](http://www.elion.co.in), Email: [safety@elion.co.in](mailto:safety@elion.co.in)**







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**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY**  
**ETHIRMEDU, KOMARAPALAYAM - 619 103.**  
**NAMAKKAL DISTRICT, TAMILNADU.**



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



  
**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 163.  
NAMAKKAL DISTRICT, TAMILNADU.



## CONCEPT

The term 'Environmental audit' means differently to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Environmental Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as:

"A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."

The European Commission, in its proposed regulation on environmental auditing, has also adopted the ICC definition of Environmental Audit.



**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,**  
**ETHIRMEDU, KOMARAPALAYAM - 638 183.**  
**NAMAKKAL DISTRICT, TAMILNADU.**





## INTRODUCTION

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues.

Environmental Management Systems (EMS) is very popular in the industrial sector, but the general belief is that EMS is something pertaining to industries only. Other parts of the world have started adopting compatible environmental management systems either voluntarily or for promoting standards by external certification. International environmental standards do not suit the existing Indian educational system.

A very simple indigenized system has been devised to monitor the environmental performance of educational institutions. It comes with a series of questions to be answered on a regular basis. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user- friendly and totally voluntary. The environmental monitoring system helps the institution to set environmental examples for the community and to educate young learners. It can be adapted to urban and / or rural situations.



Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AYURVEDIC COLLEGE OF PHARMACY,  
ETHIRAMEDU, KOHARASAL, NAMAKKAL - 626103,  
NAMAKKAL DISTRICT, TAMILNADU.



## OVERVIEW OF INSTITUTE


The scope of pharmacy includes more traditional roles such as compounding and dispensing medications, and it also includes more modern services related to health care, including clinical services, reviewing medications for safety and efficacy, and providing drug information. Pharmacists, therefore, are the experts on drug therapy and are the primary health professionals who optimize medication use to provide to patients.

In the year 1992 Bachelor of Pharmacy course was started under the name of JKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy. Master of Pharmacy course was started with specializations in Pharmaceutics, Pharmaceutical Chemistry, Pharmaceutical Analysis, Pharmacology and Pharmacy Practice.

### **List of courses being offered by the institute:**

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**PRINCIPAL,**  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARPALAYAM - 638 183  
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## AUDIT OBJECTIVES

The broad aims/ benefits of the eco-auditing system would be –

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Reduction in resource use
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the university campus and its environment
- Enhancement of university profile
- Developing an environmental ethic and value systems in young people



**Dr. N. SENTHILKUMAR,  
PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 153,  
NAMAKKAL DISTRICT, TAMILNADU.**





## **EXECUTIVE SUMMARY**

An environmental audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance.

This environmental audit of institute is for NACC affiliation; QS Program and doing their bid towards environmental protection and environmental awareness at local and global front. Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.

**Dr. N. SENTHILKUMAR,  
PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI ANIMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 628 133,  
NAMAKKAL DISTRICT, TAMILNADU.**



## AREA OF IMPROVEMENTS

- Environment Policy shall be adopted by the institute.
- Electrical/Electronic Equipments when not in use should be switched off and should not be on standby modes.
- Practice of reuse of old papers shall be implemented in the institute.
- Use of recycle paper should be encouraged in the campus.
- Water Meter should be installed to monitor and track the daily uses of water in the campus.
- Implementation of STP can be considered in the campus.
- Green and Environment Audits shall be carried out on regular basis.



**Dr. N. SENTHILKUMAR,  
PRINCIPAL,**

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 636 163.  
NAMAKKAL DISTRICT, TAMILNADU.



## ENVIRONMENTAL AUDIT - QUESTIONARE

The areas of eco/environmental/green auditing to be followed/practiced by participating institutions:

- I. Waste Minimization and Recycling
- II. Greening
- III. Energy Conservation
- IV. Water Conservation
- V. Clean Air
- VI. Animal Welfare
- VII. Environmental Legislative
- VIII. General Practices

**Dose any Environmental Audit conducted earlier?**

No, Environment Audit is not conducted earlier.

