QUALITY AUDIT REPORT

OF

NAZARETH COLLEGE OF ARTS AND SCIENCE

KOVILPATHAGAI ROAD,

AVADI, CHENNAI 600 062

TAMIL NADU

2022 – 2023

For More Information

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NAZARETH COLLEGE OF ARTS & SCIENCE CHENNAI 600 062

ENHANCING RESOURCE EFFICIENCY

QUALITY AUDIT REPORT

ON

WATER AUDIT, ENERGY AUDIT,

WASTE MANAGEMENT AUDIT,

GREEN CAMPUS MANAGEMENT AUDIT,

AND ENVIRONMENT AUDIT

OF

NAZARETH COLLEGE OF ARTS AND SCIENCE

KOVILPATHAGAI MAIN ROAD,

AVADI,

CHENNAI 600 062

2022 – 2023

NAZARETH COLLEGE OF ARTS & SCIENCE
CHENNAI
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ECO ENERGIME ENGINEERS LLP

ENHANCING RESOURCE EFFICIENCY

Certificate

This is to certify that M/s. Eco Energime Engineers LLP, Bengaluru has conducted **Quality Audit** of **"Nazareth College of Arts and Science, Chennai"** for the academic year 2022 – 2023. The Audit includes water audit, energy audit, waste management audit, green campus management audit and aspects of environment audit.

The audit involves field visit, measurements and observations, verification of bills, log books, data base, maintenance registers and interview with staffs, and this gives an overview of the existing system. In an opinion and to the best of our information and according to the information given to us, said Quality Audit gives a true and fair view in conformity with auditing principles.

For Eco Energime Engineers LLP

Authorized Signatory

A Govindaraj – EA 5212
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Project Team

- Mr. A Govindaraj, M. Tech., M.S., - EA 5212
- Mr R Arasa Kumar
- Mr. Mahammad Faizal

Project Advisor

- Mr. Prabu Das, M. Tech
- Ms. Aparna Reddy, B.Arch., MBA

Acknowledgements

We are thankful to the management of **Nazareth College of Arts and Science, Chennai,** for the support, guidance and, giving us the opportunity to be involved in this very interesting and challenging assignment.

We would be happy to provide any further clarifications, if required, to facilitate the implementation of the recommendations.

We received full co-operation and support from the concerned personnel/ staff members of the college. They took key interest and gave valuable inputs during the course of study.

And other Staff in personnel who have given full co-operation and support. They took a keen interest and gave valuable inputs during the course of study.

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EEELLP ACKNOWLEDGEMENT

EEELLP team thanks the management of **"Nazareth College of Arts and Science, Chennai"** for assigning this interesting work to us. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to Principal & Team of colleagues for giving us necessary inputs to carry out this very vital exercise. We would like to thank all the head of the departments and staff members who were actively involved while collecting the data and conducting field measurements.

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DISCLAIMER

The Audit Team has prepared this report for Nazareth College of Arts and Science, Chennai based on the input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

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

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ABBREVIATION AND ACRONYMS

1.	A	:	Amperes
2.	AC	:	Air Conditioner
3.	APFC	:	Automatic Power Factor Controller
4.	DG	:	Diesel Generators
5.	EE	:	Energy Efficient
6.	E-Waste	:	Electronic Waste
7.	etc.	:	Etcetera
8.	FTL	:	Fluorescent Tube Light
9.	GHG	:	Green House Gas
10.	Hz	:	Hertz
11.	HP	:	Horse Power
12.	I	:	Current
13.	ICT	:	Information and Communications Technology
14.	IQAC	:	Internal Quality Assurance Cell
15.	ISO	:	International Organization for Standardization
16.	kgs	:	Kilograms
17.	kL	:	Kilo Liters
18.	kV	:	kilo volt
19.	kVA	:	kilo volt ampere
20.	kVAr	:	Reactive kilo volt ampere
21.	kW	:	Kilo Watt
22.	kWh	:	kilo Watt hour
23.	kWp	:	kilo Watt peak
24.	LCD	:	Liquid Crystal Display
25.	LED	:	Light Emitting Diode
26.	MoU	:	Memorandum of Understanding
27.	NAAC	:	National Assessment and Accreditation Council
28.	No.	:	Numbers
29.	NSS	:	National Service Scheme
30.	Prim/Sec	:	Primary/Secondary
31.	PF	:	Power factor
32.	PG	:	Post Graduate
33.	Ph.D.	:	Doctor of Philosophy
34.	PV	:	Photo Voltaic
35.	Rs.	:	Rupees
36.	RO	:	Reverse Osmosis
37.	RR. No.	:	Revenue Register Number.
38.	S. No.	:	Serial Number
39.	Sq. Ft.	:	Square Feet

40.	Sq. m.	:	Square Meter
41.	SRTPV	:	Solar Roof Top Photo Voltaic
42.	TL	:	Tube Light
43.	TR	:	Ton of Refrigeration
44.	UG	:	Under Graduate
45.	V	:	Volts
46.	W	:	Watts
47.	Wi-Fi	:	Wireless Fidelity
48.	Wp	:	Watt peak
49.	#	:	Number

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1. INTRODUCTION

Nazareth College of Arts and Science was founded by C & D Educational Trust and is a part of a large educational group called Nazareth in the year 2000. The College is uniquely positioned to contribute to, and draw from, the strength and diversity of this sublime metropolis. Ever since its establishment, it has been on the mission of imparting quality tertiary education to those who attend college for the first time in their generation while meeting the competitive standards and growing requisites of contemporary learning society. It is always a mile ahead in working towards one of his noble aims of Higher studies for the lost, last and least. The college was Re-accredited with 'B' Grade by the National Assessment and Accreditation Council (NAAC) in the year 2019.

The college offers nine undergraduate programmes and four post graduate programmes. The College has signed MOUs with many academies that provide certificate courses on sundry soft skills and marketability. The college's best designed mentoring system monitors the mental and maturity of students in regaining their confidence and recouping their energy for an active academic life. Various cells and clubs practiced in the college keep the students active in serving the interest of the healthy society. Through Nazareth Emergency Relief and Rehab Foundation (NERF), the college reaches the needy whenever it finds people in want of basic amenities.

VISION

To build enriched socially responsible citizens and leaders through quality higher education.

MISSION

- To provide the best resources to impart the highest quality education and to transform into a holistic multi-disciplined institution.
- To provide opportunities to the students for practical exposure to meet the challenges of global competency & technology.
- To provide value and outcome-based education for Nation building.
- To provide creativity, leadership training, and placement
- To promote awareness and building human capacities with respect to UN Sustainable Goals.
- To engage students productively in areas of community engagement and service.

QUALITY POLICY

The institution is committed to promote and support all-round effective learning and teaching with a view to contribute to the development of a knowledge society through equitable access and widening the participation base in higher education.

CORE VALUES:

QUALITY EDUCATION

In order to improve academic performance and study skills quality education is given to the students to develop the holistic development of their personality and become worthy citizens to serve the Nation.

NATION BUILDING

Nation – Building has been an important goal of Nazareth College of Arts and Science. The students are provided with value-based education to serve the nation. the students are motivated to participate in extension activities of the college in providing awareness on socially relevant issues and developing the local community

GLOBAL COMPETENCY

The knowledge and skills needed in an evolving world to face the challenges at international level which is inculcated in students through International Conference, Seminar and Workshop and by establishing collaborations with Industries and Institutions at National and International level.

CREATIVE LEADERSHIP

The institution plays an important role in helping the students identify the leadership skill within the students. Students are given different platforms to expose the leadership skills. The students get the opportunity to develop skills that will prepare you for success as leaders in all facets of life

Committee and Cells

Internal Quality Assurance Cell (IQAC)

The College Internal Quality Assurance Cell (IQAC) was established in 2012, The cell plans, implements and monitors all the academic and co-curricular activities in the college The college has a stated policy on quality assurance to achieve excellence in all the spheres of higher education, for the holistic development of students and inculcating good citizenship among them. The college has stated various measures to promote quality in all the fields of higher education, teaching and learning, governance, student support and progression, collaboration with other institutions. IQAC happens to be one of the important components of the college which ensures Quality and continuous improvement in all the aspects of the College growth.

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The objectives of IQAC are to develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution and to assure all the stakeholders connected with higher education about the quality of education provided by the institution. IQAC is constantly working towards realizing the goal of quality enhancement and sustenance.

Various committees and cells are listed below:

- Anti-ragging Committee
- Discipline Committee
- Anti-Sexual Harassment Committee
- Anti-Narcotics Club (ANC)
- Grievance Redressal Committee
- Research Cell
- Examination Committee
- Library Committee
- Placement Committee
- Student Development Committee
- Physical Education Committee
- IQAC Cell
- College Industry Interaction Cell
- Publicity Cell
- Hospitality Cell
- Nirbhaya's Women Cell
- Entrepreneurial Development Cell
- Thrive Counseling Cell
- OBC cell
- SC/ST Cell
- Student Project and ED Cell (SPED)
- Minority Cell

Campus Area and Built-up area

The area of the campus (built up and total) is given in table 1-1.

S. No.	Description	Units	Details
1	Campus total area	Acres	5.1
2	Built-up area	Sq. ft.	62000

Table 1-1: College area

Internal Quality Auditing Composition – 2022 – 2023

The college management constitutes the internal Quality Auditing Composition Team including students, staff, stakeholders, employees, and alumina's every year. Table 1-2 gives the list of internal Quality Auditing team for the year 2022 – 2023.

NAME	ROLES
Dr. E. Mary Angeline B.R.S.C MSW (SW), PGDHRM. Ph. D. Principal	Chair Person
Mr. A.N. Henry Maris M.Tech., PGDHRM Secretary	Management Representative
Dr. A. Umesh Samuel Jebaseelan, M.A (Eng.), M.A (SW), MBA., M. Phil (SW), Ph.D Dean of Research, Bishop Heber College	External Expert
Mr.Selvaraj Partner, PSM Associates Chennai	Industrialist
Mr. Rajkumar, B.E Hirez solutions, Kodambakkam, Chennai	Employer
Mr. Gabriel Thomasraj, M.A (Eng.) Founder and CEO of Impact Foundation	Society Member
Mr. Ashwin, MSW Freelance Event Management	Alumni
Ms.K.Alamelu, , M.Sc, M.Phil, M.ED. SET Assistant Professor, Department of Mathematics	Coordinator, All criteria
Dr. Roxy Asst. Prof. Department of Business Administration	Member Criteria-1
Ms.Meenakshi, M.Sc ., M.Phil Asst. Prof. Department of Computer Science	Member Criteria-1
Ms. E. Mano Ranjitham M.Sc (Cs), M.Sc (Psy) Vice Principal, Asst. Prof. Department of Computer Science.	Criteria -2 member
Ms.E.F.Beulah, Assistant Professor, Department of Mathematics	Criteria -2 member
Dr. D. Senthil, M.Sc., MCA ,M.Phil. Head in Charge, Computer Science -Shift- II	Member, criteria-3
Ms. Devi Mano, Assistant Professor, Department of Computer Science	Member, criteria-3
Mr. M. Thyagaraj, MCA, M.phil. SET Asst. Prof. Department of Computer Science	criteria -4
Ms.Gomathi Assistant Professor, Department of Computer Application	Member, criteria-4
Mr. V. Kirubananth, M.P.Ed., M. Phil Dean of Student Affairs	Member, criteria -5
Mr. R. Pandiyan, Assistant Professor, Department of English	Member, criteria -5
Mr.Febin, M.S.W Assistant Professor, Department of Social work	Member, criteria -6
Ms. Jenifer David, Assistant Professor, Department of Social work	Member, criteria-6
Mr. Abraham, Assistant Professor, Department of Social work	Member, criteria -7
Mr.Ashwin, Assistant Professor, Department of Social work	Member, criteria -7
Mr. J. Balasubramaniam M.A., M.Ed.,	Public Relations Officer
Ms. G. Swaroopa Rani, M. Com	Administrative Officer, AISHE REPORT, UNOM ANNUAL REPORT
Ms. R. Saranya M. Com	Administrative Assistant, Reports Preparation India Today Survey, ARIIA, AG AUDIT, NIRF, AQAR
Ms. Tryphosa Mavis II MSW, NCAS	Student
Mr. D. Samuel Magesh Pandiyan , Father of Ms.Bonita, Department of Mathematics	Parent

Table 1-2: Internal Quality Audit Composition

Principal
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Overview of Green Audit:

Green Audit helps college / facility to:

- Understand the usage of electricity, water and other natural resources
- Identify opportunities to conserve various natural resources
- Identify various technological improvements
- Evaluate the techno-commercial of identified conservative measures
- Create awareness among the students and staff
- Disseminate the commitment of management towards saving nature
- Develop a culture among students, staff and management to be socially responsible

2. PRE – AUDIT PHASE

A pre-audit meeting is a prerequisite for the Audit; it helps to meet and discuss about the schedule and documents required during the audit. The pre-audit meeting was conducted at Nazareth College of Arts and Science in the end of July 2023. During the meeting, introduction of team members, scope and objectives of the audit were discussed.

