



# **GURU NANAK GIRLS COLLEGE**

## **GREEN AUDIT REPORT**

**2023-2024**

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Prepared by  
**EHS ALLIANCE**



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# CERTIFICATE



## CERTIFICATE

PRESENTED TO

# GURU NANAK GIRLS COLLEGE

Santpura, Yamuna Nagar, 135001, Haryana

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

## GREEN AUDIT

ACADEMIC YEAR 2023-24

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

SIGNATURE



16.01.2025  
DATE OF AUDIT



# ACKNOWLEDGEMENT

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EHS Alliance Services would like to thank the management of Guru Nanak Girls College for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank **Dr. Harvinder Kaur – Principal** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank **Dr. Neena Goyal, Associate Professor- Audit Coordinator**, for her continuous support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

**Dr. Mandeep Kaur – Assistant Professor**

**Dr. Prabhjot Kaur - Assistant Professor**

**Ms. Sandeep Reen - Assistant Professor**





# DISCLAIMER

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EHS Alliance Services Audit Team has prepared this report for Guru Nanak Girls College based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all sensible 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 conclusions are arrived following best estimates 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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**Signature**

**LEAD AUDITOR**



# CONCEPT AND CONTEXT

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The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the college campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution. The concepts, structure, objectives, methodology, tools of analysis, objectives of the audit as below:





# INTRODUCTION

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Now a days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to make them sustainable and eco-friendly. To preserve the environment within the institution, a number of viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the saving the energy, waste recycle, water consumption reduction, water harvesting and many more...

The activities carried out by the institution can also create adverse environmental impacts. Green audit is defined as an official inspection of the effects a college has on the environment. Green Audit is conducted to evaluate the actual scenario at the institution campus. Green audit can be a useful tool for a university /college to determine how and where they are using the most of the energy or water or resources; the institution can then decide how to implement changes and make savings. It can also be used to determine the nature and volume of waste, which can be used for a recycling project or to improve waste minimization plan.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the Green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of university /college including the assessment of policies, activities, documents and records.





# OVERVIEW OF THE COLLEGE

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Guru Nanak Girls College, Santpura, Yamunanagar was established in 1973 by the great visionary and philanthropist, Sant Pandit Nischal Singh ji Maharaj. In an era when girls were confined within the barriers of domesticity, Sant ji initiated this noble task of educating them and thereby opening before them new vistas of knowledge and self- sufficiency. Firm on his arduous mission of emancipating women from the shackles which illiteracy force upon them, Sant ji planted this sapling which today has blossomed into a premier multi-faculty postgraduate institution.



The Managing Committee of Guru Nanak Girls College is strengthened and motivated at every step by the pious vision of its founder, Pandit Sant Nischal Singh Ji who dreamt of equipping the daughters of nation with the armour of education so as to make them self-reliant, confident, ethical and progressive individuals who endeavours to surge towards the glorious historical watersheds of humanism, spirituality and professional success.

The college has a fleet of 8 buses to bring students from the areas within a radius of 55kms. By providing easy and affordable conveyance to rural girls, we try to inch closer to our founder's dream of making education accessible to the rural folk. We have a highly qualified, experienced and diligent staff who act like mentors to the students and who consistently imbibe new methodologies in their teaching so as to make it student friendly.

The college organizes both academic and excursion trips for the students. Placement cell of the college takes them to job fests and counsels them about the career opportunities.





The college has fully furnished labs. Teachers make sure that the students imbibe practical knowledge of the subjects. There are three Computer labs, a studio and an editing lab, Dept. of Science has laboratories of Botany, Physics, Chemistry, Biotechnology and Biochemistry. The Dept. of Home Science has a Food & Nutrition lab, a Clothing & Textile lab and a cafeteria. There are two labs for Music –Instrumental and Vocal. A well equipped Language lab is used to develop English Communication Skills of students. There is a centrally air conditioned auditorium, a Seminar Hall with audio-visual facilities and a well stacked library which houses some rare books of divinity and some rare manuscripts.



