NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

(Autonomous Institutions -Affiliated to Bharathiar University)

ISO 9001:2015 Certified and Re-Accredited with B Grade by NAAC

POLLACHI – 642 001

ENVIRONMENTAL AUDIT

AUDIT/REPORT BY

ALCHEME GREEN ENERGY COMPANY
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ACKNOWLEDGEMENT

We at Alcheme Green Energy Company, Madurai are thankful to the principal for giving us the opportunity to carry out Environmental audit at Nallamuthu Gounder Mahalingam College, Pollachi -642 001. Alcheme Green Energy Company team is also thankful to all other supporting Officers / Staffs of the above institute for their wholehearted support, hospitality and the courtesy extended to the Audit team during the course of the visit.

The following officers from Alcheme Green Energy Company under the guidance of Mr. C. Jebaraj, B.Tech., have carried out the Environmental Audit.

Name	Qualifications	Certification Number
Mr. C. Jebaraj	B.Tech., PDGEM., DIS., BEE Certificated Energy Auditor, IRCA Certified Lead Auditor - OHSMS Internal Auditor-QMS CII Certified Carbon footprint Professional	EA-9847
Mr. S. Lakhsmana Kumaran	B.Tech., MSc.,(Env. Science), MBA., IRCA Certified Lead Auditor ISO 14001 EMS	UID - 351851

The following staff from the Institution were participated in the audit process

Name	Qualification	Designation
Dr. R. Muthukumaran	M.A., M.Phil., B.Ed., Ph.D.,	Principal
Dr. R. Manicka Chezhian	M.Sc., M.S., Ph.D.,	IQAC Co-Ordinator
Thiru. K. Srinivasan	M.C.A	Associate Professor Department of Computer Science ERP Co-Ordinator
Dr. A. Srividhya	M.A., M.Phil., Ph.D.,	Assistant Professor Department of English
Dr. P. Archanaa	M.Com., M.Phil., PGDCA., Ph.D., M.A[HINDI]	Assistant Professor PG Department of Commerce with Computer Applications
Dr. A. Kanakaraj	MCA., M.Sc., M.Phil., Ph.D., DIR	Assistant Professor PG Department of Computer Science

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Summary of Environment Audit

Environment audit of Nallamuthu Gounder Mahalingam College and its Hostel was carried by Alcheme Green Energy Company. Audit team has gone through the data related to Water and Electrical Energy, Waste generation, Waste Management, Waste Recycling and Reuse, Green Belt Development of the Institution both inside and outside the campus. The team also carried out the study of Pollution abatement measures, Rainwater harvesting, Water and Energy Conservation measures taken to reduce the pollution, noise level, green house emission and maintain Ambient Air quality

During the visit it is observed that cleanliness in the campus is well maintained through proper disposal of wastes, utilization of eco-friendly supplies and effective recycling program. The concept of eco-friendly culture is disseminated among the students through various seminars/workshops and community-oriented programs. The Institution strictly follows reduce, reuse and recycle method to limit energy usage and partially replace non-renewable energy sources with renewable energy resources.
The environment audit report is a very powerful and valuable communications tool to use while working with various stakeholders who need to be convinced that systems and procedures in place are suited to cope with natural changes and modifications.

It is hoped that the results presented in the environment audit report will serve as a guide for educating the college community on the existing environment related practices and resource usage at the college as well as spawn new activities and innovative practices.