Management Commitment

The Management of the college has shown significant commitment towards Quality Auditing during the pre-audit meeting. They were ready to encourage all green activities. It is decided to promote all activities that are environment friendly such as awareness programmes on the environment, campus farming, planting more trees on the campus etc., after the Quality Auditing.

College administration is vital to the process of realizing campus sustainability, and college policy is an essential instrument for any substantial change in the campus environment.

Scope and goals of Quality Auditing

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. Quality Auditing is one among them for educational institutions.

Once a baseline is established, the data can serve as a point of departure for further action in campus greening. Existing data will allow the college to compare its programs and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects.

This data will also provide a basis for calculating the economic benefits of resource conservation projects by establishing the current rates of resource use and their associated costs. This audit initiative focused initially on educating colleges and universities through workshops, guidebooks, fact sheets and ensuring compliance through inspections and self-audits.

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3. ON-SITE AUDIT PHASE

3.1.Scope / Target Areas of Quality Auditing

3.1.1. Water Audit

Water Audit addresses water consumption, water sources, appliances and fixtures. Aquifer depletion and water contamination are taking place at unprecedented rates. It is therefore essential that any environmentally responsible institution should examine its water use practices.

3.1.2. Energy Audit

Energy Audit addresses energy consumption, energy sources, energy monitoring, lighting, appliances, and vehicles. Energy use is clearly an important aspect of campus sustainability.

3.1.3. Waste Management Audit

Waste Audit addresses waste production and disposal, plastic waste, paper waste, food waste, and recycling. Municipal solid waste has a number of adverse environmental impacts, most of which are well known and not in need of elaboration.

3.1.4. Green Campus Management Audit

Green campus initiatives are becoming an integral part of modern day's university systems. Green campus Audit helps in maintaining the air and water clean. It regulates the climatic conditions and provides a healthy and comfortable environment for living.

3.1.5. Environment Audit

Environment Audit addresses the usage of fossil fuels (coal, diesel, petrol and gas). The mode of commute to and from college each day has an impact on the environment through the emission of greenhouse gases into the atmosphere by the burning of fossil fuels.

3.2. Audit Methodology and Approach

The methodology and approach adopted for the study involve various steps that include:

- Review of Document and records
- Review of Policies
- Review of MoU
- Review of various measures implemented
- Site Walkthrough
- Data Collection
- Interviews

3.2.1. Review of Document and Records

Electricity bills, Water bills, equipment register, list of appliances, office registers, internal Quality Audit document, purchase document, were reviewed and relevant data and inputs required for analysis have been collected.

3.2.2. Review of Policies

College has various policies that include safety policy and Anti-ragging policy.

A. Safety Policy:

An organization's safety policy is a recognized, written statement of its commitment to protect the health and safety of the students and employees, as well as the surrounding community. All the students, teaching and non-teaching staff, maintenance and house-keeping staff have been given training to use fire extinguishers in emergency situations of fire and explosion. Fire extinguishing cylinders have been installed in easily accessible places. Sample photo of fire extinguisher is as shown in figure 3-1.

Figure 3-1: Fire extinguisher

B. Anti-Ragging Policy:

Ragging has ruined countless innocent lives. The Anti-Ragging cell has the responsibility of preventing students from being ragged. At first, the cell warns students who are involved in ragging. Finally, the cell takes the disciplinary of action against the offenders. The defaulters are expelled from the college.

Sample photos of anti-ragging posters displayed within the college premises are shown in the figure 3-2.

Figure 3-2: Anti-ragging posters

C. Green Campus Policy:

The College has a green campus policy which covers

- Green practices
- Solid waste management
- Liquid waste management
- E – waste management
- Rain Water Harvesting Structures and Utilization in the campus
- Proper Utilization of energy

The photo of the green campus policy document is given below in figure 3-3.

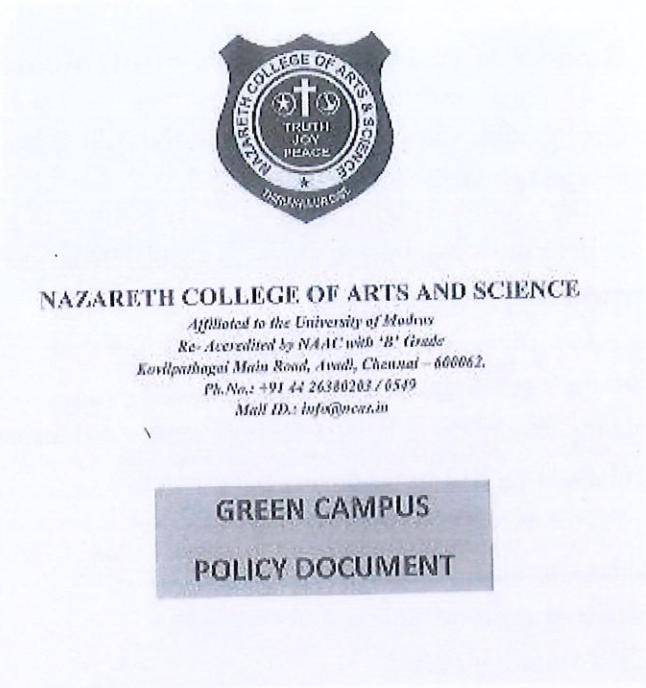

Figure 3-3: Green Campus Policy Document

The other policies available are,

Academic Policy

Admission Policy

Administrative Policy

H.R Policy

Staff Welfare Policy

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3.2.3. Review of various measures implemented

During the Green Audit study, it was observed the college has taken various initiatives in conserving natural resources that include:

- Internal Quality Auditing team is available. It is comprised of chairman, vice-chairman and members.
- Usage low flow water taps like push type taps and taps with aerators is used to minimize water usage.
- Cleaning activity using bucket & mop is followed instead of using a water hose.
- Regular testing RO water quality parameters
- Rain water harvesting pits available
- Regular checking of water distribution system
- Daylight integration and natural ventilation
- SRTPV system installed
- Well maintained Earth pits
- Color coded bins used
- Installation of LCD/LED monitors for all the desktops to conserve electricity
- Switching OFF lights and fans whenever not in use to save electricity
- Sensor based solar LED street lights are used.
- Plastic free campus
- Restricted entry of automobiles
- Regular maintenance of greeneries
- Pedestrian friendly pathways
- Ramp facility
- RO plant
- Usage of steel cutleries
- Usage of bicycles and electric scooters

3.2.4. Site Walk through

Site walk through was conducted with staff members, students and audit team members. Staff and students have shown very keen interest in the data collection process and methods to be followed in field data collection. The staff and students have given inputs and suggestions for resource conservation as well.

College Infrastructure

NCAS College campus has various blocks and departments. Each floor has state of the art class rooms, staff rooms, laboratories libraries and many more. Details of infrastructure and facilities are as follows:

- Nazareth College of Arts and Science Sports Students Hostel (Men)
- Student Indoor Gym
- College Bus
- Clinic inside the campus
- Students Safety Insurance
- Providing School Loan to remit the tuition fee
- Transportation
- Distribution of Sanitary Pads to Girl students
- Sanitary Vending Machine for Girl students
- Tailoring Room for emergency stitching
- Laboratories
- Library
- Conference hall
- Board rooms
- Auditorium

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3.2.5. Inventory Collection

To understand the types of appliances used, inventory collection was carried out by the audit team members. The consolidated list of systems and their location is given in table 3-1.

S. No.	Inventory Type	Quantity
1.	Systems	202
2.	Projectors	15

Table 3-1: Consolidated list of inventories

3.2.6. Interviews

To collect the various data, information and operating patterns, interviews were conducted with college staff (Principal, teaching staff, non-teaching staff) and students. The consolidated information from the interviews is given in the following sub-sections.

3.2.6.1. List of Holidays

The lists of holidays were collected during the study and the same is given in figure 3-6, figure 3-3.

Nazareth College of Arts and Science

List of Holiday 2022-2023

S.NO	DATE	DAY	No of Holiday
1	3. July 2022	Sunday	Holiday-International Day of World Cooperatives
2	9. July 2022	Saturday	Holiday
3	10. July 2022	Sunday	Holiday - Bakrit
4	17. July 2022	Sunday	Holiday
5	24. July 2022	Sunday	Holiday
6	31. July 2022	Sunday	Holiday - International Day of Friendship
7	7. August. 2022	Sunday	Holiday
8	9. August. 2022	Tuesday	Holiday - Moharam
9	13. August. 2022	Saturday	Holiday
10	14. August. 2022	Sunday	Holiday
11	15. August. 2022	Monday	Holiday - Independence Day
12	19. August. 2022	Friday	Holiday - Krishna Jayanthi
13	21. August. 2022	Sunday	Holiday
14	28. August. 2022	Sunday	Holiday
15	31. August. 2022	Wednesday	Holiday - VinayagaChathurthi
16	4. September.2022	Sunday	Holiday
17	10.	Saturday	Holiday
18	11.	Sunday	Holiday
19	18.	Sunday	Holiday
20	25.	Sunday	Holiday
21	2.October.2022	Sunday	Holiday - Gandhi Jayanthi
22	4.October.2022	Tuesday	Holiday - SaraswathiPooja
23	5.October.2022	Wednesday	Holiday - Vijayadhasami
24	8.October.2022	Saturday	Holiday
25	9.October.2022	Sunday	Holiday - MiladiNabi
26	16.October.2022	Sunday	Holiday - World Food Day
27	23.October.2022	Sunday	Holiday
28	25.October.2022	Tuesday	Holiday - Divali
29	30.October.2022	Sunday	Holiday
30	6. November.2022	Sunday	Holiday
31	12.	Saturday	Holiday
32	13.	Sunday	Holiday
33	20.	Sunday	Holiday
34	27.	Sunday	Holiday

35	4. December.2022	Sunday	Holiday - International Day of Banks
36	10.	Saturday	Holiday - Human Rights Day
37	11. December.2022	Sunday	Holiday - International Mountain Day
38	18.	Sunday	Holiday
39	25.	Sunday	Holiday - Christmas
40	1. January.2023	Sunday	Holiday - New Year
41	8. January.2023	Sunday	Holiday
42	14. January.2023	Saturday	Holiday - Pongal
43	15. January.2023	Sunday	Holiday - Thiruvalluvar / UzhavarThirunal
44	22. January.2023	Sunday	Holiday
45	26. January.2023	Thursday	Holiday - Republic Day
46	29. January.2023	Sunday	Holiday
47	5. February.2023	Sunday	Holiday
48	11. February.2023	Saturday	Holiday - International Day of Women and Girls in Science
49	12. February.2023	Sunday	Holiday
50	19. February.2023	Sunday	Holiday
51	25. February.2023	Saturday	Holiday
52	5. March.2023	Sunday	Holiday
53	11. March.2023	Saturday	Holiday
54	12. March.2023	Sunday	Holiday
55	19. March.2023	Sunday	Holiday
56	22. March.2023	Wednesday	Holiday - Telugu New Year
57	26. March.2023	Sunday	Holiday
58	2. April.2023	Sunday	Holiday
59	4. April.2023	Tuesday	Holiday - Mahavir Jayanthi
60	7. April.2023	Friday	Holiday - Good Friday / World Health Day
61	8. April.2023	Saturday	Holiday
62	9. April.2023	Sunday	Holiday
63	14. April.2023	Friday	Holiday - Dr Ambedkar Jayanthi / Tamil New Year
64	16. April.2023	Sunday	Holiday
65	20. April.2023	Thursday	22.9 - World Creativity and Innovation Day
66	23. April.2023	Sunday	Holiday - English Language Day
67	30. April.2023	Sunday	Holiday - International Jazz Day
68	1. May.2023	Monday	Holiday - May Day
69	7. May.2023	Sunday	Holiday
70	13. May.2023	Saturday	Holiday
71	14. May.2023	Sunday	Holiday - International Day of Families
72	21. May.2023	Sunday	Holiday
73	28. May.2023	Sunday	Holiday

Figure 3-4: List of Holidays for 2022-2023

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3.2.6.2. Tentative Schedule of College:

The tentative schedule of the college is 08.15 AM to 5:45 PM. The details of the sessions are given in table 3.2.

S. No.	Description	Timings
1	Session – I	08.15 AM to 9.10 AM
2	Session – II	9.10 AM to 10.05 AM
3	Break	10.05 AM to 10.30 AM
4	Session – III	10.30 AM to 11.20 PM
5	Session – IV	11.20 PM to 12.10 PM
6	Session – V	12.10 PM to 01.00 PM
7	Lunch	01.15 PM to 02.10 PM
8	Session – VI	02.10 PM to 03.00 PM
9	Session – VII	03.00 PM to 03.50 PM
10	Break	03.50 PM to 04.10 PM
11	Session – VIII	04.10 PM to 05.00 PM
12	Session – IX	05.00 PM to 05.45 PM

Table 3-2: Tentative College Schedule

3.2.6.3. Staff and Students of College:

The number of staff includes teaching and non-teaching is given in the table 3-3. The number of students includes both boys and girls.