**What is the total permanent population of the Institute?**

	Male	Female	Total
Students	591	276	867
Teachers	34	25	59
Non-Teaching Staff	6	25	31
Sub Total	631	326	957
Approximate Number of Visitors (Per day)			12
What is the total number of working days of your campus in a year?			250

**Where is the campus located?**

The campus is Located in Tamil Nadu.



*Dr. N. Senthil Kumar*  
**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPGORANI AMMAL COLLEGE OF PHARMACY,**  
**ETHIRAMEDU, KOMARI PALAYAM - 622 133,**  
**NAMAKKAL DISTRICT, TAMILNADU.**





**Which of the following are available in your institute?**

1 Garden area	Yes
2 Playground	Yes
3 Kitchen	Yes
4 Toilets	Yes
5 Garbage Or Waste Store Yard	No
6 Laboratory	Yes
7 Canteen	Yes
8 Hostel Facility(numbers)	Yes (1 Boys & 2 Girls)
9 Guest House	No

**Which of the following are found near your institute?**

1 Municipal dump yard	No
2 Garbage heap	No
3 Public convenience	Yes
4 Sewer line	No
5 Stagnant water	Yes
6 Open drainage	No
7 Industry – (Mention the type)	No
8 Bus / Railway station	No
9 Market / Shopping complex / Public halls	Yes (Weekly Market)



**Dr. N. SENTHILKUMAR,**  
PRINCIPAL.

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNA JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOTTAIPALAYAM, TAMIL NADU



**I WASTE MINIMIZATION AND RECYCLING**

1.	Does your institute generate any waste? If so, what are they?	Yes Chemical Waste
2.	What is the approximate amount of waste generated per day? (in Kilograms/month) (approx.)	400-500Kg/month
3.	How is the waste generated in the institute managed? By 1 Composting 2 Recycling 3 Reusing 4 Others(specify)	Recycling and Reusing
4.	Do you use recycled paper in institute?	No
5.	Do you use reused paper in institute?	No
6.	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, Please specify.	By posters
7.	Can you achieve zero garbage in your institute? If yes, how?	No



**Dr. N. SENTHIKUMAR,**  
**PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOORANI ANIMAL COLLEGE OF PHARMACY,**  
**ETHIRMEDU, KOMARAPALAYAM - 638 183.**  
**NAMAKKAL DISTRICT, TAMILNADU.**

**II GREENING THE CAMPUS**

1.	Is there a garden in your institute?	Yes
2.	Do students spend time in the garden?	Yes
3.	Total number of Plants in Campus	74
4.	Suggest plants for your campus. (Trees, vegetables, herbs, etc.)	Trees and Herbs.
5.	Is the university campus have any Horticulture Department	No
	Number of Staff working in Horticulture Department	NA
6.	Number of Tree Plantation Drives organized by Institute per annum. (If Any)	10
7.	Number of Trees Planted in Last FY.	150
	Survival Rate	80%
8.	Plant Distribution Program for Students and Community	Yes
9.	Plant Ownership Program	No



  
**Dr. N. SENTHILKUMAR,**  
PRINCIPAL.

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOORANI ANJAL COLLEGE OF PHARMACY,**  
**ETHIRMEDU, KOMARAPALAYAM - 638 163,**  
**NAMAKKAL DISTRICT, TAMILNADU.**



**III ENERGY CONSERVATION**

1.	List ten ways that you use energy in your institute. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.	1. Electricity. 2. LPG (kitchen). 3. Diesel (DG Set) 4. Solar Power.
2.	Are there any energy saving methods employed in your institute? If yes, please specify. If no, suggest some	No
3.	How many CFL/LED bulbs has your institute Installed?	310
4.	Are any alternative energy sources employed / installed in your institute? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Specify.	Solar Energy
5.	Do you run "switch off" drills at institute?	No
6.	Are your computers and other equipment's put on power-saving mode?	Yes
7.	Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?	Yes, maximum 6 hours.

**Dr. N. SENTHILKUMAR,**  
PRINCIPAL,JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRIMECHI, KOMARPALAYAM - 639 103,  
NAMAKKAL DISTRICT, TAMILNADU.