## VISION

### ***Vision For Future Small Steps: Big Leaps***

- With a very specific objective of imparting education to girls, the college has many courses which increase job prospects and are also within the reach of weaker sections of the society. The top Management, the Principal and the staff keep themselves abreast with the current needs of the society.
- Bus facilities are provided to the girls coming from rural areas within the radius of 50 Kms.



- Students are provided with different types of scholarships so that they are able to continue their studies.
- Teachers visit rural areas to motivate the students to pursue higher education after 10+2.

With a progressive view to upgrade the college, there are different plans in place to improve & enhance the infrastructure – to provide adequate facilities to start new courses, enriching the faculty, increasing the teaching quality, developing e-content for our students in their easy to understand language from their own teachers are to name a few. We strongly believe that the futuristic vision of our college Management will make the dreams a reality. The plans are:

- To expand community college under UGC scheme
- To start more buses in rural areas
- To sign MOU with other universities / industries / NGOs
- To establish separate wings for Self Financing Courses

## VALUES

### ***Traditions and Value Orientations of the Institution***

Our founder Sant Pandit Nischal Singh Ji Maharaj laid emphasis on keeping the students rooted to their culture and moral values. To fulfill his dream, we have developed following practices which inculcate the value system and nurture in the young minds the healthy traditions of Indian society

- Respect for all the religions.
- The college has maintained a large number of books on various religions and faiths and encourages the students to read them. Such practice would inculcate in them the feelings of religious tolerance and brotherhood of mankind.
- Morning Prayer is a daily routine in our college.
- The college has in its premises Gurudwara Sahib which is open to all.
- From time to time our college organizes seminars and invites various religious scholars to present their views.
- Celebration of cultural festivals like Lohri, Teej, Basant Utsav, Dussehra and Prakesh Utsav of Guru Ram Das ji followed by langar is a regular practice.
- The college follows the teachings of the Great Guru and visionary Guru Nanak Dev Ji who propagated 'Sarbat Da Bhala' & 'Ek Pita Ekas Ke Hum Barik'. Students from different parts of the country belonging to different castes and creeds come here for higher education.



**Geo Coordinates: 30.1292564,77.2917283**

## Facilities in the campus

- 1. Sports Facility** – The college provides facilities for various Sports & Games as Weightlifting, Yoga, Fencing, Archery, Table-tennis, Volleyball, Kho-Kho etc. to participate according to interest & Capability of oneself to build overall personality and health. College celebrates International Yoga Day, National Sports Day, International Women Day by organising Sports Events for the women of the society. College conducts Annual Athletic Meet for its students. Besides College participates in Kurukshetra University Inter College Competitions & District Level championships of different Sports Disciplines as well our athletes participate at State, National, zonal & All India Inter University competitions in various games and sports. We are champions in the University for the last six times in Weightlifting since 2018. Since last two times we are champions in Hockey in 2022 & 2023 and won positions in other team games as Table Tennis, Yoga, Fencing, Archery and in individual medal winners in the games like Wrestling, Athletics, Fencing, Weightlifting etc.
- 2. Hostels** - Hostels of Guru Nanak Girls College aim at providing budget oriented and sociable accommodation for the girls. The college has three hostels – Two within the main campus and third in Govind Puri. The total accommodation capacity of these three hostels is 180 ; presently occupied by 90 girls .Each of these hostels has a female warden who is herself a faculty member of the college. Hostels have two, three, four and six seater rooms available, which can be chosen according to the individual's need. Hostels provide spacious, well lighted and airy rooms for comfortable stay of our students.



The food served to the hostellers is prepared under supervision by taking care of nutritional needs of the students and hygienic practices. The fresh meals provided to the residents are of different cuisine and relevantly served according to the season and occasion.

