Youth Education & Welfare Society's
National Senior College Nashik
Dist. Nashik (MS)
(2018-19)

Prepared by

Ashwamedh Engineers & Consultants

Survey No.102, Plot No.26, WadalaPathardi Road, Indira Nagar, Nashik-422009, Maharashtra, India

(Near Guru Gobind Singh School, Near PandavNagari, / SaiMandirChowk / Samrat Sweet Turning), sales@ashwamedh.net T/F: +91-253-2392225

Table of Contents

College Entry Gate

College Campus

Executive Summary

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background

it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development.

The YEWS National Senior College Nashik Dist. Nashik is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher learning, the college has initiated 'The Green Campus' program that actively promote the various projects for the environment protection and sustainability.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology include: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons, data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Waste water management, Rain water harvesting, Paperless Work, Alternative Energy and Mapping of Biodiversity. With this in mind, the specific objectives of the audit are to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student's health and learning college operational costs and the environment. The criteria, methods and recommendations used in the audit are based on the identified risks.

1. Introduction

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth by carrying out Green Audit.

Green audit is assigned to the criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India and it declares the institutions as Grade A, B or C according to the scores assigned during the accreditation.

1.1 About the College

National Senior College Nashik is affiliated to Savitribai Phule Pune University, Pune Established as Minority College by a leading Youth Education & Welfare Society Sarda Circle, Nashik in the Year 2007. Youth Education & Welfare Society Sarda Circle, Nashik (YEWS) is an educational society is both a religious and linguistic minority institution. It has been especially working for minority students and weaker section of society with the objective of bringing about social transformation and educational upliftment of society. The college located in the eastern part of Nashik city at the convenient of travelling to reach college on schedule. The college premises extend over an area of 2.17 acres with adequate infrastructure facilities. The Building is well designed owing to the ever growing need of student and infrastructure, the institution continuously ensure adequate facilities for curriculum and co-curriculum and extracurricular activities are provided to the satisfaction of the stake holders.

In pursuance of its aim and objectives, the YEWS has setup 10 educational institutions right from primary to graduation level in the field of Arts,

Commerce, Computer Science and BSc. And B.B.A. Each faculty has separate classroom for running the all classes, College has separate Geography & Computer Science department for running day to day practical. The College has library which has approximately 3353 books. In addition, Geography department has separate departmental library to provide subject related books and magazines Students are given access to the Central Computer Facility as and when required. In addition, there is one Banking coaching center established in an academic year 2016-17 and in year 2017-18 got grant permission for banking catching center. The institute has adequate facilities like classrooms, Laboratories, Computer lab and library for conducting these courses.

Students are given access to the Central Computer Facility as and when required. All computers, printers, copier machine and other hardware internally connected through Local Area Network. The College Wi-Fi facility is password protected and the password is provided to college students, staff and non-teaching staff only. The college has well stocked library including reference books, journals etc. The college library has IT software which used for book circulation, book accessioning and generation all types of reports. The college library is using UGC's INFLIBNET library network. In the college library separate computers with internet connectivity are provided to students for information access.

The department of physical education of our college commonly referred to as the gymkhana department is indeed our pride as the sporting accomplishment of our students have brought laurels to our college on a continued basis. Volley ball, Kabbadi, court Kho-Kho court cricket, Carom board, Chess board Boxing ring, Table tennis are the sport activities run very well manner in college. In our college there is NSS, SDO, Competitive department Placement Cell, ARC unit for the learning, improve innovative and getting job to the students.

Vision

"To become an excellent institute of higher education, grooming students into socially responsible globally competent and excellent resource"

Mission

"To provide quality education to first generation & educationally disadvantaged learners to suit the dynamics of India Democratic Republic in all possible ways"

Objectives

1.To provide quality higher education at an affordable cost

2. To build all around personalities by providing quality teaching, learning, research, co- curricular and extra-curricular activities.

3.To promote social, cultural awareness, value system& scientific temperament.

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are: Accordingly, Green Audit mainly emphasize the following key areas-

1. **Saving power :**

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

2. **Saving water:**

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

3. **Greening the work place:**

This is achieved by designing a greener office space. This involves use of alternate power sources like solar power, reducing biological contaminants like pesticides, implementing green landscaping option & rain water harvesting.

4. **Driving Green:**

Vehicle driving is one of the largest contributors to both energy use & environmental pollution. The employees' should be trained to make more fuel efficient driving choices, optimize fuel consumption & consider alternate fuel vehicles. Possibilities to use public transport or group travelling have also to be explored for reduced gas emissions. Periodic emission tests need to be conducted to check for efficient fuel consumption.