S. No.	Academic year	Staff	Students	
			Boys	Girls
1	2022 – 2023	134	1082	823

Table 3-3: Number of staff and students

4. WATER AUDIT

4.1.Facility description

The water audit study involved carrying out various observations and analysis, to realistically assess usage of water and potential for water conservation.

Borewell is the main source of water, for facilitating the water supply requirement of the entire campus. No water is purchased from outside through tankers.

Four bore wells are available in campus. Bore well 1 supplies water to canteen, Bore well 2 supplies water to school building, Bore well 3 supplies water to A&B Block located under the college bridge, Bore well 4 supplies water to hostel (C block).

All the bore wells are interconnected with valve mechanism. Sumps are not available in college.

From bore wells, water is pumped to overhead tanks using submersible type pumps. The location of bore wells and supply area are given in table 4.1

S. No.	Name	Supply Area	Pump type
1	Bore well 1	Canteen	Submersible
2	Bore well 2	School block	Submersible
3	Bore well 3	A&B Block	Submersible
4	Bore well 4	Hostel Block	Submersible

Table 4-1: Details of Bore wells

The sample image of a borewell is shown in figure 4-1.

Figure 4-1: Borewell at college

Based on the source, usage and type, water is classified as following types in the college campus that include:

- Raw Water
- Drinking Water
- Rain Water
- Sewage Water

Details of the various types of water usages are discussed in detail, in the following sections.

4.1.1. Raw Water System

The raw water is consumed in the following areas:

- RO plant Input
- Student's toilets
- Staff toilets
- Laboratories
- Canteen
- Garden

The schematic of overall raw water distribution system of the campus is given in figure 4-2.

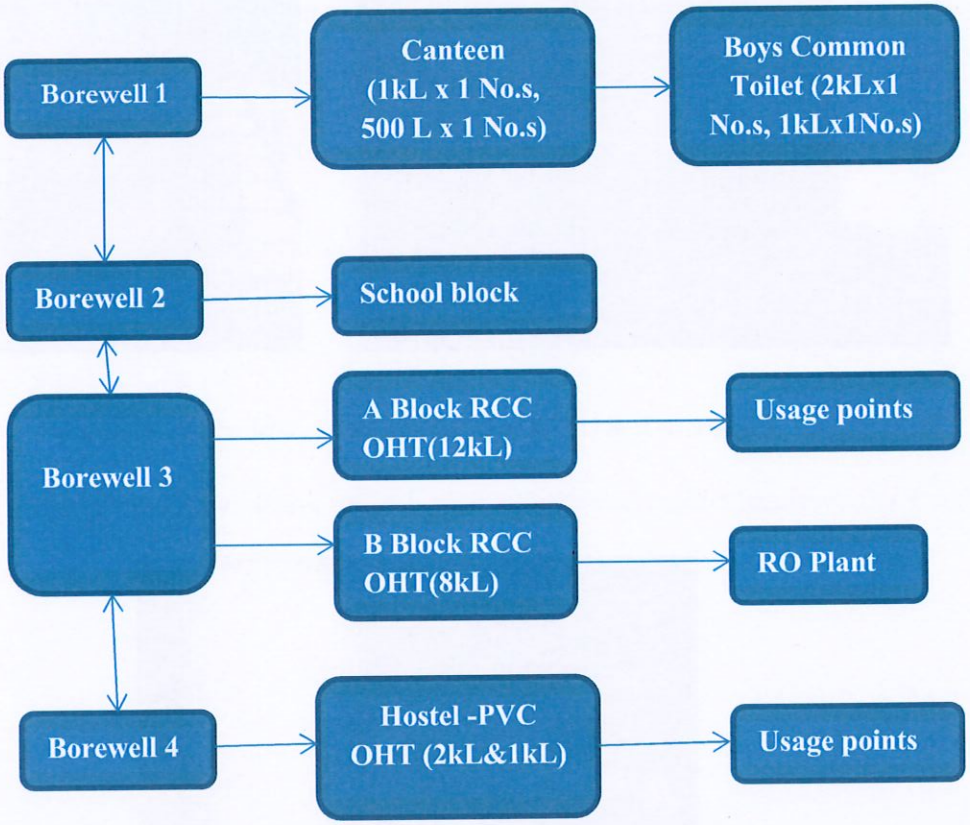

Figure 4-2: Overall schematic of raw water system

Four borewells are available in college. Borewell-1 provides water supply for canteen block. From canteen block the water is supplied to boy's common restroom.

Borewell-2 is mainly used for providing water supply to school block.

Borewell-3 is used for supplying water to A-Block and B-Block. From B-Block the water is utilized by users and RO plant input.

Borewell-4 is used for supplying water to hostel block. All the borewells are interconnected using valve mechanism.

The RCC overhead tanks in A-block and B-block are shown in figure 4-3.

Figure 4-3: RCC overhead tanks at A-block & B-block

The PVC overhead tanks available in college campus are shown below in figure 4-4.

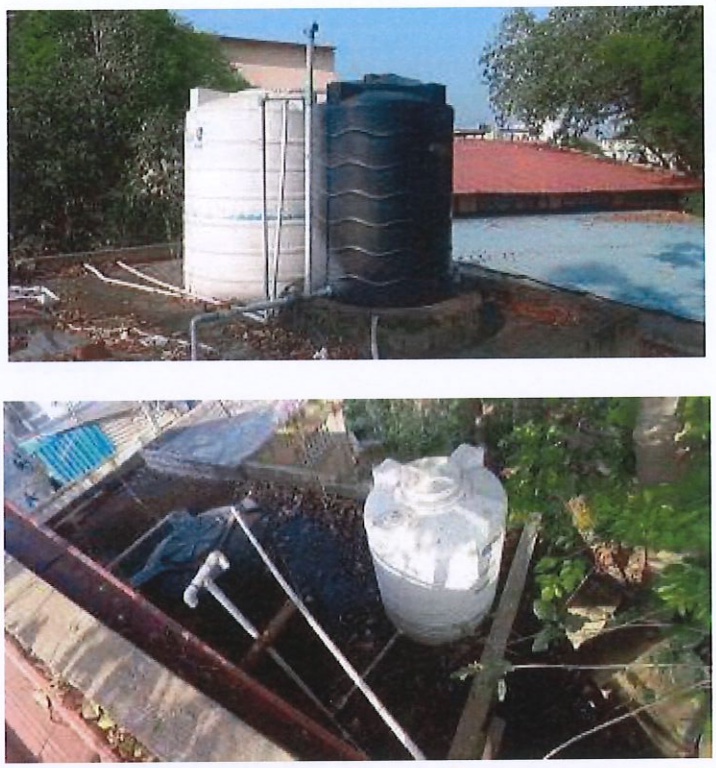

Figure 4-4: PVC overhead tanks in Hostel, Boy's toilet & canteen terrace

4.1.2. Drinking water system

To provide drinking water, RO plant is installed at B-Block. The input water for RO plant is supplied from 1000 litres x 2 No.s of PVC overhead tanks. The RO drinking water is stored in 1000 litres x 2 No.s RO tank. From RO tank, the RO water is distributed for consumption.

The schematic block diagram RO drinking water system is shown in figure 4-5.

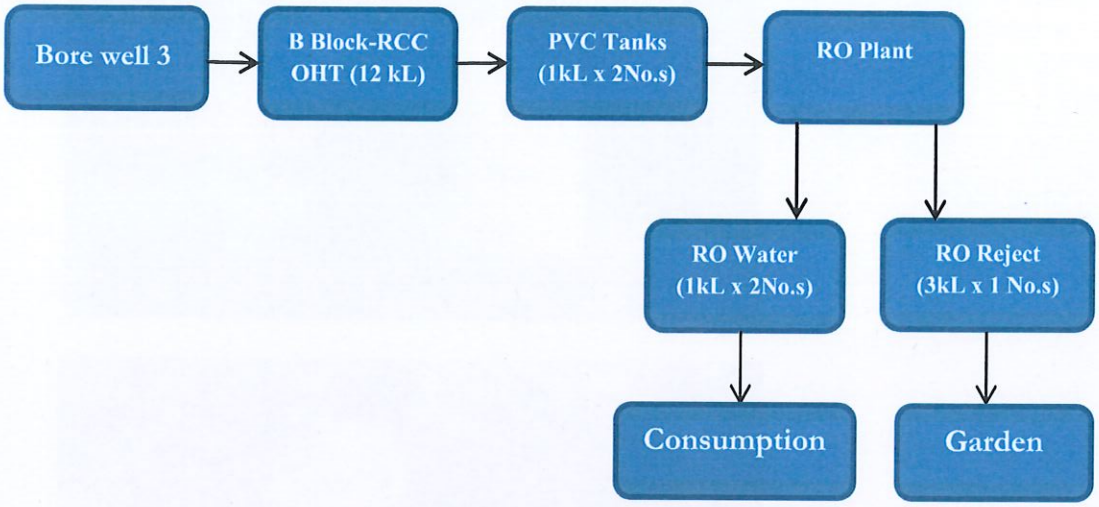

Figure 4-5: Schematic of RO drinking water system

The RO plant is shown in figure 4-6.

Figure 4-6: RO plant

The water dispenser kept at college is shown figure 4-7.

Figure 4-7: Water dispenser

The RO reject water is used for watering the garden. The image of RO reject tank is shown below in figure 4-8

Figure 4-8: RO Reject storage tank

4.1.3. Rain water system

There are two rain water harvesting pits available. One is near the book shop. The other pit is near C block. The water from terrace along with water from surfaces is made to drain into the harvesting pit.

The pipe lines for to bring rain water from terrace is shown in figure 4-9.

Figure 4-9: Pipelines for rain water

4.1.4. Waste Water System:

The sources of waste water in the college campus are as follows

- Washrooms
- Toilets
- Labs
- Canteen

The schematic of waste water system is shown in figure 4-10.

Figure 4-10: Schematic of waste water system

Waste water from the wash rooms, toilets and labs are connected to the waste water chambers in each block. Then, from chambers the waste water is collected in a sewage tank. From sewage tank, the overflowing sewage water is sent to corporation drainage system. The waste water pipes in building are shown in figure 4-11.

Figure 4-11: Waste water pipeline

4.2. Institutional Initiatives for Water Conservation

4.2.1. Aerator for taps

Aerator for taps is installed at labs and in handwash sinks to save water. The image of tap with aerator is shown in figure 4-12.

Figure 4-12: Tap with aerator

The aerator is a small attachment that either fits onto the end of the tap or can be inserted inside of the existing spout. These water saving devices will control the amount of water that flows through the tap without affecting the water pressure as they mix the water with air which will save water and money.

The biggest water saving benefit is achieved in the hand wash sinks where you are often turning the taps on and off to wash your hands and for other uses.

4.2.2. Use of Push taps

Push type taps are installed for urinals. This helps to save water.

A push tap is a type of faucet that can be operated by just pushing a button in order to activate the water flow. It's a self-closing faucet which if once pressed, emits water until the pressing is held and automatically shuts off if pressing is released.

The image of push taps installed in boy's toilet is shown in figure 4-13.

Figure 4-13: Push type tap for urinals

Push type taps are designed to control wastage of water caused due to human laxity. Also, it eliminates the risk of the tap being left on by a user.

Push type taps are more water-saving when compared to the other taps because they have a controlled water stream which limits the water use.

4.2.3. Usage of bucket and mop cleaning instead of hose

For cleaning purpose, using a hose will result in lot of water wastage. In order to avoid wastage of water, cleaning activities are done using a bucket and mop. The sample image of bucket and mop for cleaning is shown in figure 4-14.

Figure 4-14: Cleaning activity using bucket and mop

4.2.4. Rain Water Harvesting Pits

Rainwater harvesting is the simple process or technology used to conserve rainwater by collecting, conveying, purifying and storing of rainwater for later use. The rain water from terrace of the buildings is brought through pipes to ground level.

There are two rain water harvesting pits available. One is near the book shop. The other pit is near C block. The water from terrace along with water from surfaces is made to drain into the harvesting pit.

The pipe lines for to bring rain water from terrace is shown in figure 4-15 and 4-16.

Figure 4-15: Pipelines for rain water

Figure 4-16: Rain water harvesting pits

4.2.5. Awareness posters on water conservation

In order to create awareness regarding water conservation, sign boards / posters indicating save water, conserve water were made available at appropriate locations like handwash area, drinking water tap points.

The sample image of awareness poster regarding water conservation at canteen is shown in figure 4-17.

Figure 4-17: Awareness posters on water conservation

4.2.6. Usage of RO reject water

The reject water from the RO is collected in the 3kL syntax tank located in B block terrace and it is used for gardening and hand wash in the rest rooms.