**IV WATER CONSERVATION**

1.	List four uses of water in your institute	1. Drinking. 2. Washing. 3. Cleaning. 4. Irrigation.
2.	How does your institute store water? Are there any water saving techniques followed in your institute?	Rainwater harvesting is used.
3.	If there is water wastage, specify why and How can the wastage be prevented/stopped?	For chemical handling.
4.	Locate the point of entry of water and point of exit of waste water in your institute. Entry- Exit-	Entry - Bore well Exit - Drainage
5.	Write down four ways that could reduce the amount of water used in your institute	1. To use required amount of water 2. To stop overflow 3. To stop wastage of water 4. Rain water harvesting
6.	Record water use from the institute water meter for six months (record at the same time of each day). At the end of the period, compile a table to show how many litres of water have been used.	NA
7.	Does your institute harvest rain water?	Yes



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SRIPPOORNIAM COLLEGE OF PHARMACY  
ETHIRAMEDU, KOTTARIMALAI, TAMIL NADU - 609 103.  
NANNANKAL DISTRICT, TAMIL NADU.





8.	Is there any water recycling System.	No
----	--------------------------------------	----

**V CLEAN AIR**

1.	Are the Rooms in Campus are Well Ventilated?	Yes				
2.	Window Floor ratio of the Rooms	1:2				
3.	What is the ownership of the vehicles used by your institute? (Please Tick ✓ only one)	No				
		Operator-owned vehicles				
		✓	Institute-owned vehicles			
		A combination of campus-owned and operator-owned vehicles				
4.	Provide details of institute-owned motorized vehicles?	Buses	Cars	Vans	Other	Total
	No. of vehicles	6	2	1	3	-
	No. of vehicles more than five years old	1	-	-	-	1
	No. of Air conditioned vehicles	-	2	-	-	2
	PUC done	Yes	Yes	Yes	-	-
5.	Specify the type of fuel used by your institute's vehicles:	Buses	Cars	Vans	Other	
	Diesel	Yes	Yes	Yes	Yes	
	Petrol	-	-	-	-	
	CNG	-	-	-	-	
	LPG	-	-	-	-	
	Electric	-	-	-	-	
6.	Air Quality Monitoring Program (If Any)	No				
	Students suffer from respiratory ailments? (If Any)	No				



*(Signature)*  
**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**





8.	Details of Genset	-
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## VI ANIMAL WELFARE

1.	List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)	NO (Rats Used for practical purposes)
2.	How many dogs in your area have undergone Animal Birth Control - Anti Rabies (ABC - AR)?	No
3.	Does your institute have a Biodiversity Programme or a KARUNA CLUB?	No

## VII ENVIRONMENTAL LEGISLATIVE COMPLIANCE

1.	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
2.	Does your institute have any rules to protect the environment? List possible rules you could include.	Yes (Plastic Free)
3.	Dose Environmental Ambient Air Quality Monitoring conducted by the Institute?	No
4.	Dose Environmental Water and Wastewater Quality monitoring conducted by the Institute?	Yes
5.	Dose stack monitoring of DG sets conducted by the Institute?	Yes
6.	Is any warning notice, letter issued by state government bodies?	No
7.	Dose any Hazardous waste generated by the Institute? If yes explain its category and disposal method	No

  
Dr. N. SENTHILKUMAR,  
PRINCIPAL.

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAL JKK SAMPOORANI ANNAL COLLEGE OF PHARMACY  
ETHIRMEDU, KODAGAPALAYAM - 630 183.  
NAMAKKAL DISTRICT, TAMILNADU.





8.	Dose any Bio medical waste generated by the Institute? If yes explain its category and disposal method	Yes, we have an agreement for biomedical waste management company they collect the waste every alternate day
----	--	--

### VIII GENERAL PRACTICES

1.	Are you aware of any environmental Laws pertaining to different aspects of Environmental management?	Yes
2.	Does your institute have any rules to protect the environment? List possible rules you could Include.	Yes
3.	Is there any housekeeping schedule in your campus?	Yes
4.	Are students and faculties aware of environmental cleanliness ways? If Yes Explain	Yes
5.	Dose Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?	Yes
6.	Dose Institute participated in National and Local Environmental Protection Movement?	Yes
7.	Dose Institute has any Recognition/certification for environment friendliness?	No
8.	Dose Institute using renewable energy?	Yes (solar energy)
9.	Dose Institution conducts a	No



**Dr. N. SENTHILKUMAR,**  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARPALAYAM - 638 183.  
NAMAKKAL DISTRICT, TAMILNADU.