3. **Library** - The library is the most significant and sacred place for the generation of knowledge. It not only inculcates the habit of reading but stimulates a deeper quest for knowledge among students. Our college library is a very rich treasure house of wisdom of great thinkers, philosophers and scientists. It is one of the best libraries in Haryana with a very vast and rich collection of more than 67000 books, 90 periodicals, 40 national and 4 international peer reviewed journals. Besides this, we have 20000 journals and 1,25000 books available online through British Library and n list. The library has a complete database of books & journals which is fully computerized and are easily accessible.
4. **Transport** - College has a fleet of 8 buses to facilitate girl students in and around Yamuna nagar. Presently approximately 700 girls are commuting from 208 villages and from 800 different stops, within a radius of 55 KM from our city.



SPORTS

HOSTEL



WELL-EQUIPED GYMS

SMART CLASS



# AUDIT PARTICIPANTS

On behalf of Guru Nanak Girls College

Name	Designation
Dr. Harvinder Kaur	<i>Principal</i>
Dr. Neena Goyal	<i>Associate Professor</i>
Dr. Mandeep Kaur	<i>Assistant Professor</i>
Dr. Prabhjot Kaur	<i>Assistant Professor</i>
Ms. Sandeep Reen	<i>Assistant Professor</i>
Dr. Poonam Saini	<i>Assistant Professor</i>
Ms. Charu Panwar	<i>Assistant Professor</i>
Ms. Ramanjot Kaur	<i>Assistant Professor</i>
Mrs. Monika Chopra	<i>Assistant Professor</i>
Ms. Deepika Sharma	<i>Assistant Professor</i>

On behalf of EHS Alliance Services

Name	Position	Qualifications
Dr. Uday Pratap	Lead Auditor	<i>Ph.D., PDIS, QCI – WASH, Lead Auditor ISO 14001:2015</i>
Ms. Pooja Kaushik	Co-Auditor	<i>M.Sc., Field Expert, QCI – WASH</i>

## EXECUTIVE SUMMARY

Green auditing is an essential step to identify and determine whether the institutional practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert them into green and sustainable. Green audit provides an approach for the same. It also increases overall awareness among the folks working in institution towards the eco-friendly environment.

This is the second attempt to conduct green audit of this campus for fulfilment of NAAC criteria. This audit was mainly focused on greening indicators like consumption of energy in terms of electricity and fossil fuel, quality of soil, water usage, vegetation, waste management practices and carbon foot print of the campus. Initially a questionnaire was shared to know about the existing resources of the campus and resource consumption pattern of the students and staff in the campus.



# GREEN AUDIT - ANALYSIS

## 1.1 GENERAL INFORMATION

### 1. Does any Green Audit conducted earlier?

*Yes, this is second external audit organized by the College*

### 2. What is the total strength (people count) of the Institute?

#### **Students**

*Male: 0 Female: 3036 Total: 3036*

#### **Teachers (including guest faculty)**

*Male: 2 Female: 149 Total: 151*

#### **Non-Teaching Staff**

*Male: 57 Female: 28 Total: 85*

#### **Total Strength**

*Male: 59 Female: 3313 Total: 3272*

### 3. What is the total number of working days of your campus in a year?

*There are one hundred and eighty working days in a year.*

### 4. Where is the campus located?

*The campus is located at Santpura, Yamuna Nagar, Haryana, 135001*

### 5. Which of the following are available in your institute?

<i>Garden area</i>	<i>Available</i>
<i>Playground</i>	<i>Available</i>
<i>Kitchen</i>	<i>Available</i>
<i>Toilets</i>	<i>Available</i>
<i>Garbage Or Waste Store Yard</i>	<i>Not Available</i>
<i>Laboratory</i>	<i>Available</i>
<i>Canteen</i>	<i>Available</i>
<i>Hostel Facility</i>	<i>Available</i>
<i>Guest House</i>	<i>Not Available</i>

### 6. Which of the following are found near your institute?

<i>Municipal dump yard</i>	<i>Not in vicinity of institute</i>
<i>Garbage heap</i>	<i>No Garbage heaps</i>
<i>Public convenience</i>	<i>Public convenience is available</i>
<i>Sewer line</i>	<i>Approximately 1.0 KM sewer line within campus</i>



Stagnant water	No stagnant water
Open drainage	No
Industry – (Mention the type)	No
Bus / Railway Station	Roadways bus stand and Yamuna nagar railway station
Market / Shopping complex	Available

## 1.2 WASTE MINIMIZATION AND RECYCLING

### 1. Does your institute generate any waste? If so, what are they?

Yes, Solid waste, Canteen waste, paper, plastic, horticulture, laboratories waste, e-waste, etc.