The audit outputs and recommendations are summarised as follows:

Noteworthy activities

- Installation of 90KW Solar Power plant
- MOU with Tharani Electronics Waste, Coimbatore for proper disposal of E waste
- Clean, Green and plastic free campus
- Rainwater Collection arrangement to open well
- Sewage treatment plant at Boy's Hostel
- Solar Water Heater system at Hostels and utilisation hot water at Hostel Kitchen

The audit outputs and recommendations are summarised as follows:

- Air pollution impact on Ambient Air quality is negligible since the quantity of fuel used for combustion in the institution is very less
- Noise levels inside the campus are within the prescribed limit.
- Lot of initiatives are taken to conserve Water and Energy by the Institution.
- Total water consumption for Nallamuthu Gounder Mahalingam College and Hostel –50 KL/Day
- Electrical Energy consumption from TNEB GRID alone –2,93,479 units
- Green House Gas Emission is 259.45 t CO_2e Total GHG emission
- Green House gas reduction due to grown up trees is 20.18 t CO_2 e
- Net Green House Gas emission is 239.27 t CO_2 e

We are happy to submit this detailed Environmental audit report to the Nallamuthu Gounder Mahalingam College

For Alcheme Green Energy Company

Madurai

1. Introduction

1.1Environmental Policy

Nallamuthu Gounder Mahalingam College has well formulated Environmental Policy to guide all its activities.

The main objectives are as follows:

- To promote green growth, create green jobs and maintain green infrastructure
- To execute “Reduce, Reuse, Recycle and Re- earth “towards waste management, environmental protection and sustainable future
- To reduce potable water consumption
- To create environmental awareness among all the stakeholders of the institution
- To assess and regulate environmental practices of the institution periodically

The Institution vouchsafes:

- Its commitment to sustainability and environmental management
- It reiterates the stand that managing environmental issues is a high priority for the College
- Its commitment to prevent pollution and to continuously improve upon environmental protection.
- A commitment to create environmental awareness

2. WATER

2.1 Water Usage at Nallamuthu Gounder Mahalingam College

Total number of students studied during the academic year 2021-2022: 5090

Teaching & non-Teaching staff in the institution during the academic year 2021-2022:258

Total number of stake holders: 5348

Water for college and hostel

Municipal water-34,000 litres/day

Borewell water- 16,000 litres/day

Total water usage -50, 000 litres/day

Main water uses in the College campus are Drinking, Rest room, Canteen and Lab

Water usage in the College- 41 KL / Day

Water usage per day per stakeholder in the college – 7.66 litres

Water usage at college

Sl. No	Place	Water usage Quantity Litres / Day
1	Drinking	5000
2	Rest room	25,000
3	Canteen	4000
4	Lab	1000
5	Garden	6000
	Total	**41,000**

Waste water generation in the college – 30 KL/day

2.2 Water usage at Hostel

Number of students and staff residing in the hostel in the year 2021-2022: 91

Main water uses in the Hostel are Drinking, Washing of clothes, Cooking & Vessel cleaning and for Rest room

Water usage at Hostel - 9 KL / Day

Water consumption per day per stakeholder in the hostel – 98.9 litres

Water usage at Hostel

Sl. No	Place	Water usage Quantity Litres / Day
1	Drinking	200
2	Cooking	400
3	Rest room	900
4	Bathing	1300
5	Clothes washing	1300
6	Vessel Cleaning	400
7	Garden	4,500
	Total	9,000

Waste water generation in the Hostel – 4.3 KL /day

3. Electrical Energy

3.1 TNEB Grid Electrical Energy Consumption: 2021-2022

ELECTRICAL ENERGY CONSUMPTION IN THE COLLEGE AND HOSTEL

SL.NO	PLACE	UNITS CONSUMED
1	COLLEGE	264949
2	HOSTEL	28530
	TOTAL	293479

3.2 Diesel Generator Electrical Energy Consumption: 14,850 units

Total electrical energy consumption

SL.NO	SOURCE	UNITS CONSUMED
1	TNEB	293479
2	DIESEL GENERATOR	7596
	Total	301075

Total Electrical Energy consumption from TNEB grid and DG in the College and Hostel 3,01,075 units

Electrical Energy consumption per stakeholder per year – 56.3 units/year

4. FUEL CONSUMPTION

4.1 LPG

LPG gas is used in the hostel for cooking and used in the college lab for heating