	Green/Environmental audit of its campus?	
10.	Has the institution been audited / accredited by any other agency such as NABL, NABET, TQPM, NAAC etc.?	No (going for NAAC)



**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY**  
**ETHIRAMEDU, KOMARAPALAYAM - 628 183,**  
**NAMAKKAL DISTRICT, TAMILNADU.**





## RECOMMENDATIONS

- Environment Policy shall be adopted by the institute.
- Electrical/Electronic Equipments when not in use should be switched off and should not be on standby modes.
- Practice of reuse of old papers shall be implemented in the institute.
- Use of recycle paper should be encouraged in the campus.
- Water Meter should be installed to monitor and track the daily uses of water in the campus.
- Implementation of STP can be considered in the campus.
- Green and Environment Audits shall be carried out on regular basis.



**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNA JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY**  
ETHIRMEDU, KOMARPALAYAM - 608 403  
NAMAICAL DISTRICT, TAMILNADU.



## CONCLUSION

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. Overall, majority of university campus is for landscaping and greenery. The audit has identified several observations for making the campus premise more environmentally friendly. The recommendations are also mentioned with observations for college team to initiate actions.

The audit team opines that the overall site is maintained well from environmental perspective. There are no major observations but few things are important which if implemented would further strengthen the environment setting in the college.



**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOGRANI ARTS COLLEGE OF PHARMACY,**  
**ETHIRMEDU, KANNIYAKUMARI - 625193**  
**NARAIKAL DISTRICT, TAMIL NADU.**



## REFERENCE

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Water [Prevention & Control of Pollution] Cess Act-1977 (Amended 2003) and Rules- 1978
- The Air [Prevention & Control of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981)
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 630 103,  
NAMAKKAL DISTRICT, TAMILNADU.



**ENERGY AUDIT REPORT  
FOR  
JKKMMRF'S ANNAI JKK SAMPOORANI AMMAL  
COLLEGE OF PHARMACY  
Ethirmedu, Valayakaranoor Post, Komarapalayam,  
Namakkal Dist., Tamil Nadu, 638183**



**Carried On  
13<sup>th</sup> April 2022**



**Carried Out By**



**ELION TECHNOLOGIES & CONSULTING PVT LTD**

**307, 3<sup>rd</sup> Floor Local Shopping Centre, Lal Market,**

**H Block, Vikas Puri, New Delhi - 110018**

**Tel: +91-11-28531884, +91-11-28541888**

**Web: [www.elion.co.in](http://www.elion.co.in), Email: [safety@elion.co.in](mailto:safety@elion.co.in)**

**Dr. N. SENTHILKUMAR,  
PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 183,  
NAMAKKAL DISTRICT, TAMILNADU.**



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Dr. N. SENTHIKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRAMEDU, KODAIKANDEAM - 638 103,  
NAMAKKAL DISTRICT, TAMILNADU.



## EXECUTIVE SUMMARY

The scope of pharmacy includes more traditional roles such as compounding and dispensing medications, and it also includes more modern services related to health care, including clinical services, reviewing medications for safety and efficacy, and providing drug information. Pharmacists, therefore, are the experts on drug therapy and are the primary health professionals who optimize medication use to provide to patients.

In the year 1992 Bachelor of Pharmacy course was started under the name of JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy. Master of Pharmacy course was started with specializations in Pharmaceutics, Pharmaceutical Chemistry, Pharmaceutical Analysis, Pharmacology and Pharmacy Practice.

### List of courses being offered by the institute:

- B. Pharm
- M. Pharm
- Pharm D

### List of the Facility Building: MAIN Building, PG Building, UG Building

Total Area: 2.7 acre

Green Area: 0.54 acre

Building Name	Areas	Number of Floors
MAIN BUILDING	53600	G+3
PG BUILDING	31152	G+2
UG BUILDING	32152	1 <sup>st</sup> & 2 <sup>nd</sup> Floor

Electricity is supplied by Tamil Nadu Generation and Distribution Corporation Limited and for backup power supply DG Set is available.