### 2. What is the approximate amount of waste generated per day? (in Kg approx.)

Biodegradable waste - 15 Kg  
Non-biodegradable waste -3 Kg  
Hazardous Waste - 1 Kg  
Others < 1 Kg

### 3. How is the waste managed in the institute? By Composting, Recycling, Reusing, Others (specify)

- Food waste is collected into composting pits
- Three Rain water harvesting pits are there in campus for ground water recharge
- STP/ETP is installed for waste water treatment
- E-waste collection and management through recycled – authorized vendor

### 4. Do you use recycled paper in institute?

Yes, college uses single sided used paper for rough work, assessment work and prints

### 5. How would you spread the message of recycling to others in the community?

Following are the ways through which college is spreading the awareness about recycling

- Waste plastic collection drives
- Installation of Dustbins for waste plastic collection, e-waste collection and recycling
- Tie-ups with authorized e-waste collection agency
- Awareness among the Students by Webinars, seminars, Sign Boards, Posters, etc.

### 6. Can you achieve zero garbage in your institute? If yes, how?

Not yet achieved. Possible through waste management policy and planning.

1. Minimization of waste production
2. Awareness workshops & trainings for students and faculty on Waste management



## 1.3 GREENING THE CAMPUS

### 1. Is there a garden in your institute?

*Yes, about 12000 Sq ft areas are developed as Gardens.*

### 2. Do students spend time in the garden?

*Yes, students spend around 2-4 Hours during winters.*

### 3. Total number of Plants in Campus?

<i>Plant type with approx. count</i>	
<i>Full grown Trees</i>	<i>32</i>
<i>Small Trees</i>	<i>56</i>
<i>Hedge Plants</i>	<i>2187</i>
<i>Grass Cover sqm</i>	<i>12000 Sq ft</i>

### 4. Is the College campus having any Horticulture Department? (If yes, give details)

*Yes, Total 3 staff (maali) deployed in horticulture department*

### 5. How many Tree Plantation Drives organized by campus per annum?

*Five Plantation Drives are Organized by campus in the last academic year 112 plants were planted in this academic year. Survival rate is more than 80%.*

### 6. Is there any Plant Distribution Program for Students and Community?

*Yes, Plantations distribution drives conducted in nearby Villages under Unnat Bharat.*

### 8. Is there any Plant Ownership Program?

*No*

## 1.4 WATER AND WASTEWATER MANAGEMENT

### 1. List uses of water in your institute

*Basic use of water in campus:*

*Drinking – 78.72 KL/month*

*Gardening – 25.08 Kl/month*

*Kitchen and Toilets – 233.38 KL/month*

*Others – 36.13 KL/month*

*Hostel – 162.00 KL/Month*

*Total = 535.31 KL/Month*





## 2. How does your institute store water? Are there any water saving techniques followed in your institute?

Available total water storage of the college is  $500 \times 8 = 4,000$  litres

### **Saving Techniques**

- Avoid overflow of water-controlled valves are provided in water supply system.
- Close supervision for water supply system.
- Push taps are installed for water conservation
- Water Conservation awareness for new students
- Sprinklers usage for gardening and grass cover

## 3. Locate the point of entry of water and point of exit of waste water in your institute.

**Entry** - Water comes from Municipal corporation supply and borewells

**Exit**- From Canteen, Toilets, Hostel, bathrooms and Labs through covered drainage which is connected to sewage treatment plant of capacity 5 KLD

## 4. Write down ways that could reduce the amount of water used in your institute

### **Basic ways:**

- Close the taps after usage
- Water Conservation awareness for new students
- Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage
- Push taps are installed to save water
- Water recycling and use of sprinklers for gardening

## 1.5 ANIMAL WELFARE

### 1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

3 dogs, 3 Cats, 20+ butterfly species, 10+ Squirrels, 5 monkeys and 40+ Birds are found in campus. A variety of bird's species and other flora and fauna are available, so institute is doing their bit for bio diversity conservation.