LPG cylinders used- commercial cylinders of 19 kgs capacity

- LPG consumption in the hostel mess during the year 2021-2022- 200 cylinders
- LPG consumption in the college during the year 2021-2022- 2 cylinder.
- Total LPG consumption during the year 2021-2022- 3838 KGs (202 Cylinders)

5. Waste Generations and Management

5.1 Liquid and Solid Waste Generation

Waste water generation in the College - 30 KL /day
Waste water generation in the Hostel - 4.3 KL /day

College

- Biodegradable-–<1kg/day

Office

- Non-biodegradable –< 0.1kg/day

College Canteen

- Biodegradable –< 1 kg/day
- Non-biodegradable –<0.5kg/day
- Aluminium foil -–<0.1kg/day

Hostel

- Biodegradable (Food waste) - 10-15 kg/day
- Non-biodegradable – <0.5kg/day

Open area

- Biodegradable (Dry leaves)- 5-10 Kgs/Day

Plastic waste

- **Less than 75 grams. per day**

e-Waste

- **Less than 200 kgs/year**

5.2 Waste Management

5.2.1 Liquid waste Management

- Grey water from kitchen is used for gardening
- Sewage water from boys' hostel is collected separately and treated in the waste water treatment plant and treated clear water is used for gardening

5.2.2 Bio-degradable waste management

- Bio-Degradable and non-biodegradable waste are collected in separate bins provided.
- Dry leaves are collected separately, dumped in the pits and converted into Bio fertilizer
- Every Year around 1000 Kgs Bio composts is produced

5.2.3 Plastic Waste Management

The college has been declared as a 'Plastic Free' zone.

- Use of polythene bags, plastic cubs and laminated papers are prohibited.
- Students and staff are advised to bring cloth bags
- All the stake holders are motivated to use stainless steel water bottles and lunch boxes.
- Plastic utensils in the stores, canteen and hostel kitchen are replaced with stainless steel plates, tumblers etc
- Plastic waste that comes in through lab equipment's package, empty chemical containers etc. are collected separately and disposed periodically for recycling.