Elion Technologies and Consulting Pvt Ltd team conducted the Detailed Energy audit of the premises. The energy audit included detailed data collection, analysis of data and identification of specific energy saving proposals.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KANNARPALLE, TAMIL NADU - 625 183.  
NAMBARKAL D.S. 2





## **CHAPTER – I** **INTRODUCTION**

M/S JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy evinced interest in availing the services of Elion Technologies and Consulting Pvt Ltd for conducting energy audit of their premises.

This report is on the energy audit carried out M/S JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy. The detailed energy audit comprised of the following activities:

- Data collection of power consuming equipment's.
- A brief session on energy management was conducted to seek more inputs from the personnel engaged in operation and maintenance of electro mechanical services.
- Analysis of collected data.
- Discussion with the officials on the identified proposals.
- Discussion and reporting of the findings of energy audit with the Engineers and management staff.

All the identified energy savings proposals have been discussed with the executives concerned before finalizing the projects.

The contents of the report are based solely on the data provided by JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy officials during the energy audit.

The management should implement the suggestions made in the report after verifying requisite safety aspects.

### **Methodology for Energy Audit:**

The following is a list of general procedure and information undertaken during the energy audit:



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KODIWARAH, DISTRICT - 625 023,  
NAMAKKAL DISTRICT, TAMIL NADU.



1. General information of the campus.
2. Baseline energy description.
3. Past energy consumption bills which includes electricity bills.
4. On site data collection.
5. Energy analysis of different sectors.
6. Recommendation of energy conservation measures.

The primary goal of the energy audit was to identify sources and areas of potential energy savings and cost saving throughout the Plant by measures of optimization, replacement, retrofitting, and on the other hand, to also provide recommendations on operational and maintenance practices improvements.



Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNA JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRNEDU, KOBATALUK, NAMAKKAL - 638 163,  
NAMAKKAL DISTRICT, TAMILNADU.



## CHAPTER – II ACKNOWLEDGEMENT

Elion Technologies and Consulting Pvt Ltd places on record it's thanks to M/S JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy for entrusting the task of conducting energy audit study.

We acknowledge with gratitude the whole hearted support and cooperation extended by all team members while carrying out the study.



  
Dr. N. SENTHIL KUMAR  
PRINCIPAL  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPORANI AMMAL COLLEGE OF PHARMACY,  
ETHERVEDU, KUMBakonam, TAMIL NADU - 621112.  
NAMAKKAL DISTRICT, KANNIYAKUDI.





## CHAPTER – III

### PROCESS DESCRIPTION & ENERGY CONSUMPTION DETAILS

#### PROCESS DESCRIPTION

The main areas of energy consumption as observed during the audit are as follows:

- Motors/Pumps.
- Air Conditioner.
- Lighting.

The main sources of energy to meet the required consumptions are as follows:


- Electricity supply from Power Distribution Company.
- DG set.
- Solar power plant (5KW).

#### ELECTRICITY CONSUMPTION PATTERN

Months	KWH	Net Amount Payable
Jul-22	14304.8	119628
Aug-22	12350.8	104265
Sep-22	13333.2	147459
Oct-22	10131.4	132743
Nov-22	12615.6	155875
Dec-22	12698.8	156687

Average Power Consumption per month is calculated at 12572.40KWH while the average amount payable per month is Rs 136109.50.



  
**Dr. N. SENTHILKUMAR,**  
PRINCIPAL,  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPODRAJI AMMAL COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 638 183,  
NAMAKKAL DISTRICT, TAMILNADU.



**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNA JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRAMEDU, KOMARAPALAYAM - 635 183,  
NAMAKKAL DISTRICT, TAMILNADU.