### 2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

Yes, Guru Nanak Girls College's **Eco club** actively organizes awareness through various campaigns and activities including seminars, poster competition, etc.



## 1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

### 1. Electricity used per year - CO2 emission from electricity

$$\begin{aligned} & (\text{electricity used per year in kWh}/1000) \times 0.84 \\ & = 177444/1000 \times 0.84 \\ & = 149.05 \text{ tons} \end{aligned}$$

### 2. LPG/PNG used per year - CO2 emission from LPG/PNG

$$\begin{aligned} & (\text{LPG/PNG used per year in KG}) \times 2.99 \\ & = 6170 \times 2.99 \\ & = 16.54 \text{ tons} \end{aligned}$$

### 3. Diesel used per year CO2 emission from HDS (Diesel)

$$\begin{aligned} & (\text{Diesel used per year in liters}) \times 2.68 \\ & = 2600 \times 2.68 \\ & = 7.77 \text{ tons} \end{aligned}$$

### 4. Transportation per year (car) CO2 emission from transportation (Bus and Car)

$$\begin{aligned} & \text{There are 7 Cars, 7 buses, 1 tractor, 1 tempo and 1 tanker} \\ & = (10 \times 2 \times 2 \times 182/100) \times 0.01 + (2 \times 4 \times 2 \times 182/100) \times 0.02 \\ & = 1.30 \text{ tons} \end{aligned}$$

Total CO<sub>2</sub> emission per year is 174.66 tons

**After considering carbon absorption capacity of campus and solar energy export, the total carbon emission is 172.70 tons**

## CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 32 full grown trees and 56 semi grown trees of different species, on the campus spread over 12000 sq ft.

Carbon absorption capacity of one full grown tree 22 kg CO<sub>2</sub> Therefore Carbon absorption capacity of 32 full-grown trees 32 x 22 kg CO<sub>2</sub> = 0.70 tons of CO<sub>2</sub>.

The carbon absorption capacity of 56 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption 56 x 6.8 kg of CO<sub>2</sub> = 0.38 tons of CO<sub>2</sub>

There are approximately Hedge Plants 287 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO<sub>2</sub> where as some others absorb very low level of CO<sub>2</sub>. In the absence of a detailed scientific study, 200g of CO<sub>2</sub>, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is 287 x 200 g = 0.44 ton of CO<sub>2</sub>



The lawns on the campus have buffalo grass, Mexican grass and indigenous grass species and cover a total area of 12000 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area  $12000 \times 365 \times 0.1 \text{ g CO}_2 = 0.44 \text{ tons CO}_2$  per year.

Total of carbon absorption capacity of the campus is 1.96 tons.

## GREEN INITIATIVES BY CAMPUS

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### ➤ Solid Waste Management

- Collect paper waste produced on campus and collaborate with scrap dealers for recycling.
- College has composting pits for solid waste management
- Reduce use of paper by supporting digitization of attendance and internal assessment records.
- Reduce requirement of printed books by updating the e-books and e-journals collection of the college library.
- Take initiatives to spread awareness amongst students about food wastage and ways of minimizing it
- The habit of reusing and recycling non-biodegradable products
- Organizing workshops for students on solid waste management.
- There is ban on single use plastic and plastic crockery in the campus.

### ➤ Liquid Waste Management

- Maintain leak proof water fixtures.
- Minimize the use of water by constructing more Indian style toilets instead of western style toilets.
- Continued employment of a caretaker to take immediate steps to stop anywater leakage through taps, pipes, tanks, toilet flush etc.
- Reuse of wastewater generated by the Reverse Osmosis (RO) system in washrooms.
- STP/ETP is installed for waste water treatment

### ➤ E-waste Management

- College has a separate storeroom for the safe storage of electronic waste. After a certain interval of time college disposes of the E-waste to concerned agencies through the auction process.