4.2.7. Regular checking of water distribution system

The water distribution system is checked regularly. Every week the plumbing department personnel check all plumbing fixtures for any leakage and damages.

If any leakage or damage is found, then immediate attention is given. The leakage arresting and damage rectification are done immediately.

4.2.8. Maintenance Team

There is a maintenance team for water distribution system. The team carry out maintenance activities in concern sections i.e., electrical, water and gardening.

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4.3. Recommendations for water conservation

4.3.1. Sewage Treatment Plant

The waste water sources are washrooms, toilets and labs. The waste water from all blocks is sent to septic tank and then to corporation drainage through underground pipe.

Cost effective and advanced water purification technologies are available to recycle and reuse the waste (sewage) water. Integration of recycled water use in the existing system will result in reduced raw water usage. An STP plant will treat the waste water to make it fit for safe disposal.

At present, water from hand wash sinks is used for watering the garden. If STP is established, the treated water can be used for watering the garden. Also, it can be used in dual piping system for toilet flushing.

Hence, it is advised to conduct study for establishing a Sewage Treatment Plant.

4.3.2. Water flow meters

In college campus, four borewells are used as sources of water. Water is pumped daily from the borewells and distributed to overhead tanks available in each block for usage.

However, data regarding the quantity of water used per day is not accounted. With the presence of flow meters, it is possible to measure quantity of water used per day. Installing water flow meters at each block will quantify the water used in individual blocks. Whereas, installing flow meters in borewells will help in quantifying overall water consumption.

Measurement is the first step towards conservation of water. Hence, water usage has to be measured by installing proper metering and monitoring systems.

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4.3.3. Waterless urinals

Traditional water-based urinals are one of the major waters consuming area in any facility. Apart from the normal water usage, the cost for handling raw water to the urinals is an added expenditure. Also, maintaining the water taps and flushes for urinals will add to maintenance cost as well.

To overcome these challenges and as part of water conservation measure, implementation of waterless urinals can be incorporated in the campus.

Waterless urinals may look similar to regular flush urinals, but they use no water and have no flush valves. The sample image of waterless urinals is shown in figure 4-18.

Figure 4-18: Waterless urinals

The advantages of water less urinals are as follows:

- Reduces water bill
- Reduces usage of chemicals
- Improves overall bathroom hygiene
- Save enormous quantities of freshwater
- Enhance efficiencies of sewer lines and wastewater treatment plants
- Optimize cost of plumbing accessories at supply & consumption ends
- Conserve electricity used for pumping water & treating wastewater

4.3.4. Awareness posters and campaigns

- In order to create awareness regarding water conservation, posters indicating the importance of water can be made available throughout the campus.

- To create awareness about the water conservation among new students and staff, awareness programs/campaigns need to be conducted inside the campus on a periodic basis.

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5. ENERGY AUDIT

5.1. Facility Description

Nazareth College of Arts and Science, receives power supply from the state electricity board (TNEB – Tamil Nadu Electricity Board). NCAS has availed LT power supply.

Incoming power supply from TNEB is received at the transformer pole near the college premises. Transformer unit is available near college premises is as shown in the figure 5-1.

Figure 5-1: Transformer unit near campus

The LT supply from the transformer is taken to the main distribution panel. From main panel the supply is catered to various locations. The main distribution panel is shown in the figure 5-2.

Figure 5-2: Main distribution panel

There are six number of sub distribution panels. All sub distribution panels are installed with energy meter.

One number of DG (Diesel Generator) sets is used for backup power supply, during power failure from TNEB. The 45 kVA DG set installed at the college premises is shown in the figure 5-6.

Figure 5-3: Diesel Generator (DG) sets

The DG changeover panel is shown in figure …

UPS is available in the campus to give the backup power supply for all the critical loads like computer labs, server rooms etc., AMC is also available for UPS systems. Sample picture of the UPS room at college is shown in the figure 5-4.

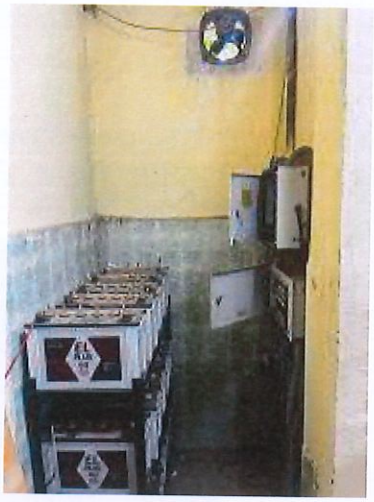

Figure 5-4: List of UPS details

UPS systems with rated capacity and quantity are shown in Table 5-1.

S.No.	Capacity, kVA	Quantity
1	20 kVA	2
2	7.5 kVA	2

Table 5-1: List of UPS

5.2. Institutional Initiatives for Energy Conservation

During the study, observations were carried out on the usage of the inventories in the college building premises. In the intension of saving the electricity, various measures have been adopted in the college. Computers and AC units are used only during the working hours, after completion of class hours – fans, lights, computers and AC units are found to be turned OFF. This practice is followed across the college premises (class rooms, labs, staff rooms, office rooms, library and seminar halls).

5.2.1. Day-light Integration:

During the audit phase classrooms, staff-rooms, laboratories, seminar hall, UPS & batteries room and library areas were surveyed for illumination levels and fresh air-circulation. It was observed most of the rooms are well ventilated and day-light integrated; sample photos are shown in figure 5-5.

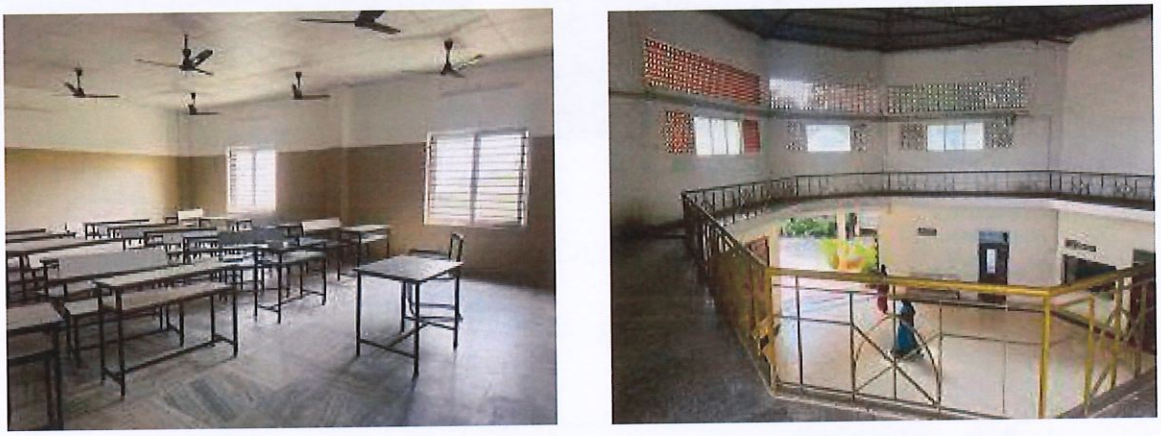

Figure 5-5: Day-light integration at college premises

5.2.2. SRTPV (Solar Roof Top Photo-Voltaic) System

SRTPV system was installed at the terrace of engineering new block and is of **30 kWp** rated capacity. The SRTPV is On-grid system. Totally, there are 90 solar modules installed at terrace. The SRTPV system is installed before 6 years. The solar panels are regularly cleaned for every 15 days.

The image of the SRTPV system is shown in figure 5-6

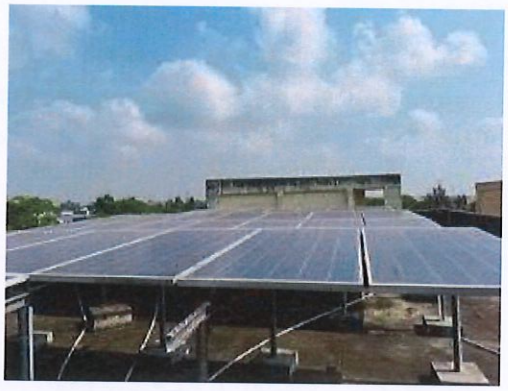

Figure 5-6: SRTPV modules at college terrace

Energy generation and cost savings of 30 kWp SRTPV system is estimated and the same is given in the table 5.2.

S. No.	Description	Unit	Values
1	Rated Capacity of SRTPV system	kWp	30
2	Average units generated per day	kWh/day/kWp	90
3	No. of working hours per annum	days	250
4	No. of years in operation	years	5
5	Annual energy generation from SRTPV	kWh/ annum	22,500
6	Average energy cost	Rs./kWh	7.0
7	**Electricity savings from 2019 – 2023**	**kWh**	**112,500**
8	**CO_2 mitigations from 2019 – 2023**	**Tonne of CO_2**	**89.0**
9	**Cost savings due to installation of SRTPV - 2019-2023**	**Rs. Lakh**	**7.90**

Table 5-2: Cost savings from SRTPV system

5.2.3. Installation of LED fixtures

LED fixtures are used in the office rooms, staff-rooms, class rooms, seminar hall, and meeting room areas. Sample photo of LED fixtures used in the college are shown in figure 5-7.

Figure 5-7: Use of LED fixtures

5.2.4. Installation of LED/LCD monitors

LED/LCD monitors are used for all the desktop computers in staff rooms and in computer labs. Sample photos of the computer labs are as shown in the figure 5-8.

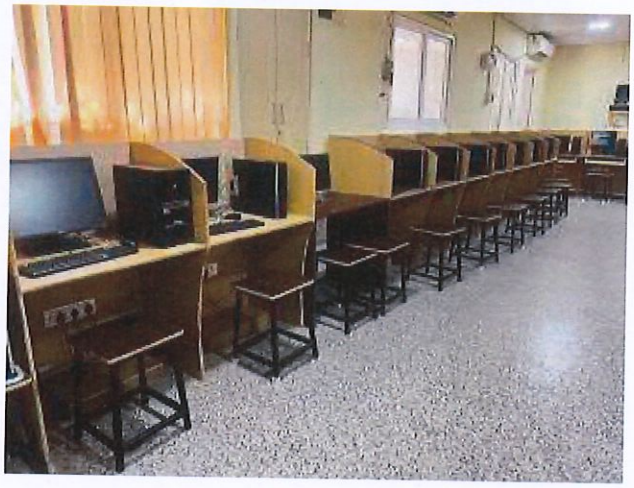

Figure 5-8: Use of LED/LCD monitors in labs

5.2.5. Solar LED Street lights

Solar street lights with sensors have been installed inside the campus. Each LED Street light consists of sensor and LED light. In college campus, eight solar LED lights are available. Sample photos of the LED street lights with sensors are shown in figure 5-9.

Figure 5-9: Solar LED Street lights

5.2.6. Maintenance of Earth pits

The earth pits are well maintained and covered properly with lids. The sample images of earth pits are shown in figure 5-10.

Figure 5-10: Earth pits with closures

5.2.7. DG set log register

The hours of operation of DG set are logged on register regularly. Any problems on DG set are rectified immediately.

5.3. Recommendations for Energy Conservation

- Conduct training and awareness programs on energy conservation
- Posters stating 'Switch off lights, Fans & appliances when not in use' or 'Use electricity wisely' or 'Once the Electricity is used -It cannot be regained' etc., needs to be sticked to the walls at all the appropriate places.
- Conduct Seminars and workshops on a regular basis among all the staffs and students to create awareness about Energy conservation and proper usage.
- Replacement of conventional fans with energy efficient fans in phased manner, as part of procurement practice.
- It is advised to conduct preventive maintenance on a regular basis.

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6. Waste Management Audit

6.1. Facility Description

The study involved carrying out various analyses to realistically assess waste generation. There are different types of waste generated in the college and is tabulated in table 6-1.

S. No.	Description	Yes / No	Details
1	E-Waste	Yes	Vendors
2	Hazardous / Chemical Waste	No	NA
3	Solid Waste	Yes	Corporation
4	Dry Leaves	Yes	Corporation
5	Food Waste	Yes	Corporation
6	Waste Water	Yes	Drainage
7	Glass Waste	No	NA
8	Unused Materials	No	-
10	Plastic Waste	Yes	Corporation

Table 6-1: Types of waste generated in the college

6.1.1. Dry Waste Management

Separate bins are used across the campus for Dry and Wet wastes. Each room (Staff, class rooms, office, restrooms, library and corridors) is provided with the dustbin to segregate waste. The housekeeping staffs cleans and collect the wastes generated inside the campus and dumps them into the larger waste bins in segregated manner at disposal point. From, there the wastes are taken by the corporation vehicles.

Old newspapers, exam papers, academic records etc., are disposed yearly or two years once. The dry wastes are disposed through local vendor.