## CHAPTER – IV LIGHTING SYSTEM

The inventory of lighting was collected and following is the summary:

Type-LED/CFL/Conventional -Bulb/Tube Light	Location	Rating	Qty	Number of Hours being turned on
LED	Principal Room	22 W	10	5
LED	Board Room	22 W	12	3
LED	Office	22 W	14	5
LED	V.P Room	22 W	2	4
LED	Reception Hall	22 W	1	1
CFL AND LED	All Toilets	20 W CFL 22 W LED	4 CFL +8 LED	6
LED	Store Room	22W	2	5
LED	All Class Room (12 Nos)	22 W	44	Avg 3 Hours
LED	Library	22 W	7	5
LED	All Corridors (3 Nos)	22 W	29	Avg 3 Hours
LED	All Staff Room (16 Nos)	22W	16	Avg 5 Hours
LED	Computer Lab (01 No)	22W	10	Avg 4 Hours
LED	All Steps (3 Nos)	22 W	8	Avg 3 Hours
LED	ALL New Lab (2 Nos)	22 W	30	Currently No use
LED	ALL labs	22 W	7	Avg 3 Hours
LED	Exam Hall	23 W	21	Only during exams 8 Hours)
Tube Light	All Labs (7Nos)	40 W	46	Avg 4 Hours
Tube Light	All class Room(3 Nos)	40 W	12	Avg 4 Hours
Tube Light	ALL HOD Room (5)	40 W	5	Avg 5 Hours
Tube Light	All Staff Room (6 Nos)	40 W	6	Avg 5 Hours

Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI ANIMAL & COLLEGE OF PHARMACY,  
ETHIRMEDU, KOMARAPALAYAM - 620 183,  
NAMAKKAL DISTRICT, TAMILNADU.







Tube Light	Seminar Hall	40 W	4	Only during Seminars and functions 8 Hours)
Tube Light	All Corridors (3 Nos)	40 W	8	If necessary
	All Labs (10Nos)	40 W	71	
Tube Light	Staff Room	40 W	3	
Tube Light	ALL HOD Room (2)	40 W	2	
Tube Light	All Corridors (3 Nos)	40 W	6	

**Observation:**

Most of the lighting used are LED. Conventional fluorescent Tube lights and CFLs are being used in certain location. It was informed that college has planned to replace Tube light in phased manner with replacement of faulty lights with LED tube lights.

**Recommendation:**

- Sticker to SWITCH OFF LIGHT and SAVE ENERGY to be displayed.



*(Handwritten signature in blue ink)*

**Dr. N. SENTHILKUMAR,**  
**PRINCIPAL,**  
**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION**  
**ANNAI JKK SAMPOORANI ANIMAL COLLEGE OF PHARMACY,**  
**ETHIRMEDU, KOPPARAPALAYAM - 632 163,**  
**NAMAKKAL DISTRICT, TAMILNADU.**



## CHAPTER – V MOTORS AND PUMPS

Pumps are used for pumping of water. The details of the pumps and motors are given below:

### PUMPS:

Name of Pump and Make	Name Plate Details					
	Running Hours	Any VFD	Rated Capacity in HP	Flow Rate (LPM)	Head (m)	RPM
Pump 1	10	No	10.0	1500	-	1500
Pump 2	10	No	7.5	1050	-	1500
Pump 3	10	No	5.0	720	-	1500

### Motors:

Name of Motor and Make	Name Plate Details					
	Running Hours	Any VFD	Rated Capacity in KW	Efficiency	Ampere	RPM
Motor 1	-	No	0.7	-	5	2000
Motor 2	-	No	0.7	-	5	2000
Motor 3	-	No	0.7	-	5	2000
Motor 4	-	No	0.7	-	5	2000

### Observation:

All pumps and motors are functioning properly and well maintained.

### Recommendation:

Proper maintenance and upkeep of pumps and motors to be done.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORAMI MEDICAL COLLEGE OF  
ETHIRVEDU, KOMPALMURU - 677 102,  
NAGAPALAI DISTRICT, TAMIL NADU.



## CHAPTER – VI AIR CONDITIONING

Split AC's are used in facility for air conditioning. Temperature maintained is 23 - 25°C. Following is the summary of air conditioners installed:

Type Windows/Split/Package and Location	Capacity in Ton	Whether any star rating available	Set temperature	Running Hours	Whether AC performance is satisfactory
					Yes/No
Principal Room - Split AC (1 No)	3	5	23 – 25	8	Yes
Board Room (2 Nos of Split Ac)	3	5	23 – 25	8	Yes
12 Class Room (22 Nos of Split Ac)	3	5	23 – 25	6	Yes
Computer Lab (02 Nos of Split Ac)	3	5	23 – 25	4	Yes
Seminar Hall (03 Nos of Split Ac)	2	3	23 – 25	-	Yes
Labs (4 Nos )	2	3	23 – 25	-	Yes
Labs (1 Nos )	2	3	23 – 25	-	Yes

### Observation:

All air conditioners are found to be functioning properly and well maintained.