### ➤ Rain water harvesting

- College has 3 rainwater harvesting pits for better groundwater recharge. The stored water in this tank can be used for gardening purposes

### ➤ Renewable Energy

- The college has also installed solar PV (50 KW) on the rooftop of building.
- The College is using solar lights for street lights.



- The college believes in using cleaner energy such as LED lighting.
- **Air Pollution Reduction**
  - Personal Vehicles (Students) are not allowed in the campus
- **Eco Club Activities**
  - National sports day was organized on 29<sup>th</sup> Aug 2024
  - International yoga day was celebrated on 23<sup>rd</sup> July 2024 by organizing a district yoga championship
  - Elocution competition was organized on 6<sup>th</sup> Nov 2023 in association with M R Pai Foundation
  - Poster making and slogan writing competition was organized on 13<sup>th</sup> Aug 2024
  - Pledge taking Oath ceremony was organized on 13<sup>th</sup> Aug 2024
  - International Women's Day was celebrated on 11<sup>th</sup> March 2024
  - Annual Athletic Meet was organized on 21<sup>st</sup> March 2024
  - Workshop was organized for preservation of milk products, vegetables and fruits in Krishi Vigyan Kendra, Damla on 13<sup>th</sup> march 2024

## RECOMMENDATIONS

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- Environmental parameters shall be included in purchase policy to achieve a cradle to grave approach for sustainability.
- College should start drip irrigation to save water in campus
- Arrange training programmes on environmental management system and nature conservation for schools and local people.
- Involve lower hierarchy staff in environmental awareness programmes and campaigns.
- Increase in the display of environment-conscious posters/paintings/slogans for spreading awareness amongst students.
- Plant Ownership Program should be initiated – Several Trees should be Planted and owned by Visitors as well as students. The Nameplates should also be displayed near the plants.
- Green building guidelines for future expansion projects of the campus.



# CONCLUSION

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This audit involves considerable team discussions and meetings with key staff members on a variety of environmental-related topics. The eco club of Guru Nanak Girls College promotes conservation of resources.

Overall, 40% of Guru Nanak Girls College is for landscaping. The college makes a significant effort to act in an environmentally responsible manner and takes into account the environmental effects of the majority of its activities. The recommendations in this report suggests some more ways in which the college can work to improve its practices and develop into a more sustainable institution.

It's important to begin a few things, such as initiating drip irrigation, and increase plantation drives. Additionally, we strongly advise to sign MOU with third party authorised vendors for waste management such as plastic, paper, metal, C&D, etc.

# REFERENCE

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



# ANNEXURE – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS



New age building



Well maintained campus



Lush green campus



Sports Ground



Open Corridors



Vertical Garden in hostel



Ornamental plants in campus



Plantation Drive



Pledge taking ceremony



Poster making activity



Cleanliness drive



International Yoga day celebration





Gym for Students



STP/ETP



Solar lights



Solar panel

\*\*\*\*\* END OF THE REPORT \*\*\*\*\*



# **GURU NANAK GIRLS COLLEGE**

## **ENVIRONMENT AUDIT REPORT**

2023-2024

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Prepared by  
**EHS ALLIANCE**



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# CERTIFICATE



# CERTIFICATE

PRESENTED TO

## GURU NANAK GIRLS COLLEGE

Santpura, Yamuna Nagar, 135001, Haryana

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

### ENVIRONMENT AUDIT

ACADEMIC YEAR 2023-24

The environment legal compliances and initiatives carried out by the institution have been verified on the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards environment and sustainability are highly appreciated and noteworthy.

SIGNATURE



16.01.2025

DATE OF AUDIT



EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001  
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM





# ACKNOWLEDGEMENT

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EHS Alliance Services would like to thank the management of Guru Nanak Girls College for assigning this important work of Environment Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank ***Dr. Harvinder Kaur – Principal*** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank ***Dr. Neena Goyal, Associate Professor- Audit Coordinator***, for her Continuous Support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

***Dr. Mandeep Kaur - Assistant Professor***

***Dr. Prabhjot Kaur - Assistant Professor***

***Ms. Sandeep Reen - Assistant Professor***



# DISCLAIMER

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EHS Alliance Services Audit Team has prepared this report for Guru Nanak Girls College based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team.