6.1.2. Wet Waste Management

To manage the wet waste produced in the college, which is produced from the canteen in campus, from the remains of the tiffin boxes brought by the students, teachers, & staff of the college, the college management has thought of a very novel way to make a difference, create cleaner healthier campus, and provide an opportunity to see a fresh

campus. The house keeping Staff collects all the wet waste produced in the college and dumps in larger bins, and then it is given to Piggeries.

6.1.3. E- Waste Management

E-Waste produced in the campus is stored at separate place All e-waste generated is dumped into e-waste storage place. Low configured computers are donated to nearest schools. Also, college has conducted a e-waste disposal activity to bring awareness among students and staffs then it is given to the E-waste recycling private limited company. The revenue generated is used for campus maintenance.

The sample photo from the e-waste disposal activity is shown in figure 6-1.

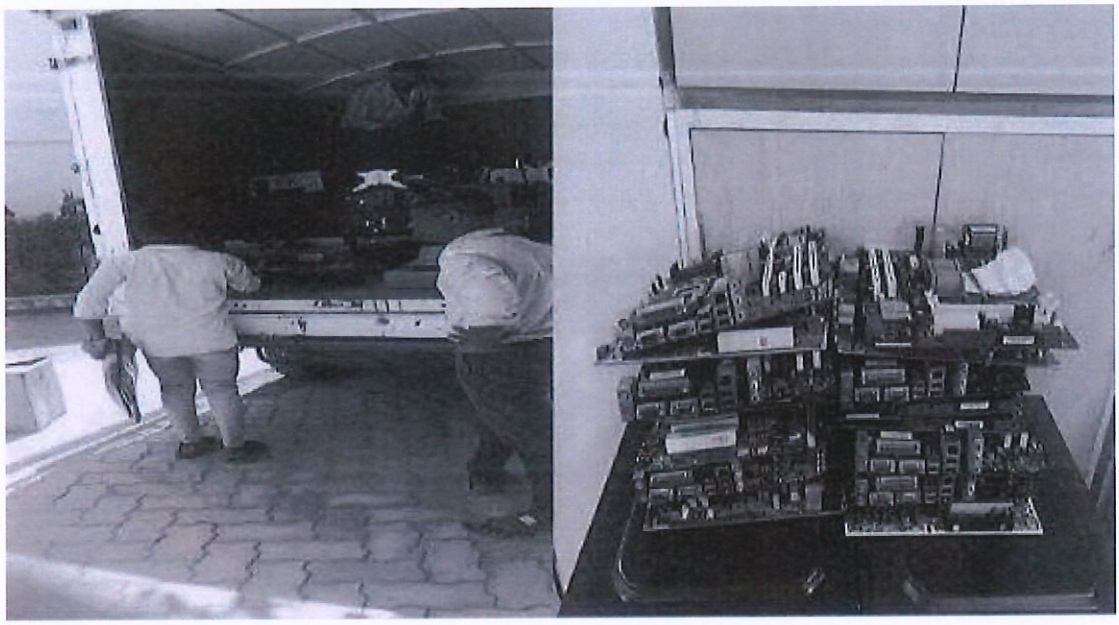

Figure 6-1: E-waste Disposal Activity

6.1.4. Bio- Waste Management:

As part of maintaining hygienic environment for the girl's, the management has provided the sanitary napkin incinerator in ladies restroom. The image of napkin incinerator machine is shown in figure 6-2.

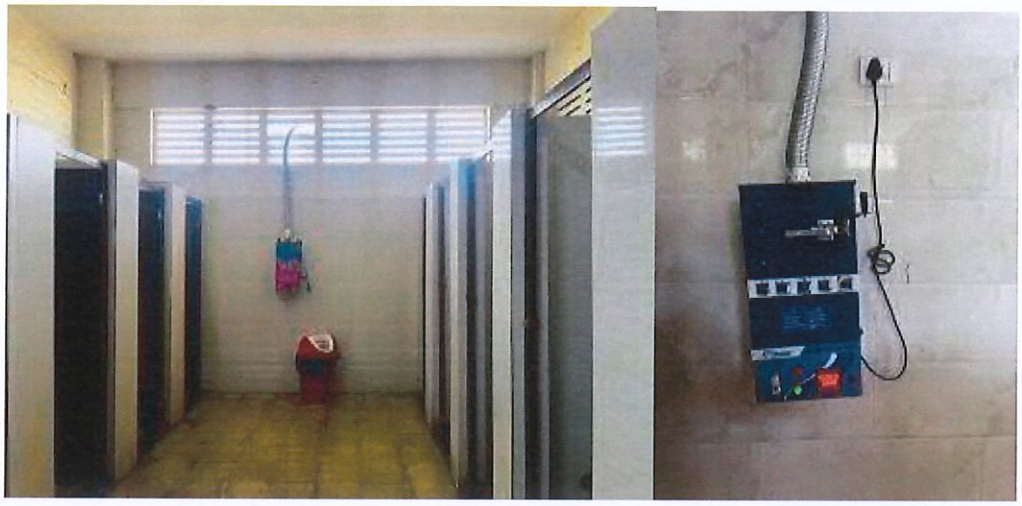

Figure 6-2: Bio – waste management - Napkin incinerators

Usage of napkin incinerator machine gives the following advantages,

- Complete disposal of used napkin by burning
- Self-disposal by user by directly putting into the incinerator.
- Gets rid of the embarrassment of finding out ways to dispose used napkins.
- Eco-friendly disposal
- Less than 1gm of ash per cycle.

6.2. Institutional Initiatives for Waste management

6.2.1. Waste Collection Bins

The waste segregation is done at source level itself. Separate waste bins for paper waste, food waste, and plastic waste are kept at appropriate locations of the campus. This helps to maintain the college premises clean & hygiene. The wastes collected are stored in disposal point behind the canteen and handed over to corporation.

Figure 6-3 shows the waste segregation bins and large waste collection bins at different locations of college campus.

Figure 6-3: Sample photos of dustbin in college

6.2.2. Color Code Bins

Different color code bins for the waste segregation (Dry, Wet, Bio-medical/Sanitary) at the source itself will make the segregation easy. Standard color code bins are available at various locations of the campus.

Sample image of the color coded bins are shown in figure 6-4.

Figure 6-4: Color-coded bins kept at college

6.2.3. Sign boards to use dustbin

Sign boards indicating to use dustbin is kept all around the campus. The sample image of sign board is shown in figure 6-5.

Figure 6-5: Sign boards - Use dustbin

6.2.4. Regular cleaning of campus

Regular cleaning of campus is done to maintain overall hygiene. Cleaning activities are carried out using chemicals wherever necessary. Purchase of brooms, chemicals, phenyls, mop etc., are done based on requirement. The sample image of cleaning activity is shown in figure 6-6.

Figure 6-6: Cleaning activity in campus

The chemicals used for cleaning activity i.e., phenyls and soap oil are shown in figure 6.7

Figure 6-7: Cleaning materials

6.2.5. Awareness Program – Swachhata League Season 2.0

The college has participated in "Swachhata League Season 2.0" conducted by Avadi City Municipal Corporation.

The image of award is shown in figure 6-8.

Figure 6-8: Swachhata League Season 2.0

6.2.6. Awareness Program on E-Waste Management

The College has organized awareness sessions on E -waste management for students covering

- Fundamentals of E-waste
- Importance of E-waste
- E-waste and its Impacts on society
- Pollution created from E-waste
- Ways to dispose E-waste

The picture of the awareness sessions is given below in figure 6-9.

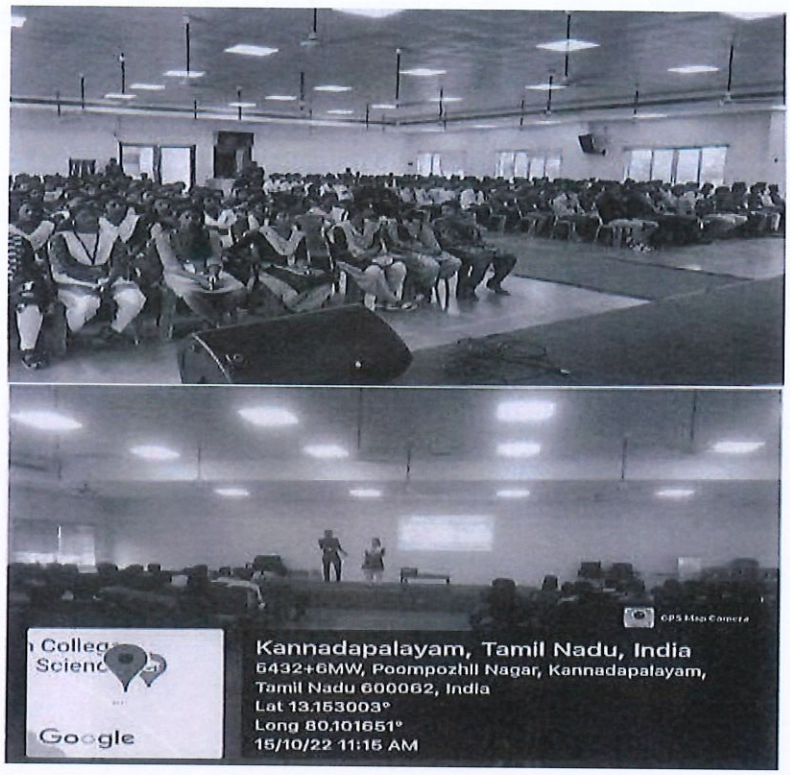

Figure 6-9: Awareness Session on E-waste Management

6.3. Recommendations on Waste Management Audit

- Conducting training and awareness programs for new students and staff on waste management
- The dry leaves can be collected separately and disposed in the leaf composter.
- MoU can be signed for safe disposal of e-waste

7. GREEN CAMPUS MANAGEMENT AUDIT

7.1.Facility Description

The students and faculty are encouraged to adopt cleanliness, making the campus garbage and plastic free zone. Tree plantation programs help in encouraging eco-friendly environment, which provides pure oxygen within the institute.

The maintenance team takes care of the up-keeping of the environment and ensures to keep the surroundings clean. They maintain all the plantations by employing the cleanliness and watering regularly.

7.1.1. Landscaping with Trees and Plants

Entire campus of the college has been made green by planting trees and plants. By this, the green campus concept offers the Nazareth college of Arts and Science to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

Tree Plantation is done every year through student activities. The college has nurtured number of trees of different variety.

Sample list of trees are given in table 7-1.

List of Trees					
S.no	Local name	Botanical name	Count	Year	location
1	Arasa maram	Ashwattha tree	4	20	chapel front
2	Ala maram	Benghalensis	4	18	college backside
3	Ponga maram	Cyathea deal bata	30	15	college foot path
4	Eecha maram	Neolamarckia	2	30	college front& car parking
5	Po arasa maram	Thespesia	25	17	college foot path
6	Mango maram	Mangifera indica	2	10	college front
7	Sapota maram	Manilkara zapota	1	7	college parking
8	Redwood maram	Sequoia semperivirens	1	5	college front
9	Banana	Promusa	2	6 m	front

Table 7-1: Details of list of trees

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Sample list of plants are given in table 7-2.

List of Plants					
S.no	Local name	Botanical name	Count	Year	location
1	Orange	Citrus x sinensis	1	5 month	college front
2	Lime	Citrus x aurantiifolia	1	6 month	college front
3	Ashoka	Saraca asoca	40	7 year	college front
4	Fonds	Kayle's	40	3 year	college front
5	Bonsai thnamaram	Vititiau	8	5 year	college front

Table 7-2: Details of list of trees

Sample list of flowers are given in table 7-3.

List of Flowers					
S.no	Local name	Botanical name	Count	Year	location
1	Sembaruthi	Libcucus	2	6 month	college front
2	Boganvila	Galbra	10	1 year	college front
3	Crotons	Co diacum vari	25 pots	3 year	college front
4	Thoja	Arborvitae	40	7 month	college front
5	Exoras	Red ix ora red	20	1 year	college front
6	Terminiya	Arecanut	12	1 year	college front
7	Rose	Desert mock azalea	25	9 month	college front
8	Nithiyakalyani	Catte aeanthus	5	1 month	college front

Table 7-3: Details of list of flowers

Sample list of creepers are given in table 7-4.

List of Creepers					
S.no	Local name	Botanical name	Count	Year	location
1	Rangoon malli	ornaruental	4	1 year	Lawn
2	Devil lvy	royalty	10	10 month	Lawn
3	Jassime	taber maeruontatana	4	7 month	Lawn

Table 7-4: Details of list of creepers

Sample list of vertical garden plants are given in table 7-5.

List of Vertical Garden				
S.no	**Local name**	**Count**	**Year**	**location**
1	Plantain lillie's	25	6 month	college front elevation
2	Ferns	25	6 month	college front elevation
3	Darcana	25	6 month	college front elevation
4	Basil	25	6 month	college front elevation
5	Sage	25	6 month	college front elevation
6	Horse tail	25	6 month	college front elevation
7	Mint	25	6 month	college front elevation
8	Elephant ear	25	6 month	college front elevation

Table 7-5: Details of vertical garden plants

Sample list of vertical garden plants are given in table 7-6.