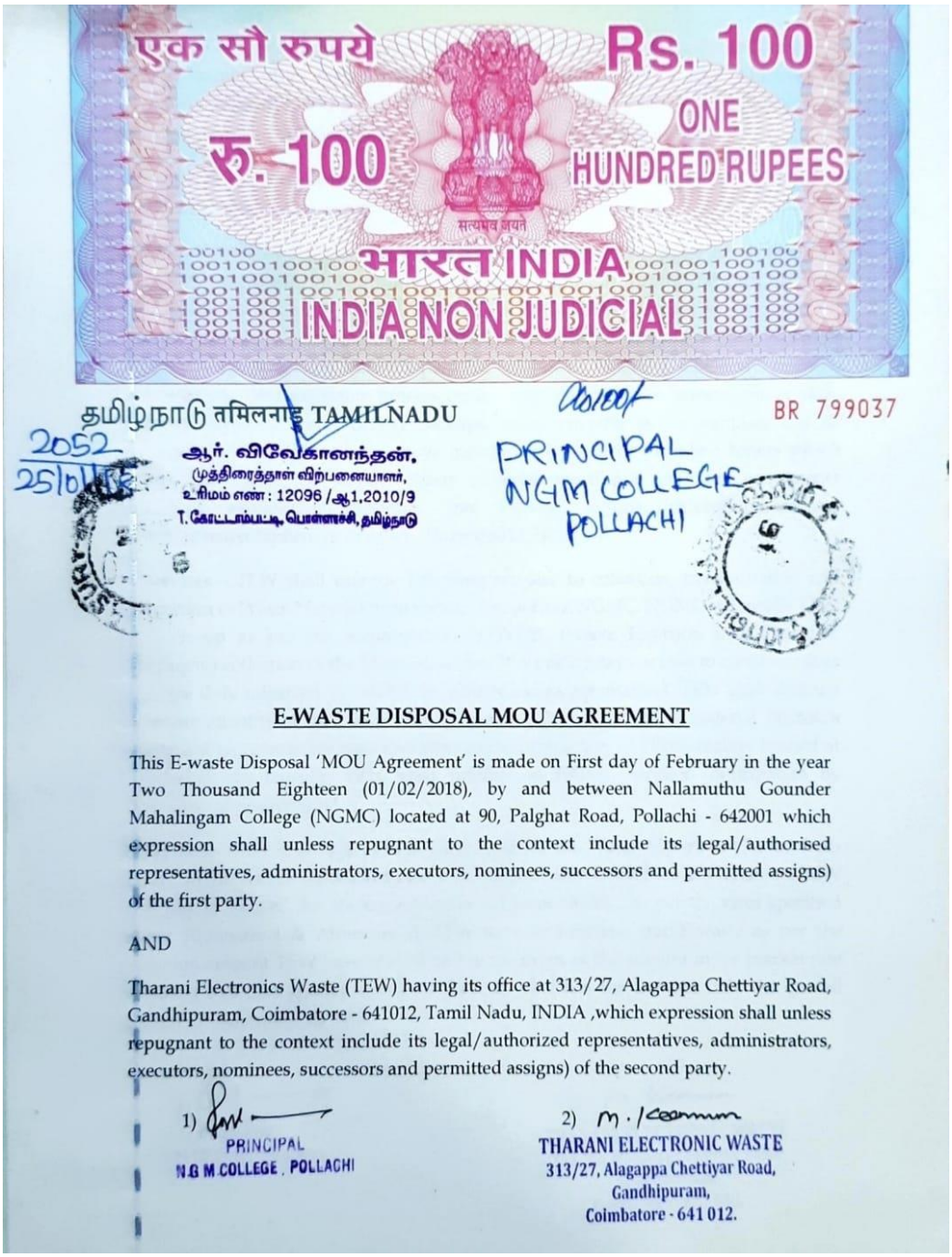
5.2.4 Used Battery Management

- Used batteries are disposed through Buy back method

5.2.5 e-Waste Management

- All electronic machineries are purchased under Buy-Back agreement for proper disposal of e waste to recycler

- MOU signed with Tharani Electronics Waste, Coimbatore for proper disposal of E waste



एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

BR 799037

ஆர். விவேகானந்தன்.
முத்திரைத்தாள் விற்பனையாளர்,
உரிமம் எண் : 12096 /ஆ1,2010/9
T. கோட்டாம்பட்டி, பொள்ளாச்சி, தமிழ்நாடு

PRINCIPAL
NGM COLLEGE
POLLACHI

E-WASTE DISPOSAL MOU AGREEMENT

This E-waste Disposal 'MOU Agreement' is made on First day of February in the year Two Thousand Eighteen (01/02/2018), by and between Nallamuthu Gounder Mahalingam College (NGMC) located at 90, Palghat Road, Pollachi - 642001 which expression shall unless repugnant to the context include its legal/authorised representatives, administrators, executors, nominees, successors and permitted assigns) of the first party.

AND

Tharani Electronics Waste (TEW) having its office at 313/27, Alagappa Chettiyar Road, Gandhipuram, Coimbatore - 641012, Tamil Nadu, INDIA ,which expression shall unless repugnant to the context include its legal/authorized representatives, administrators, executors, nominees, successors and permitted assigns) of the second party.

1) PRINCIPAL
N.G.M.COLLEGE, POLLACHI

2) THARANI ELECTRONIC WASTE
313/27, Alagappa Chettiyar Road,
Gandhipuram,
Coimbatore - 641 012.

5.2.6 Other Solid Waste Management

- Solid wastes generated from damaged furniture are sent to waste wood collection centre. Useful furniture and other wooden materials are made from the waste
- Glass wastes are disposed periodically through municipal waste collection system.