The college has also adopted the 'Green Campus' system for environmental conservation and sustainability. The goal is to reduce CO_2 emission, energy use and water use, while creating an atmosphere where students can learn and be healthy.

2. Objectives of the Study

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

- To introduce and make students aware of real concerns of environment and its sustainability.
- To secure the environment and cut down the threats posed to human health by analysing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections require high cost.
- To bring out a status report on environmental compliance.

3. Methodology

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

- Water management
- Energy conservation
- Waste management
- E-waste management
- Green area management

4. Observations and Recommendations

4.1. Water Use

This indicator addresses water consumption, water sources, irrigation, storm water, appliances and fixtures. A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use.

a) Observations

The study observed that Nashik Municipal Corporation is the main source of water for the campus. Water is used for drinking purpose from with two connections. Water is used for canteen, toilets, laboratory and gardening, basketball ground from tank. During the survey, no loss of water is observed, neither by any leakages nor by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 2,500 L/day, which include 1,500 L/day for domestic purposes, 500 L/day for gardening and 500 L/day for different laboratories.

The College has rain water harvesting facility in a campus having capacity 5800 lit. And the water from the tank is used for gardening and washing purpose. So the College has saved 5.8 M^3 water per year. The total amount of water consumption is reduced by this facility.

The College has Reverse Osmosis process for drinking water in a campus having capacity of 1000 liters/hr. and the rejected water from this Reverse Osmosis is used for the sanitary purpose. From the Canteen, water used for drinking purpose analyzed as per IS 10500:2005 drinking water specification and observed it was potable.

b) Appreciations:

- Water is properly used in the campus and water reusing strategy is followed by the college like reusing R.O. rejected water for sanitary purpose.

c) Recommendations:

- Appreciate that Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged. In campus small scale/medium scale/ large scale reuse and recycle of water system is necessary.
- The college does not have waste water treatment for waste water generated from laboratories, canteen, hostel kitchen, toilets, bathrooms and office rooms. But next fanatical year Sewage Treatment Plant will be installed in the premises.
- Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations.
- Year wise water consumption report.

Test Report

Sr. No.	Parameters	Results	Acceptable Limit as per IS 10500: 2012	Units
1.	Colour	1	*Max.* 5	Hazen Units
2.	Odour	Agreeable	Agreeable	-
3.	Ph	7.07	6.5-8.5	-
4.	Turbidity	0.6	*Max.* 1	N.T.U.
5.	Total Dissolved Solids	52	*Max*. 500	mg/L
6.	Calcium (as Ca)	11.2	*Max.* 75	mg/L
7.	Chloride (as Cl)	11	*Max*. 250	mg/L
8.	Fluoride (as F)	<0.05	*Max.* 1	mg/L

9.	Iron (as Fe)	<0.06	*Max.* 0.3	mg/L
10.	Magnesium (as Mg)	1.88	*Max.* 30	mg/L
11.	Nitrate (as NO_3)	5.12	*Max.* 45	mg/L
12.	Sulphate (as SO_4)	2.50	*Max.* 200	mg/L
13.	Alkalinity (as $CaCO_3$)	16	*Max.*200	mg/L
14.	Total Hardness (as $CaCO_3$)	28	*Max.* 200	mg/L
15.	*E. coli*	Absent	Not Detectable	/100 ml
16.	Total Coliforms	Absent	Not Detectable	/100 ml

Rain Water Harvesting Tank

R.O. System Water Sampling for Testing Purpose

Energy Use and Conservation

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

a) Observations

Energy source utilized by all the departments and common facility center is electricity only. Total energy consumption is determined as 580 KVA/Year by major energy consuming equipment.

All the departments and common facility centers are equipped with LED & CFL lamps. Approximately 96 LED Lamps, 06 projectors,59 fans, 01 Laptops , 76 Computers,13 Printers,4 Scaner,2 water coolers, 6 xerox machines, 23 Exhaust fans, 2 scanner. Besides this, there are no photovoltaic cells installed in the campus as an alternate renewable source of energy. Equipment like Computers are used with power saving mode. Also, campus administration runs switch–off drill on regular basis. In various labs after completion of work, electricity was shut down as one of the practices for energy conservation.