While all sensible 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 conclusions are arrived following best estimates 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.

If you wish to distribute copies of this report external to your organisation, then all pages must be included.

EHS Alliance, its staff and agents shall keep confidential all information relating to your organisation and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies.

EHS Alliance staff, agents and accreditation bodies have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.

**Signature**

**LEAD AUDITOR**



# CONCEPT AND CONTEXT

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In India, the process for environmental audit was first mentioned under the Environment Protection Act, 1986 by the Ministry of Environment of forests on 13th march, 1992. As per this act, every person owning an industry or performing an operation or process needs a legal consent and must submit an environmental report or statement.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the sustainable environment.

In view of the NAAC circular regarding environment auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor.

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

The ICC defines Environmental Auditing as:

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

This audit focuses on the environment legal compliances and implementation of rules defined by MoEFCC or state pollution control board. The concepts, structure, objectives, methodology, tools of analysis, and objectives of the audit are discussed below.



# INTRODUCTION

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Nature is very precious gift for all life forms. Disturbance in the nature causes environmental Problems. These are increasing day by day as a result of development of urbanization and industrialization on earth. Because of unplanned utilization of resources, our planet is facing tremendous pressure results a sharp rise in temperature. Therefore, there is an urgent need to plan the consumption of the resources in sustainable manner in order to conserve natural resources for future generation.

Sustainable development is becoming popular in the world for saving the earth. Utilizing resources judiciously can save the earth's precious resources. Measurement of environmental components is the most effective step to conserve and protect natural resources.

Environmental auditing had begun in the early 1970s with provision of civil lawsuits for non-compliance with environmental regulations. Environment auditing involves on site visit, collection of samples, performing analyses, and report results to competent authorities.

Industry, the corporate world is initiating auditing for saving natural resources. Academic institutions also can contribute to the preservation and conservation of resources within their premises.

In this, "Environment Audit" report would help everyone to think about preserving resources, show willingness to learn their importance, adopt steps to minimize resource use and set an example for others to follow the path of eco-friendly practices to achieve the goal of sustainable development. Effective implementation of environmental auditing helps in minimization of environmental risks at low cost.





# OVERVIEW OF THE COLLEGE

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Guru Nanak Girls College, Santpura, Yamunanagar was established in 1973 by the great visionary and philanthropist, Sant Pandit Nischal Singh ji Maharaj. In an era when girls were confined within the barriers of domesticity, Sant ji initiated this noble task of educating them and thereby opening before them new vistas of knowledge and self- sufficiency. Firm on his arduous mission of emancipating women from the shackles which illiteracy force upon them, Sant ji planted this sapling which today has blossomed into a premier multi-faculty postgraduate institution.



The Managing Committee of Guru Nanak Girls College is strengthened and motivated at every step by the pious vision of its founder, Pandit Sant Nischal Singh Ji who dreamt of equipping the daughters of nation with the armour of education so as to make them self-reliant, confident, ethical and progressive individuals who endeavours to surge towards the glorious historical watersheds of humanism, spirituality and professional success.

The college has a fleet of 8 buses to bring students from the areas within a radius of 55kms. By providing easy and affordable conveyance to rural girls, we try to inch closer to our founder's dream of making education accessible to the rural folk. We have a highly qualified, experienced and diligent staff who act like mentors to the students and who consistently imbibe new methodologies in their teaching so as to make it student friendly.

The college organizes both academic and excursion trips for the students. Placement cell of the college takes them to job fests and counsels them about the career opportunities.