### Recommendation:

- All doors to be kept closed while using the air conditioner and regular annual services of AC should be carried out.
- Periodic replacement of 3 star ACs with energy efficient 5 star inverter ACs should be implemented.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI ANIMAL COLLEGE OF VETERINARY  
ETHIRMEDU, KOTTAIWAR, DISTRICT - KANNIYAKUMARI  
NATALAKKAL DISTRICT





- The set temperature of the air conditioners should be maintained at 24°C. A reduction in 1°C set point temperature, the energy cost comes down by 5%. By carefully selecting the seasonal temperature in different areas as per requirement considerable saving on account of power consumption can be achieved.



  
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**PRINCIPAL,**  
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ANNA JKK SAMPOORANAMMA COLLEGE OF PHARMACY  
ETHIRAMEDU, KOMARAVALLY - 625 013  
NAMAKKAL DISTRICT, TAMILNADU



## CONCLUSION

The energy audit conducted at M/S JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy has revealed that campus is doing good work in having sustainable college. In house solar power plant is installed. The college is sustainable in energy consumption. To further reduce energy consumption, college should implement the recommendation made in report.



  
Dr. N. SENTHILKUMAR,  
PRINCIPAL,  
JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY,  
ETHIRVEDU, KUMBAKONAM - 622 553  
NAMAKKAL DISTRICT, TAMILNADU.



# J.K.K.MUNIRAJAH MEDICAL RESEARCH FOUNDATION'S ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY

Ethirmedu, **B.Komarapalayam** – 638 183, Namakkal Dist. Tamilnadu. India  
Approved by : Pharmacy Council of India, New Delhi & The Tamilnadu Dr.M.G.R Medical University, Chennai.  
Website : [www.jkkmmrfpharmacy.edu.in](http://www.jkkmmrfpharmacy.edu.in) | E-Mail : [principal@jkkmmrfpharmacy.edu.in](mailto:principal@jkkmmrfpharmacy.edu.in)  
Contact No. : +919789456750, +919943069944, +919943066944

## 7.1.6 Certificate from the auditing agency

**ENERGY AUDIT REPORT  
FOR  
JKKMMRF'S ANNAI JKK SAMPOORANI AMMAL  
COLLEGE OF PHARMACY  
Ethirmedu, Valayakaranoor Post, Komarapalayam,  
Namakkal Dist., Tamil Nadu, 638183**



**Carried For  
Year 2022**

**Carried Out By**



**ELION TECHNOLOGIES & CONSULTING PVT LTD  
307, 3<sup>rd</sup> Floor Local Shopping Centre, Lal Market,  
H Block, Vikas Puri, New Delhi - 110018  
Tel: +91-11-28531884, +91-11-28541888  
Web: [www.elion.co.in](http://www.elion.co.in), Email: [safety@elion.co.in](mailto:safety@elion.co.in)**

  
**Dr. N.SENTHILKUMAR,  
PRINCIPAL**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 638 183.  
NAMAKKAL DISTRICT, TAMILHADU, INDIA.**







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## Elion Technologies & Consulting Pvt Ltd Certificate

This is to certify that Energy Audit at **JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy, Ethirmedu, Valayakaranoor Post, Komarapalayam, 638183** was carried out on **13<sup>th</sup> April 2022**.

It is found that sustainable measure are taken by the college in reduction in energy consumption. The college is taking sustainable measure for reduction of its power consumption.



Audit Officer

Certificate Number  
EA/2022/JKKMMRF



  
**Dr. N.SENTHILKUMAR,**  
PRINCIPAL

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ETHIRMEDU, KOMARAPALAYAM - 638 183.  
NAMAKKAL DISTRICT, TAMILNADU, INDIA.