6. Pollution abatement measures

6.1 Waste Reduction

- ❖ Students are instructed not to waste paper while writing examinations.
- ❖ Reusing one side paper
- ❖ Where ever possible, printing on both sides of papers
- ❖ In order to reduce the use of paper the following initiative were taken by E - Governance
    - Attendance
    - Payment of fees
    - Submission of e-assignment through email
    - Digitalisation of Staff profiles and details about students
    - E – Circular through SMS, WhatsApp or Email
- Online Admission Process – Printing of applications reduced & submission of applications through admission portal.
- All inter department communications are through intranet
- Online exams are conducted to reduce the paper usage.

6.2 Waste Recycling

Recyclable papers are collected and kept and disposed as mixed waste to paper mills through authorized Vendors.

- The answer scripts after the publication of results are sent for recycling.
- e wastes are collected and sent to authorised recycler.

6.3 Waste Reuse

- Reuse one sided paper
- Reuse Envelopes

6.4 Waste to wealth

- Dry leaves are converted into bio fertilizer

6.5 Water Conservation initiatives

- Water taps are changed to push type to reduce the wastage of water
- Periodical preventive maintenance is carried out to avoid leakages

6.6 Energy conservation activities followed

- High volume Low Speed fans are provided in the auditorium
- Maximum utilisation of day lights at auditorium, hostel and colleges
- Staff and Students are made aware of using public transport system
- Individual vehicle usage is reduced to the minimum level
- Periodical maintenance and overhauling of generators are being carried out
- The fans, lights, air-conditioners and other electronic and electrical equipments are switched off when not in use.
- Lights and fans are switched off by the students whenever they are out of hostel rooms
- Replacing conventional electrical light fittings with energy efficient Light-Emitting Diode (LED) bulbs.
- Replacing old high energy consuming appliances with star rated energy efficient appliances.
- Computers are switched to sleep mode or hibernate mode automatically when not in use.
- At the end of every practical session, Computer monitors and UPS are switched off.
- Soft copies are maintained instead of hard copies, to reduce power consumption and paper.

7. Greenbelt Development

Nallamuthu Gounder Mahalingam College, Pollachi being located in the regime surrounded by agriculture-based villages, naturally the institute is overwhelmed with the atmosphere of greenery. The Institution too does ever take meticulous efforts to maintain and retain the Nature given atmosphere with planting of new saplings The campus is lush green with gardens, lawns and plants wherever there is open space

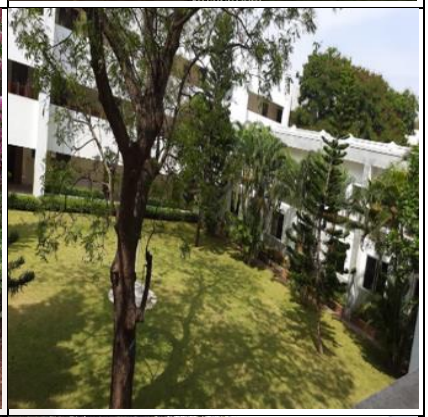
- The eco-friendly ambience of the campus is a noteworthy feature of Nallamuthu Gounder Mahalingam College
- Green belt is developed in all possible open area are being converted into greenery
- The Green Society is maintaining a medicinal garden plant which is spread over 450 sqft area. Around 40 numbers of medicinal plants are there inside the campus
- Special initiatives are taken by the Green Society and new saplings are planted every year. Altogether, there are 961 plants in the campus.
- The list of trees and the arrival of new saplings are recorded every year.

Routine Green Practices

- Every year, new tree saplings are planted inside the college campus.
- The Green campus drive is an initiative of the College to protect the environment.
- The Green Society of the college take special care to keep the campus neat and green.
- Environmental awareness programs are conducted regularly to spread the message of environment preservation.