Recommendations:

- This includes evaluation of procurement practices with ISO 50001. This does not exactly mean that you need to buy the most efficient, but you need to buy the most efficient which is financially viable. Example AC with efficiency star ratings, Transformer etc.
- Centralized controls of lighting, auditorium etc. to avoid any mis-use of electricity.
- Installation of LED lamps instead of CFL is necessary because CFL consumes maximum energy and it is observed that college has maximum CFL lamps.
- Installation of Solar panels, Power Purchase Agreements with Solar Power Plant Owners to buy environmentally friendly energy Source etc.
- Shift to paperless regime wherever not required, example attendance muster replaced by biometrics, DG logbook replaced by computerised logbook, daily reports converted from paper to paper less, HOD meetings converted to paperless formats, and all such examples.
- Maintenance of solar lamps in the campus is necessary.

Waste Generation

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

a) Observations

The total organic waste collected in the campus is 3 kg/day. Waste generated from canteen is a major solid waste in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Non-Bio-degradable waste. Single sided used papers reused for writing and printing in all departments. Important and confidential reports/papers are sent for recycling after completion of their preservation period. Very less plastic waste (0.1 kg/day) is generated by some departments, office, garden etc. but it is neither

categorized at point source nor sent for recycling. Metal waste and wooden waste is stored and given to authorized Scrap agents for further processing. The food waste from main canteen and mess is sent for anaerobic composting.

The institute has adopted anaerobic composting backside of canteen having dimensions 5.5 x 3 x3 ft. The main purpose of this is to breakdown & decompose all kind of organic waste into compost within 24 hrs. with a volume reduction of 85-90%. After complete process of composting, it is used as manure in the garden and lawns. Awareness program among farmers is also conducted in the village nearby.

Campus is well equipped with Dry and Wet waste segregation facility

b) Appreciations:

- Appreciate that college campus is well equipped with dry and wet waste collection system having colour coding blue and green. Among that green coloured dustbin is used for wet waste and blue colour is used for dry waste.

c) Recommendations

- Reduce the absolute amount of waste that produces from college staff offices.
- Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white coloured and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste with responsibility for recycling clearly allocated.

- Important and confidential papers after their validity to be sent for pulping.

E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

a) Observations:

The E-waste generally includes the tube lights, CFL, LED are stored into the scrap yard of college and stored. E-waste generated in the campus is very less in quantity. The college has total of 76 computers and 11 printers in working condition. The cartridges of laser printers are refilled outside the college campus. Administration conducts the awareness programs regarding E-waste Management with the help of various departments. The E- waste and defective item from computer laboratory is very less and being stored properly. The institution has decided to contact approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

b) Recommendations:

- Recycle or safely dispose of white goods, computers and electrical appliances.
- Use reusable resources and containers and avoid unnecessary packaging where possible.
- Always purchase recycled resources where these are both suitable and available.

Green Area

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programmes.

Green Area of College Campus

a) Observations

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal and all departments faculty members.

Campus is located in the vicinity of approximately 43 types (species) of trees. Total trees are 117. Various tree plantation programs are being organized during the month of July and August at college campus and surrounding villages through NSS unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes plantation of various type of indigenous species of ornamental and medicinal as well as wild plant species. Under the biodiversity and ecological survey, rain water harvesting is well maintained. The Institute has a policy of gift a plant to guests in any programme. It is a good thing for environment.

b) Appreciation:

- Appreciate that the college conducts various tree plantation programme in various industries.
- Appreciate that college established Green Cell in college for the enactment, enforcement and review of the Environmental Policy.
- Appreciate that college celebrates 5th June as 'Environment Day' every year and plant trees on this day to make the campus Greener.

c) Recommendations

- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects and community service.
- Create awareness of environmental sustainability and take actions to ensure environmental sustainability.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.

Green Campus

5. Environment:

a) Air Quality: Air quality in the academic institute is very important for health of the students, faculty and staff of the institute. The air pollution sources in the college campus are wind storm, pollen grains, natural dust, vehicular emissions, generators, fires and laboratory fumes etc.

Observation: All results of Ambient Air monitoring (Near Main Gate) found within limits as perNational Ambient Air Quality Standards, 2009.

Test Report

Meteorological Data / Environmental Conditions				
Average Wind Velocity: 3.0 km/h	Wind Direction: E	Relative Humidity (Max./Min.): 73/65 %	Temperature (Max./Min.): 26/18°C	Duration of Survey: 24 h