Terrace Garden				
S.no	**Local name**	**Count**	**Year**	**location**
1	250 grow bag	-	-	Terrace
2	10 variety herbal plants	-	-	Terrace
3	Alovera	10	8 month	Terrace
4	Vethla	10	3 month	Terrace
5	Karpuravali	10	4 month	Terrace
6	Thulasi	10	3 month	Terrace
7	Greeneries 10 varieties	-	-	Terrace
8	Arakeera	10	1 month	Terrace
9	Vegetables 10 varieties	-	-	Terrace
10	Tomato	10	2 month	Terrace
11	chilli	10	3 month	Terrace
12	Cucumber	10	4 month	Terrace

Table 7-6: Details of vertical garden plants

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Sample photos of trees around the campus are shown in figure 7-1.

Figure 7-1: Sample photos of Trees around the campus

Sample photos of plantations around the campus are shown in figure 7-2.

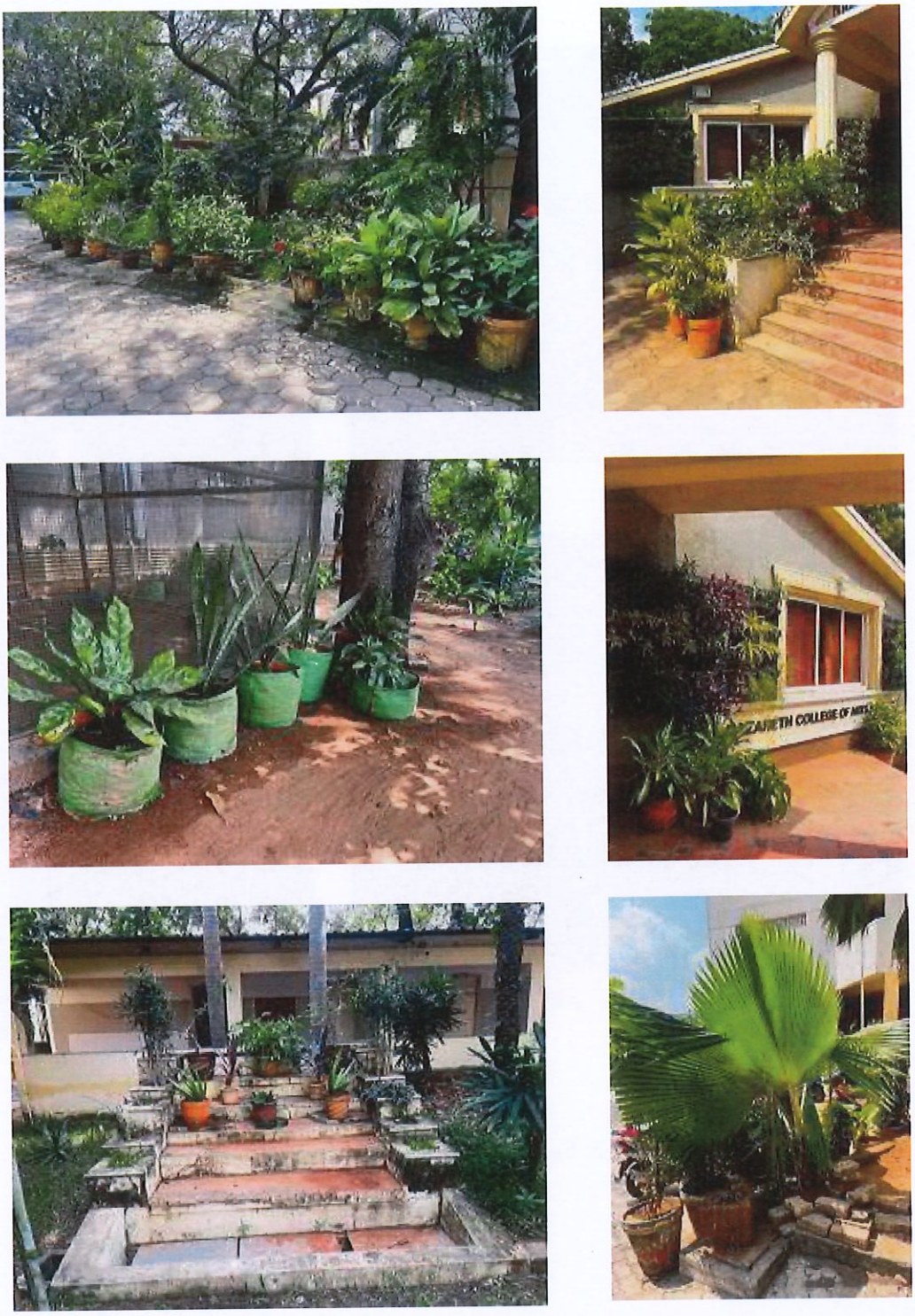


Figure 7-2: Sample photos of plantations around different blocks

Sample photos of lawns and plantations around the campus are shown in figure 7-3.

Figure 7-3: Sample photos of Lawn and plantations

7.2. Institutional Initiatives for Green Campus Management

7.2.1. Regular maintenance of greeneries

The greeneries within the campus are maintained properly with dedicated garden maintenance staff. They proper maintenance like weeding, lawn care and watering etc.,

7.2.2. Restricted entry of Automobiles

The restricted entry of automobiles policy is followed to restrict the entry of outside vehicles inside the campus. Provide sufficient transportation spaces and parking areas for the students and staffs.

The image of restricted entry of automobiles sign board is shown in figure 7-4.

Figure 7-4: Restricted entry of automobiles – sign board

7.2.3. Awards and recognition

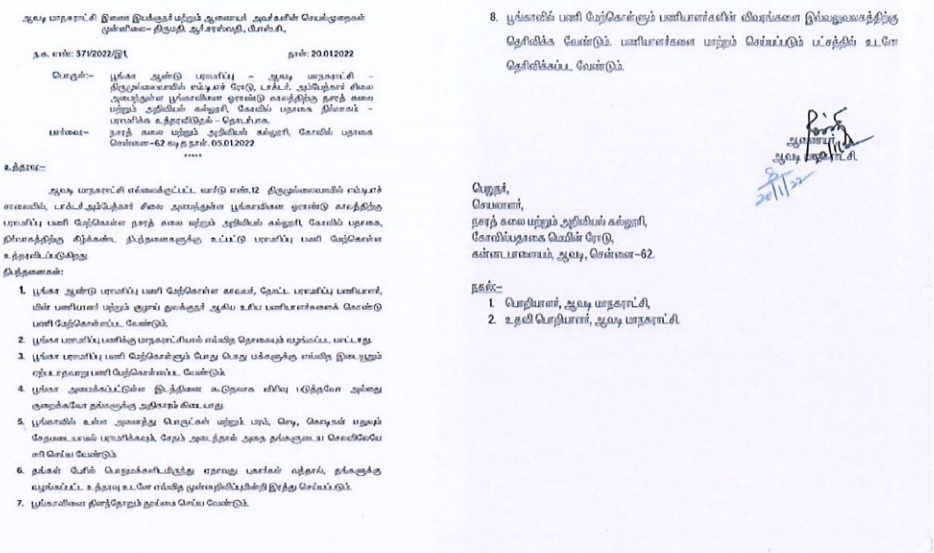
The Nazareth college of Arts and Science have won the "Best Green Partner" from Dream Kalam for mega awareness signature campaign on "To save Trees & Save Earth Do Recycling".

The image of the award is shown in figure 7-5.

Figure 7-5: Best green partner award

7.2.4. Park Adoption

The College has adopted a park. The document related to the park adopted is shown in figure 7-6.



ஆவடி மாநகராட்சி இணை இயக்குநர் மற்றும் ஆணையர் அலுவலரின் செயல்முறைகள்
முன்னிலை– திருமதி. ஆர்.சாந்மதி, பி.எஸ்.சி.,

ந.க. எண்: 57/2022/இ1 நாள்: 20.01.2022

பொருள்:– பூங்கா ஆண்டு பராமரிப்பு – ஆவடி மாநகராட்சி – திருமுல்லைவாயில் எம்.டி.எச் ரோடு, டாக்டர். அம்பேத்கர் சிலை அருகிலுள்ள பூங்காவினை ஓராண்டு காலத்திற்கு நாசத் கலை மற்றும் அறிவியல் கல்லூரி, கோவில் பதாகை நிர்வாகம் – பராமரிக்க உத்தரவிடுதல் – தொடர்பாக.

பார்வை:– நாசத் கலை மற்றும் அறிவியல் கல்லூரி, கோவில் பதாகை சென்னை–62 கடிதம் நாள். 05.01.2022

*****

உத்தரவு:–

ஆவடி மாநகராட்சி எல்லைக்குட்பட்ட வார்டு எண்.12 திருமுல்லைவாயில் எம்.டி.எச் சாலையில், டாக்டர் அம்பேத்கர் சிலை அமைந்துள்ள பூங்காவினை ஓராண்டு காலத்திற்கு பராமரிப்பு பணி மேற்கொள்ள நாசத் கலை மற்றும் அறிவியல் கல்லூரி, கோவில் பதாகை, நிர்வாகத்திற்கு சிந்தக்கண்ட நிபந்தனைகளுக்கு உட்பட்டு பராமரிப்பு பணி மேற்கொள்ள உத்தரவிடப்படுகிறது.

நிபந்தனைகள்:

1. பூங்கா ஆண்டு பராமரிப்பு பணி மேற்கொள்ள காவலர், தோட்ட பராமரிப்பு பணியாளர், மின் பணியாளர் மற்றும் குழாய் துக்குநர் ஆகிய உரிய பணியாளர்களைக் கொண்டு பணி மேற்கொள்ளப்பட வேண்டும்.
2. பூங்கா பராமரிப்பு பணிகளு மாநகராட்சியால் எவ்வித தொகையும் வழங்கப்பட மாட்டாது.
3. பூங்கா பராமரிப்பு பணி மேற்கொள்ளும் போது பொது மக்களுக்கு எவ்வித இடையூறும் ஏற்படாதவாறு பணி மேற்கொள்ளப்பட வேண்டும்.
4. பூங்கா அமைக்கப்பட்டுள்ள இடத்தினை கடுதலாக விரிவு படுத்தவோ அல்லது குறைக்கவோ தங்களுக்கு அதிகாரம் கிடையாது.
5. பூங்காவில் உள்ள அமைந்து பொருட்கள் மற்றும் பரப், செடி, கொடிகள் பழுதுப் சேதமடையாமல் பராமரிக்கவும், சேதம் ஏற்படுத்தாமல் அதை தங்களுடைய செலவிலேயே சரி செய்ய வேண்டும்.
6. தங்கள் பேரில் பொதுமக்களிடமிருந்து ஏதாவது புகார்கள் வந்தால், தங்களுக்கு வழங்கப்பட்ட உத்தரவு உடனே எவ்வித முன்னறிவிப்புமின்றி இரத்து செய்யப்படும்.
7. பூங்காவினை தினந்தோறும் தூய்மை செய்ய வேண்டும்.
8. பூங்காவில் பணி மேற்கொள்ளும் பணியாளர்களின் விவரங்களை இவ்வலுவலகத்திற்கு தெரிவிக்க வேண்டும். பணியாளர்களை மாற்றம் செய்யப்படும் பட்சத்தில் உடனே தெரிவிக்கப்பட வேண்டும்.

ஆணையர்,
ஆவடி மாநகராட்சி.

பெறுநர்,
செயலாளர்,
நாசத் கலை மற்றும் அறிவியல் கல்லூரி,
கோவில்பதாகை மெயின் ரோடு,
கன்னடபாளையம், ஆவடி, சென்னை–62.

நகல்:–
1. பொறியாளர், ஆவடி மாநகராட்சி,
2. உதவி பொறியாளர், ஆவடி மாநகராட்சி.

Figure 7-6: Document of the Park Adopted

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7.3. Recommendations on Green Campus Management

- Encouraging students to recommend creative ideas for making campus more greenery.
- Conducting competition among departments to promote student's ideas in sustainability initiatives

8. Environment Audit (Carbon footprint Analysis)

8.1.Facility Description

The carbon footprint is "the total amount of greenhouse gas (GHG) emissions caused by an organization, event or product". Global warming and climate change are the foremost environmental challenges facing the world today. It is our responsibility to minimize the consumption of energy and hence reduce the emissions of greenhouse gases.

To analysis the carbon footprint, transportation details of students and staff are collected as below:

1. Whether college provides transport facility for staff and students (Yes/No)? No,
2. Number (or Percentage) of Staff using public transport: 82%
3. Number (or Percentage) of Staff using Bike and car: 11%
4. Number (or Percentage) of Staff coming by walk: 7%
5. Number (or Percentage) of students using public transport: 86%
6. Number (or Percentage) of students using Bike: 12%
7. Number (or Percentage) of students using Electric vehicle and Bicycles: 2%

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8.2. Institutional Initiatives for Environment Conservation

8.2.1. Usage of Transport Facility

- Transport facility to the students and staff is provided. Transport facility is provided at free of cost to students.
- Most of the students and staff prefer public transport for the commute.