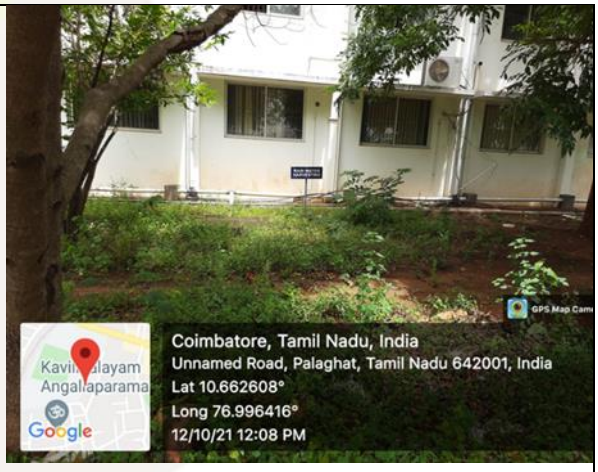

GREEN BELT DEVELOPMENT

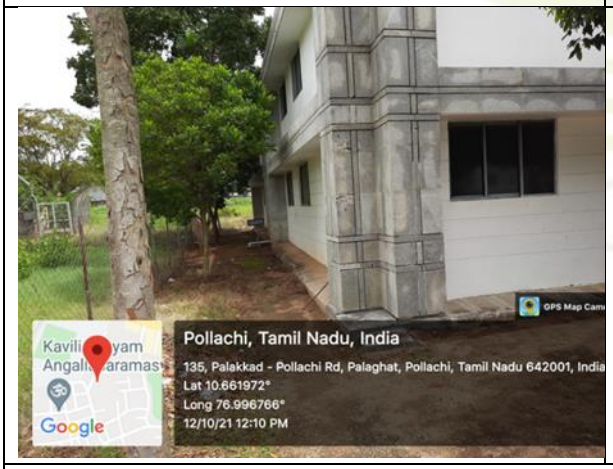
8.Rainwater Harvesting

At Nallamuthu Gounder Mahalingam College, rainwater harvesting is done effectively to enhance the ground water level. The institution has rainwater harvesting pits at various locations and they are being maintained properly. The water drained during the rainy season is allowed to flow into the pits constructed in various places inside the campus including the Hostel Premises.

Rainwater harvest area covered in the college -45,799 sqft
Rainwater harvest area covered in the hostel- 16,276 Sqft

In addition, all the rainwater from open floor area is collected through Rainwater collection channel and directed to open well





Excellent collection system for effective utilisation of rainwater

9. AMBIENT AIR

9.1 Green House Gas Emission

Release of carbon dioxide into the atmosphere is contributes to the global warming and increasing the pace of climate change. More trees in the campus will make a source of sink for the carbon dioxide and for other greenhouse gases

Average distance travelled from home to College and back to home by four wheelers=16KM		
Average distance travelled from home to College and back to home by two wheelers=12 KM		
Average Four Wheeler Fuel efficiency assumed = 20KM/ Lit		
Average Two Wheeler Fuel efficiency assumed = 60KM/ Lit		
No of cars used by both students and staff =17		
No of two wheelers used by both students and staff =693		
No of College working days during the year 2021-2022-180 days		
No of days Hostel was occupied with students in the year 2021-2022-252 days		
Fuel (Petrol)consumption by two wheelers = No of days * No of vehicles*12/60	12613	lits
Fuel (Petrol)consumption by four wheelers = No of days * No of vehicles*16/20	1237.6	Lits
Total quantity of petrol consumed by both two wheelers and four wheelers	13850	Lits
Diesel consumed by DG sets during the year 2021-2022	2532	Lits
Total Diesel consumption during the year 2021-2022	2532	lits
LPG consumption in the college	38	kgs
LPG consumption in hostel mess and canteen	3800	kgs
Total LPG consumption	3838	KGS
Total Power consumed in the COLLEGE and HOSTEL in the year 2021-2022	293479	units
GHG EMISSION		
Green House Gas emission due to petrol	32686.47	Kge CO2
Green House Gas emission due to diesel	6760.44	Kge CO2
Green House Gas emission due to LPG	11629.14	Kge CO2
Green House Gas emission due to Grid power	208370.09	Kge CO2
Total GHG emission per year	259446.14	Kge CO2
Total GHG emission per year	**259.45**	**t CO2 eq**
GHG Captured by tress		
Fully grown up trees inside the campus	961	trees
Greenhouse gas captured by trees	**20.18**	**t CO2 eq**
Net Green House Gas Emission per year	**239.27**	**t CO2 eq**
GHG AVOIDED due to usage of Renewable Energy		
Solar power generation from Solar power plant	7583.00	units
Solar power generation for street lights	438.00	units
Total solar energy used	8021.00	units
Greenhouse gas emission avoided due to solar power generation	6577.22	KGs
Greenhouse gas emission avoided due to solar power generation	6.58	t CO2 eq
Total Solar Water Heater installed	4100.00	LPD
Greenhouse gas emission avoided due to Solar Water Heater	30.57	t CO2 eq
Total GHG avoided by usage of Renewable Energy	**37.14**	**t CO2 eq**