Parameter	**Results**	**NAAQS 2009**	**Unit**
Sulphur Dioxide (SO_2)	**18**	80	$\mu g/m^3$
Nitrogen Dioxide (NO_2)	**20**	80	$\mu g/m^3$
Particulate Matter (size less than 10 µm) or PM_{10}	**60**	100	$\mu g/m^3$
Particulate Matter (size less than 2.5µm) or $PM_{2.5}$	**34**	60	$\mu g/m^3$
Ozone (O_3)	**<19.6**	180	$\mu g/m^3$
Lead (Pb)	**<0.02**	1	$\mu g/m^3$
Carbon Monoxide (CO)	**0.61**	4	mg/m^3
Ammonia (NH_3)	**<4**	400	$\mu g/m^3$
Benzene (C_6H_6)	**<1**	5	$\mu g/m^3$
Benzo (a) Pyrene (BaP)- particulate phase only	**<0.2**	1	ng/m^3
Arsenic (As)	**<0.3**	6	ng/m^3
Nickel (Ni)	**<3**	20	ng/m^3

d) Noise Environment: The noise levels measurements were carried out using Noise level meter. The Noise level survey was carried out at two locations, at outside as well inside the study area campus. The major source of noise identified in the study area has been predominantly the vehicular movement and the transportation activities.

Noise Level Monitoring Report

Location	**Time**	**1**	**2**	**3**	**4**	**5**	**Noise Level Readings dB (A)**
Outside	11.00	55	50	57	56	55	54.6
	11.30	56	51	54	53	55	53.8
Inside	12.30	52	51	51	50	49	50.6
	13.30	48	52	50	53	50	50.6
As per The Noise Pollution (Regulation & Control) Rules, 2000 (Rules							

3(1) and 4(1))			
Area Code	Area Type	Limits in dB (A)weighted scale	
		Day (6 a.m. to 10 p.m.)	Night (10 p.m. to 6 a.m.)
C	Residential	52.4	45

Noise Level Monitoring

Noise level monitoring in classroom

Observation: All results of Noise level monitoring (Inside & Outside) found within limits as per the Noise Pollution (Regulation & Control) Rules, 2000

e) Illumination Study: The Illumination Study were carried out using Lux meter. The Illumination Study was carried out at two locations, in Classroom & Laboratory.

Sr. No.	Location	Time	Lux Level Reading (LUX)				Average LUX
			1	2	3	4	
1.	Classroom	12:00	300	312	290	305	301.75
2.	Laboratory	12:30	280	309	320	312	305.25

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

Illumination Monitoring in Classroom

Ventilation Monitoring in Classroom

D) Ventilation Study: The ventilation study was carried out by using anemometer. The ventilation study was carried out at two locations, in classroom and in laboratory.

Sr No.	Name of Location	Temperature (^{0}C)	Relative Humidity (%)	Air velocity (m/s)
1.	Classroom	16.6	28	0.7
2.	Laboratory	17.5	27	0.6

Observation: All results of ventilation study (classroom & laboratory) found within limits as per Factory Act 1948, Rule 22-A.

Photo Gallery

Cultural Activity 2018-19

Teacher's Day

Inauguration of funfair by Management Members

Examining the food on food stalls

Felicitation of guest of Mehendi competition

Participants of mehendi competition

Guest observing participants of best out of waste competition

Felicitation of guest of One Minute Act

Quiz competition

Participants of one minute Act

Shayari Competition

Guidance for road safety

Students cleaning ground at Rajur Bahula (NSS)

BETI BACHAO BETI PADHAO RALLY

Tank Cleanliness: NSS Volunteer Doing Tank Cleanliness Activity

6. Conclusions

Considering the fact that the YEWS National Senior College Nashik there is significant environmental awareness both by faculty and students and initiatives taken by them are substantial. Rain water harvesting management, reuse of R.O. water, paperless work system and anaerobic composting practices are noteworthy. Besides, environmental awareness programme initiated by the administration shows how the campus is going to be a green. Few recommendations are added to curb the menace of waste management using ecofriendly and scientific techniques.

As part of green audit of campus, we carried out the environmental monitoring of campus includes Illumination, Noise level, Ventilation and Indoor Air quality of the class room. It was observed that Illumination and Ventilation is adequate considering natural light and air velocity present. Noise level in the campus well within the limit i.e. below 50 dB at day time. Canteen water also analyzed and found it was potable.

This may lead to the prosperous future in context of Green Campus and thus sustainable environment and community development.

7. Acknowledgement

We are grateful to the committee members of YEWS National Senior College Nashik to award this prestigious project and allowed us to enter the new era of Green Audit in the College Campus.

Further we sincerely thank the college staff for providing us necessary facilities and co-operation during the audit. This helped us in making the audit, a success.

Further we hope, this will boost the new generation to take care of Environment and propagate these views for many generations to come.

FOR ASHWAMEDH ENGINEERS & CONSULTANTS

Authorized Signatory

Ashwamedh Engineers & Consultants