The image of college transport facility is shown in figure 8-1.

Figure 8-1: College transport facility

8.2.3. Facilities for differently abled persons

College has wheelchair, walking sticks, crutches and has a separate restroom for disabled student/staffs. Also, college has provided ramp facility for differently abled as well as elderly people to move in and around the campus safely. The sample photo of the facility available for differently abled persons is shown in the figure 8-3.

Figure 8-3: Facilities for differently abled persons in college

8.2.2. Pedestrian Friendly Pathways

The Institute has pedestrian paths on both the sides of the road and also within the campus.

Vehicle parking space is provided at the college campus. As the campus is vehicle free with some exceptions, students and staff experience comfort walking through the pedestrian friendly pathways. The internal roads are lined with trees and lights and they are properly maintained.

The college has pedestrian friendly pathways where all staff & faculty can walk safely. Pedestrian friendly pathways are shown in figure 8-2.

Figure 8-2: Pedestrian friendly pathway

8.2.4. Plastic free campus

The institute has taken steps for not using plastic inside the campus. Instructions have been given to cafeteria operators to avoid use of plastic. Students are also informed to avoid use of plastic inside the campus. The images of plastic free zone are shown in figure 8-4.

Figure 8-4: Plastic ban on college

8.2.5. Paperless Office

The instructions have been given to all the departments to avoid using the paper and taking necessary steps to send all the circulars by email.

The college gives emphasis on paperless office to save carbon footprint due to printers.

8.2.6. Usage of Bicycles

Few students are coming to college by bicycle. The sample images of bicycles used by students are shown in figure 8-5.

Figure 8-5: Bicycle usage by students

8.2.7. Encouragement of Electric Vehicles

The institution management is recommending and encouraging the staff and students to use the public transport and electric vehicles, to reduce the carbon foot prints.

Some of the staff & students are coming to college by Electric vehicles. During audit pictures of electric vehicles are taken and the same is given in figure 8-6

Figure 8-6: Sample photo of electric scooters

8.2.8. Rain Water Harvesting Pits

Rainwater harvesting is the simple process or technology used to conserve rainwater by collecting, conveying, purifying and storing of rainwater for later use. The rain water from terrace of the buildings is brought through pipes to ground level.

There are two rain water harvesting pits available. One is near the book shop. The other pit is near C block. The water from terrace along with water from surfaces is made to drain into the harvesting pit.

The pipe lines for to bring rain water from terrace is shown in figure 8-7.

Figure 8-7: Pipelines for rain water

8.2.9. SRTPV (Solar Roof Top Photo-Voltaic) System

SRTPV system was installed at the terrace of engineering new block and is of **30 kWp** rated capacity. The SRTPV is On-grid system. Totally, there are 90 solar modules installed at terrace. The SRTPV system is installed before 6 years. The solar panels are regularly cleaned for every 15 days.

The image of the SRTPV system is shown in figure 8-8.

Figure 8-8: SRTPV modules at college terrace

8.2.10. Usage of steel cutleries

To avoid plastic usage, steel cutleries are used in the college. The sample image of steel cutleries used is shown in figure 8-9.

Figure 8-9: Sample photo of steel cutleries used in college

8.3. Recommendations on Carbon Footprint Analysis

During the study, there was continuous interaction between the audit team, college engineers and staff members to ensure that the suggestions made are realistic, practical and implementable.

- Recommend students and staff to use public transport system
- Recommend students and staff to use bicycle in large numbers
- Recommend staff and students to use electric vehicles
- Recommended to use display boards to conserve fuel and use bicycle.

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9. ANNEXURES

9.1. Data Collection Questionnaire

A questionnaire is a checklist used as the primary tool for the collection of data / information in a systematic manner that enables to perform the audit.

9.1.1. General information of the college:

General information of the college needs to be collected to get an overview of the campus for the walk-through purpose. It includes a set of questionnaires as given below.

1. Internal Quality Audit Team: 2020 – 2021

Table 9-1 depicts the format for the collection of Internal Quality Audit team.

S. No.	Name	Designation	Role
1			
2			
3			

Table 9-1: Internal Quality Audit team

2. General Information of the college

General information of the college includes an address of college and head office, contact person details, year of establishment etc., as given in table 9-2.

S. No.	Description	Details
1.	Name of the College and address:	
1.a	Head office address :	
2.	Telephone/Fax No	
3.	Co-ordinating officer:	Name:
		Mob:
		Email:
4.	Year of Establishment:	
5.	Hostel (Available/Not Available)	

S. No.	Description	Details	
6.	No. of Working days/year		
7.	Brief description of Campus		

Table 9-2: General information of the college

3. College Infrastructure

Infrastructure details of the college were gathered from table 9-3.

S. No.	Description	Details
1	Block Name	Class rooms
		Labs
		Staff rooms
		Wash rooms
2		
3		

Table 9-3: Detail Infrastructure of the college

4. Details of Student clubs
5. Details of cells that support students
6. Tentative Schedule of a working day:
   a. No. of working days per year:
   b. List of holidays:
7. Total area of the campus
8. Details of List of Departments and Courses (Faculty wise)

The total number of departments, laboratories, conference hall, Libraries, Auditorium, and Cafeteria are obtained from table 9-5.

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S. No.	Description	Details
1	Department	
2	Laboratories	
3	Conference Hall	
4	Libraries	
5	Auditorium	
6	Cafeteria	

Table 9-4: Details of the departments

9. Number of staff

Teaching, non-teaching, supporting staff with a male and female breakup is obtained from table 9-5

S. No.	Teaching Staff		Non-teaching Staff		Support Staff (Security, House Keeping)	
	Male	Female	Male	Female	Male	Female

Table 9-5: Details of the Staff

10. Number of Students

Number of students is collected from table 9-6.

S. No.	Boys	Girls
1		

Table 9-6: Details of the Students

11. Additional infrastructure details have been collected from table 9-7.

S. No.	Description	Details	
1.	Number of blocks available for boys hostel	Nos.	

2.	Number of rooms available for boys hostel	Nos.	
3.	Number of blocks available for girls hostel	Nos.	
4.	Number of rooms available for girls hostel	Nos.	
5.	Whether Laundry is available in the hostel	Yes / No	
6.	If Yes List the Electrical Equipment in Laundry Section of the hostel (like Washing machine, Dry Cleaning Machine, Iron)		
7.	Whether gym/ indoor sports hall is available in hostel	Yes / No	
8.	Whether Solar PV based Power Generation is available in campus (academic or hostel block)	Yes / No	
9.	Whether lifts available in academic block	Yes / No	
10.	Whether Kitchen is available in the academic block	Yes / No	
11.	Whether any food counter (outside caterers) available in academic block	Yes / No	
12.	Whether any commercial shops available in academic block	Yes / No	
13.	Any more information or additional details of academic block you would like to share – kindly elaborate here		

Table 9-7: Details of the departments

9.1.2. Water Audit details:

1. General information

General information required for water management analysis is collected from table 9-8.

S. No.	Description	Details
1	Source of water	
2	Types of water	
3	No of Wells	
4	No of motors used	
5	No of bore wells	
6	Rating of the motors in HP	

S. No.	Description	Details
7	Depth of each bore-well	
8	Water level of bore well	
9	Number of water tanks (overhead & underground tanks)	
10	Capacity of overhead tank	
11	Capacity of underground tank	
12	Quantity of water pumped every day	
13	Any water wastage of water /why?	
14	Water usage for gardening	
15	Waste water sources	
16	Use of waste water	
17	Faith of waste water from labs	
18	Whether waste water from labs mixed with ground water?	
19	Any treatment method available for lab water?	
20	Whether any green chemistry method practiced in labs?	
21	Total number of water coolers	
22	Whether Rain water harvesting system available?	
23	Whether Sewage Treatment Plant (STP) is available?	
24	List of equipment installed in STP (If S.No.23 is Yes)	
25	Whether Solar Hot Water System is available in the campus	
26	Number of units and amount of water harvested	
27	Any leaky taps in the campus	
28	Amount of water lost per day	
29	Any water management plan used?	
30	Any water-saving techniques followed?	
31	Are there any signs reminding peoples to turn off the water?	
32	No. of water flow meters available	
33	Method of water consumption monitoring	
34	Breakup of daily water consumption	

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S. No.	Description	Details
35	Attach Month wise water bill for last 2 years	
36	Please attach recent water quality test reports for Bore well water, Drinking Water and STP processed water.	
37	What are the sources of hot water	
38	What are the usage areas of hot water	

Table 9-8: Water management details

2. STP information

STP details are collected from table 9-9

S. No.	Description	Details
1.	Number of STP plants installed	
2.	Capacity of STP	
3.	Technology of STP	
4.	Year of Installation	
5.	Schematic / Layout of STP	
6.	Water flow meters installed	
7.	Quantity of Sludge	
8.	Disposal of Sludge	

Table 9-9: Details of STP

3. RO Plant information

RO Plant details are obtained from table 9-10

S. No.	Location	Quantity	Capacity
1.			
2.			
3.			

Table 9-10: Details of RO Plant

9.1.3. Energy consumption details:

1. Energy consumption details:

The energy consumption details required for the audit is collected, the brief format of the same is given in table 9-11.

S. No.	Type	Units		Value	Cost in Rs.
1	Electricity	kWh	2019		
			2020		
2	LPG	Cylinders			
3	Diesel	Litres (Month wise consumption for the last two years)			
4	Others resources (Please specify)				
5	Total connected load	kW			
6	Contract demand	kVA			
7	Maximum demand recorded	kVA			
8	Average power factor				
9	Energy charges	Rs./kWh			
10	Demand charges	Rs./kVA			
	*** Attach Electricity Bill Copy of last 2 years**				

Table 9-11: Details of Energy consumption

2. Solar Energy details:

The solar energy details required are collected from table 9-12.

S. No.	Building No./ Name	Solar water Heater			Solar PV System		
		Capacity	Working / Not working	Year of Installation	Capacity	Working / Not working	Year of Installation

Table 9-12: Details of Solar Energy

3. Solar Street lights details:

a. Quantity -
b. Capacity -
c. Year of Installation –

4. Electrical Equipment details:

Electrical Equipment like transformers DGs UPS Capacitor Bank, AC, Computers, water coolers, fans, exhaust fans are obtained from the table 9-14.

S. No.	Description	Details	
1.	Number of Transformers Installed	Nos.	
2.	Number of Electrical Panels / Electrical Panel Rooms	Nos.	
3.	Whether Diesel Generator Set Backup Power is Available	Yes / No	
4..	How many number of DG Sets available in the campus (If S.No.3 is Yes)	Nos.	
5.	Whether UPS is available for labs, computers and/or any equipment	Yes / No	
6.	Number of UPS installed with location and capacity (If S.No.5 is Yes)	Nos.	
7.	Whether Capacitor Banks is installed in the electrical panel rooms	Yes / No	
8..	Whether Air Conditioning Units have been installed in the campus	Yes / No	
9.	Type of AC units (split, cassette or packaged) available, capacity and installed location (If S.No.8 is Yes)	Nos.	
10.	Total number of computers available in the campus	Nos.	
11.	Type of computer monitors available (CRT, LCD, LED)	Nos.	
12.	Whether water coolers are installed in the academic blocks	Yes/No	
13.	Type of lamps (Fluorescent Tube Light, CFL, LED, Incandescent, Sodium / Mercury lamps, etc.,) installed in the campus	Nos.	
14.	Type of fans (ceiling, wall mount, standing, exhaust, etc.,) installed in the campus	Nos.	

S. No.	Description	Details	
15.	Whether exhaust fans are installed in hostel / kitchen.(If Yes, share the quantity and installed location)	Yes /No	
16.	Any other electrical equipment's in college buildings.		

Table 9-13: Details of Electrical Equipment

5. List of energy saving initiatives implemented
6. List of energy saving initiatives in plan for future

9.1.4. Waste management details:

Waste management includes the activities and actions required to manage waste from its inception to its final disposal. The various data/ information required for the assessment of waste management is as collected from the following set of questionnaires.

1. Basic information

Basic information for waste management is collected from table 9-14.

S. No.	Description	Yes/ No
1	Whether wet and dry garbage segregation is done inside the campus?	
2	Whether garbage is given to external agencies / municipal agencies?	

Table 9-14: Basic details of waste management

2. Types of Waste generated

Types of waste generated in the college are obtained from table 9-15.