9.2 Ambient Air Quality

Flue gas emission sources

- LPG combustion at hostel, canteen and labs
- Diesel generator at College and Hostel

Fuel consumption per year

- LPG -3838 Kg
- Diesel for generator – 2532 litres

Fuel consumption per day

- College workings days -180
- Hostel occupied with students -252 days
- Average LPG consumption per day- 15.23 kgs
- Average diesel consumption per day-14.06 litres

Combustion of LPG is NOT CONTINUOUS process

DIESEL Generator will run only when TNEB grid power fails

Considering the above situation, the quantity of flue gas emission and the impact on ambient air quality from the above combustions are negligible

9.3 Noise level

Noise level inside the campus

Sl. No	Location	Max value in dB	Average Value in dB
1	Near Main Entrance	71.3	66.1
2	Class room	58.1	53.4
3	Library	51.7	47.3
4	Near DG	59.5	52.7
5	Hostel	54.6	52.2
6	Office	57.8	55.6

- Diesel Generators (DG) sets do not run on a continuous basis. Only during power failure, DG sets are operated during the working hours of the College.
- Generally, Power failure occurs for a very short time period.
- During planned shutdown hours, DGs run continuously based on the load
- Noise disturbance due to DG set is negligible.

10. Audit Findings & Recommendations

Noteworthy activities

- Utilisation of Green Energy from 90KW Solar Power Plant
- MOU with Tharani Electronics Waste, Coimbatore for proper disposal of E waste
- Clean, Green and plastic free campus
- Optimum utilisation of Water
- Sewage Water Treatment at Boys' Hostel
- Hot water from Solar water heaters is utilised in the Hostel Kitchen to reduce the LPG consumption

Findings

- Air pollution impact on Ambient Air quality is negligible since the quantity of fuel used for combustion in the institution is very less
- Noise levels inside the campus are within the prescribed limit.
- Lot of initiatives are taken to conserve Water and Energy by the Institution.
- Total water consumption for Nallamuthu Gounder Mahalingam College and Hostel –50 KL/Day
- Electrical Energy consumption from TNEB GRID alone –2,93,479 units
- Green House Gas Emission is 259.45 t CO_2e Total GHG emission
- Green House gas reduction due to grown up trees is 20.18 t CO_2 e
- Net Green House Gas emission is 239.27 t CO_2 e
- Tree cover of the college with respect to the stakeholder strength is excellent
- Regular planting of trees inside campus are to be continued
- Water usage per day per stakeholder in the college 7.66 litres.
- Water consumption per day per stakeholder in the hostel -98.9 litres
- Electrical Energy consumption per stakeholder per year – 56.3 units/year

Recommendations

- Flow meter to be installed at borewell water pump discharge to know the exact usage of water.

- Waste water generated from college rest room shall be separated as grey and septic water and grey water shall be used for garden or reused for toilet flushing after treatment
- Training programs in Water & Waste management, Solids and e-Waste Management, Carbon footprint concepts, Awareness on Global warming & Climate change, E -vehicle usage, Alternative Fuel usage, Renewable Energy
- Increase the number of display boards on environmental awareness such as no wastage of food, switch off light and fan after use etc