# J.K.K.MUNIRAJAH MEDICAL RESEARCH FOUNDATION'S ANNAL JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY

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Contact No. : +919789456750, +919943069944, +919943066944

## ENVIRONMENT AUDIT REPORT FOR JKKMMRF'S ANNAL JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY Ethirmedu, Valayakaranoor Post, Komarapalayam, Namakkal Dist., Tamil Nadu, 638183



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Year 2022

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H Block, Vikas Puri, New Delhi - 110018  
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Web: [www.elion.co.in](http://www.elion.co.in), Email: [safety@elion.co.in](mailto:safety@elion.co.in)



  
**Dr. N.SENTHILKUMAR,**  
PRINCIPAL

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAL JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 638 183.  
NAMAKKAL DISTRICT, TAMILNADU, INDIA.





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## Elion Technologies & Consulting Pvt Ltd Certificate

This is to certify that Environment Audit at **JKKMMRF'S Annai JKK Sampoorani Ammal College of Pharmacy, Ethirmedu, Valayakaranoor Post, Komarapalayam, 638183** was carried out on **13<sup>th</sup> April 2022**.

Campus has submitted necessary data and credentials for scrutiny. It is found that college is an oxygen tank.



Certificate Number  
ENV/2022/JKKMMRF

**Dr. N.SENTHILKUMAR,**  
PRINCIPAL

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 638 183.  
NAMAKKAL DISTRICT, TAMILNADU, INDIA.







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Ethirmedi, **B.Komarapalayam** – 638 183, Namakkal Dist. Tamilnadu. India  
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Contact No. : +919789456750, +919943069944, +919943066944

## GREEN AUDIT REPORT FOR JKKMMRF'S ANNAL JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY Ethirmedi, Valayakaranoor Post, Komarapalayam, Namakkal Dist., Tamil Nadu, 638183




Carried For  
Year 2022

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307, 3<sup>rd</sup> Floor Local Shopping Centre, Lal Market,  
H Block, Vikas Puri, New Delhi - 110018  
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PRINCIPAL

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAL JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 638 183.  
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This is to certify that Green Audit at **JKKMMRF'S Annai JKK Sampoarani Ammal College of Pharmacy, Ethirmedu, Valayakaranoor Post, Komarapalayam, 638183** was carried out on 13<sup>th</sup> April 2022.

College has submitted necessary data and credentials for scrutiny. The activities and measures carried out by the college have been verified. The efforts taken by the college towards environment and sustainability is highly appreciated and commendable.



Audit Officer

Certificate Number  
GA/2022/JKKMMRF



  
Dr. N.SENTHILKUMAR,  
PRINCIPAL

JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
ANNAI JKK SAMPOORANI AMMAL COLLEGE OF PHARMACY  
ETHIRMEDU, KOMARAPALAYAM - 638 183.  
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## 7.1.6 - QUALITY AUDITS ON ENVIRONMENT AND ENERGY ARE REGULARLY UNDERTAKEN BY THE INSTITUTION

**"We have not received any awards and certificates"**



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PRINCIPAL,**

**JKK MUNIRAJAH MEDICAL RESEARCH FOUNDATION  
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### 1. Policy document on environment and energy usage

Energy and environmental conservation are critical for long term viability. JKKMMRF's college believes that an environment and energy consumption policy may significantly contribute to environmental conservation via efficient energy use and so serve the cause of environment in a dedicated manner. Various efforts have been taken by the college to utilize the solar energy in an effective way based on its unique infrastructure.

Besides these various measures are taken to reduce the power consumption in our campus. It includes the provision of On-grid solar roof top panel, they can produce average solar energy of 10kw. Biogas plant has been installed backside of the hostel mess for waste management with the capacity of 20kg/day and also produce gas to used as cooking fuel. In addition sensor and LED pulps are used for energy saving electricity.

#### Objectives:

Reduce energy usage on campus.

We use alternative energy source for energy demand.

#### Green audit:

The institution has a green audit performed on a regular basis by an approval energy.

#### Energy audit:

The institution has energy audit conducted by authorized auditors/auditing agency to find out the status of energy utilization of the college.

#### Environment audit:

Along with green audit, the institute also conduct environment audit on regular basis, the parameters like air, soil, noise and water qualities are to be taken into consideration for maintaining clean environment of the college campus.



  
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ETHIRMEDU, KOMARAPALAYAM - 638 183,  
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