S. No.	Description	Yes / No	Remarks
1	E-Waste (Computers, electrical and electronic parts)		
2	Hazardous / Chemical Waste		
3	Solid Waste (Damaged furniture, paper waste, paper plates)		
4	Dry Leaves		
5	Food Waste		
6	Waste Water (Washing, urinals, bathrooms)		
7	Glass Waste (Broken glass wares from the labs)		
8	Unused Materials		
9	Plastic Waste (Pen, Refill, Plastic water bottles and other plastic containers, wrappers etc.)		

Table 9-15: Types of waste generated

3. Segregation of waste

Segregation of waste information at different locations with quantity is gathered from table 9-17.

S. No.	Location	Bio-degradable	Non-Biodegradable	E-waste	Quantity, kgs/month
1	Office				
2	Labs				
3	Cafeteria / Kitchen				
4	College				

Table 9-16: Segregation of waste

4. Waste generation management

Waste generation management of the college was collected from table 9-18

S. No.	Description	Yes / No	Remarks
1	Composting / Vermicomposting		
2	Recycling		
3	Reusing		
4	Other ways		

Table 9-17: Waste Disposal methods

9.1.5. Green campus management details:

1. Total number of plants and trees

The total number of plantations, garden area, and many more are collected as per the set of questionnaires given in table 9-19

S. No	Description	Details
1	Total number of plant species identified	
2	Total number of plants on the campus	
3	Total number of Trees on the campus	
4	Garden area inside the college –	
5	Total number of medicinal plants /trees on the campus	

6	Total number of vegetables and fruits plantation in the campus	
7	Whether display boards are given to plants and trees for identification	
8	Does Institute celebrate World environment day?	
9	Does Institute celebrate World water day?	
10	Does Institute celebrate World ozone day?	
11	Does Institute celebrate World Earth day?	
12	Total number of aquatic water plants	

Table 9-18: List of plantation details

2. List of plants/ trees

List of plants/ trees with their scientific names obtained from table 9-20.

S. No.	Common/Local Name	Scientific name	No. of Trees/Plants

Table 9-19: List of plants/trees in campus

9.1.6. Carbon footprint management details:

The carbon emission from various activities such as transport, diesel generator usage, LPG consumption, and electricity consumption were collected, as per table 9-21.

S. No	Description	Details
1	Whether college provides transport facility for staff and students (Yes/No)	
2	Number (or Percentage) of staff using transport services provided by college	
3	Number (or Percentage) of students using transport services provided by college	
4	Number (or Percentage) of Staff using public transport	
5	Number (or Percentage) of Staff using Bike	
6	Number (or Percentage) of Staff using Car	
7	Number (or Percentage) of students using Public transport	
8	Number (or Percentage) of students using Car	
9	Number (or Percentage) of students using Bike	
10	Number (or Percentage) of students using Bicycles	
11	Average consumption of diesel per month	
12	Average electricity consumption per month	
13	Average LPG consumption per month	

Table 9-20: Details of Carbon footprint management

9.1.7. Photos required for Audit:

1. General Photos

In various sections, different types of photos are required to validate the existence of things, and hence they are collected from table 9-21.

S. No	Description	Details
1	Photos of student's NSS activities	
2	Photos of Safety policy	
3	Photos of the training program on the use of fire extinguishers	
4	Photos of environmental policies adopted by college	

5	Photos of MoUs for Waste management		
6	Photos of any other policies adopted by college		
7	Photos of water test report	Drinking Water	
		STP processed water	
		Bore-well water	
		Other water Sources (Like Tanker water and any other)	
8	Photos of use of Energy efficient devices like fan, bulbs etc.		
9	Photos of LCD/LED monitors used in Labs		
10	Photos of dry and wet waste collection bins		
11	Photos of celebrating World Environment Day		
12	Photos of celebrating World Water Day		
13	Photos of celebrating World Earth Day		
14	Photos of celebrating World Ozone Day		

Table 9-21: List of photos

Part II – Strategic Plan

Vision for Excellence

Attribute I – Curriculum

Academic Enrichment

Noncredited courses (2025)

SNo	Department	Course Name
1.	Commerce	1. Fundamentals of Marketing 2. Business Communication 3. Entrepreneurship and Startup Essentials 4. Financial Literacy 5. Basics of E-commerce 6. Human Resource Management 7. Introduction to Supply Chain Management 8. Investment Basics 9. Corporate Social Responsibility (CSR 10. Advanced Excel for Business
2.	Corporate Secretaryship	1. Innovation and Entrepreneurship 2. Introduction to Financial Markets 3. Global Business Etiquette 4. Retail Management 5. Advanced Excel for Financial Analysis 6. Digital Marketing 7. Corporate Law and Compliance 8. Taxation Basics 9. Corporate Social Responsibility (CSR) Regulations 10. Company Law and Secretarial Practices
3.	Business Administration	1. International Business and Global Trade 2. Overview of management, marketing, finance, and operations 3. Leadership and Management Skills 4. Project Management Essentials 5. Business Strategy and Planning 6. Marketing Strategies for Businesses

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		7. Financial Management for Non-Financial Managers 8. Human Resources Management 9. Business Communication and Negotiation 10. Operations and Supply Chain Management
4.	English Literature	1. Creative Writing and Storytelling. 2. Digital Art and Illustration 3.Fundamentals of Acting 4. Introduction to Film Studies 5. Graphic Design Essentials 6. Art History: From Renaissance to Modern Art 7. Photography: Techniques and Composition 8. Introduction to Sculpture 9. Music Theory and Composition 10. Textile Arts and Fashion Design
5.	Computer Application	1. Introduction to Accounting 2. Artificial Intelligence and Machine Learning 3. Data Science and Big Data Analytics 4. Blockchain Technology 5. Internet of Things (IoT) 6. Database Management Systems (SQL, NoSQL) 7. Automation Tools (Selenium, Jenkins) 8. Digital Marketing and Analytics 9. Ethical Hacking and Penetration Testing 10. Robotics and Automation
6.	Computer Science	1.Web Development Fundamentals 2. Data Science Essentials 3. E-commerce Platforms 4. Introduction to Artificial Intelligence 5. Mobile App Development 6. Cloud Computing Fundamentals 7. Blockchain and Cryptocurrency 8. Introduction to Robotics 9. Business Analytics and Big Data

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		10. Game Development Essentials
7.	Visual Communication	1. Graphic Design Principles 2. Digital Illustration and Design 3. Photography and Visual Storytelling 4. Motion Graphics and Animation 5. User Experience (UX) Design 6. Video Production and Editing 7. Branding and Identity Design 8. Web Design Fundamentals 9. Print Media Design 10. Design Thinking and Innovation
8.	Social Work	1. Introduction to Social Work 2. Mental Health and Counseling 3. Community Development and Organization 4. Child and Family Welfare 5. Crisis Intervention 6. Social Work with Older Adults 7. Substance Abuse and Addiction Counselling 8. Human Rights and Social Justice 9. Program Evaluation and Research in Social Work 10. Cultural Competence in Social Work

Attribute II – Faculty Resources

- The faculty-to-student ratio is maintained at 15:1.

Faculty Quality

- Every faculty member holds a PhD or has cleared the NET.
- Retaining highly qualified and quality staff.
- Faculty development: ensuring all staff attend a five-day Faculty Development Program (FDP) or refresher course.
- Sponsoring individual faculty members for specialized training.

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Attribute III – Infrastructure

- **Increase in Student-Computer Ratio:** Improve the availability of computers for students.
- **Enhanced Canteen Facility:** Upgrade and expand canteen services.
- **International Participation:** Engage in international events.
- **Improved Language Lab:** Upgrade the language laboratory for better learning outcomes.

Learning Resources

- **E-Book Acquisition:** Purchase additional e-books.
- **Expanded Book Collection:** Increase the number of physical books.
- **Automated Library:** Implement an automated library system.

Accessibility and IT Infrastructure

- **Barrier-Free Environment:** Ensure the campus is accessible with the installation of lifts and tactile paths.
- **Increased Bandwidth:** Enhance IT infrastructure by increasing bandwidth to 300 Mbps

Attribute IV – Financial Resources

- **Increased Budget for Infrastructure:** Allocate additional funds for infrastructure improvements.
- **Increased Budget for Academic Programs:** Enhance the budget for academic initiatives.
- **Increased Budget for Equipment:** Allocate more funds for the purchase of new equipment.
- **Salary Hike:** Ensure salaries are on par with UGC standards.
- **Enhanced Employee Benefits:** Strengthen the benefits offered to employees.

Attribute V – Teaching and Learning

- **Diverse Pedagogical Approaches:** Implement group learning, individual learning, and peer teaching methods.

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- **Problem-Solving and Project-Based Learning:** Strengthen these approaches to enhance student engagement and practical understanding.
- **Effective Use of Learning Management Systems:** Leverage LMS for better organization and delivery of course content.
- **Online and Blended Learning:** Expand and integrate online and blended learning options.
- **Integration of Online Courses:** Make courses from platforms like SWAYAM, Coursera, and edX mandatory for course completion.
- **Mandatory Projects and Internships:** Require all students to participate in projects, internships, and on-the-job training.
- **Promotion of Indian Knowledge Systems:** Organize workshops, seminars, certificate courses, and student research projects focused on Indian knowledge systems.
- **Continuous Evaluation and Assessment:** Implement diverse assessment methods including multiple-choice questions, case studies, and projects.
- **Self and Peer Assessment:** Introduce self and peer assessment components within the continuous evaluation process

Attribute VI – Curriculum Engagement

- **Establishment of Domain-Related Clubs:** Create clubs focused on specific academic and professional fields.
- **Student Involvement:** Engage students in activities and festivals in collaboration with NGOs, corporations, and professional bodies.
- **Hackathon Training:** Train and empower students to participate in hackathons.
- **Mandatory Hackathon Participation:** Require participation in hackathons and idea generation competitions at regional, state, and national levels.
- **Cultural Activities:** Increase cultural events and promote intra-institutional cultural activities at state and national levels.
- **Ek Bharat Shreshtha Bharat:** Implement this program to celebrate cultural diversity.
- **Mental Well-Being:** Focus on activities and clubs that promote mental well-being and make value education compulsory.

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- **International Sports Participation:** Encourage sports participation at the international level and establish MOUs for cross-cultural sports events.
- **Special Olympics:** Organize special Olympic events.
- **Social Awareness Activities:** Increase activities that raise awareness for special communities.
- **Model Villages in UBA:** Develop adopted villages in the UBA initiative as model villages.

Attribute VII – Governance and Administration

- **Alignment with UN Sustainable Development Goals:** Ensure institutional development goals are aligned with the UN SDGs.
- **Enhance Staff Welfare:** Strengthen welfare measures for both teaching and non-teaching staff.
- **Improve Grievance Handling:** Strengthen the grievance resolution procedures.
- **Implement Digital India:** Adopt and implement policies to align with the Digital India initiative.

Attribute VIII – Student Outcomes

- **Increase Enrollment:** Boost student enrollment numbers.
- **Improve Pass Rates:** Enhance the pass percentage.
- **Expand Graduate Programs:** Increase the number of graduate programs offered.
- **Achieve Awards and Recognition:** Encourage faculty and students to participate in and earn awards for curricular, co-curricular, and extracurricular activities.
- **Strengthen Alumni Research:** Enhance research initiatives based on alumni involvement.

Attribute IX – Research and Innovation

- **One Faculty, One Project:** Encourage each faculty member to lead at least one research project.
- **Individual Research Initiatives:** Promote the idea of one faculty member leading one research initiative.
- **Institutional Grants:** Provide institutional grants for research aligned with sustainable development goals.

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- **Increase Publications:** Aim to increase the number of publications in UGC CARE list and Scopus-indexed journals.

Attribute X – Sustainability Outcomes and Green Initiatives

- **Compulsory Component:** Make sustainability and green initiatives a mandatory component, requiring students to engage in 50 hours per semester in related activities.
- **Resource Conservation and Waste Management:** Implement effective measures to conserve resources and manage waste.
- **Achieve Net Zero Progress:** Support the institution's efforts towards achieving net-zero environmental impact.
- **Stakeholder Involvement:** Engage stakeholders in green audits both on and off campus, promoting the institution's environmental policies.
- **Academic and Co-Curricular Engagement:** Plan and execute activities, including academic, co-curricular, extra-curricular, and community engagement, focusing on local communities and evaluating effectiveness based on outcomes.

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Certificate

This is to certify that M/s. Eco Energime Engineers LLP, Bengaluru has conducted **Quality Audit** of **"Nazareth College of Arts and Science, Chennai"** for the academic year 2022 – 2023. The Audit includes water audit, energy audit, waste management audit, green campus management audit and aspects of environment audit.

The audit involves field visit, measurements and observations, verification of bills, log books, data base, maintenance registers and interview with staffs, and this gives an overview of the existing system. In an opinion and to the best of our information and according to the information given to us, said Quality Audit gives a true and fair view in conformity with auditing principles.

For Eco Energime Engineers LLP

Authorized Signatory

A Govindaraj – EA 5212
Certified Energy Auditor
Eco Energime Engineers LLP
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