The college has fully furnished labs. Teachers make sure that the students imbibe practical knowledge of the subjects. There are three Computer labs, a studio and an editing lab, Dept. of Science has laboratories of Botany, Physics, Chemistry, Biotechnology and Biochemistry. The Dept. of Home Science has a Food & Nutrition lab, a Clothing & Textile lab and a cafeteria. There are two labs for Music –Instrumental and Vocal. A well equipped Language lab is used to develop English Communication Skills of students. There is a centrally air conditioned auditorium, a Seminar Hall with audio-visual facilities and a well stacked library which houses some rare books of divinity and some rare manuscripts.



## VISION

### ***Vision For Future Small Steps: Big Leaps***

- With a very specific objective of imparting education to girls, the college has many courses which increase job prospects and are also within the reach of weaker sections of the society. The top Management, the Principal and the staff keep themselves abreast with the current needs of the society.
- Bus facilities are provided to the girls coming from rural areas within the radius of 50 Kms.
- Students are provided with different types of scholarships so that they are able to continue their studies.



- Teachers visit rural areas to motivate the students to pursue higher education after 10+2.

With a progressive view to upgrade the college, there are different plans in place to improve & enhance the infrastructure – to provide adequate facilities to start new courses, enriching the faculty, increasing the teaching quality, developing e-content for our students in their easy to understand language from their own teachers are to name a few. We strongly believe that the futuristic vision of our college Management will make the dreams a reality. The plans are:

- To expand community college under UGC scheme
- To start more buses in rural areas
- To sign MOU with other universities / industries / NGOs
- To establish separate wings for Self Financing Courses



**Geo Coordinates: 30.1292564,77.2917283**

## VALUES

### ***Traditions and Value Orientations of the Institution***

Our founder Sant Pandit Nischal Singh Ji Maharaj laid emphasis on keeping the students rooted to their culture and moral values. To fulfill his dream, we have developed following practices which inculcate the value system and nurture in the young minds the healthy traditions of Indian society



- Respect for all the religions.
- The college has maintained a large number of books on various religions and faiths and encourages the students to read them. Such practice would inculcate in them the feelings of religious tolerance and brotherhood of mankind.
- Morning Prayer is a daily routine in our college.
- The college has in its premises Gurudwara Sahib which is open to all.
- From time to time our college organizes seminars and invites various religious scholars to present their views.
- Celebration of cultural festivals like Lohri, Teej, Basant Utsav, Dussehra and Prakesh Utsav of Guru Ram Das ji followed by langar is a regular practice.
- The college follows the teachings of the Great Guru and visionary Guru Nanak Dev Ji who propagated 'Sarbat Da Bhala' & 'Ek Pita Ekas Ke Hum Barik'. Students from different parts of the country belonging to different castes and creeds come here for higher education.

## Facilities in the campus

1. **Sports Facility** – The college provides facilities for various Sports & Games as Weightlifting, Yoga, Fencing, Archery, Table-tennis, Volleyball, Kho-Kho etc. to participate according to interest & Capability of oneself to build overall personality and health. College celebrates International Yoga Day, National Sports Day, International Women Day by organising Sports Events for the women of the society. College conducts Annual Athletic Meet for its students. Besides College participates in Kurukshetra University Inter College Competitions & District Level championships of different Sports Disciplines as well our athletes participate at State, National, zonal & All India Inter University competitions in various games and sports. We are champions in the University for the last six times in Weightlifting since 2018. Since last two times we are champions in Hockey in 2022 & 2023 and won positions in other team games as Table Tennis, Yoga, Fencing, Archery and in individual medal winners in the games like Wrestling, Athletics, Fencing, Weightlifting etc.

**Hostels** - Hostels of Guru Nanak Girls College aim at providing budget oriented and sociable accommodation for the girls. The college has three hostels – Two within the main campus and third in Govind Puri. The total accommodation capacity of these three hostels is 180 ; presently occupied by 60 girls .Each of these hostels has a female warden who is herself a faculty member of the college. Hostels have two, three, four and six seater rooms available, which can be chosen according to the individual's need. Hostels provide spacious, well lighted and airy rooms for comfortable stay of our students.

The food served to the hostellers is prepared under supervision by taking care of nutritional needs of the students and hygienic practices. The fresh meals provided to the



residents are of different cuisine and relevantly served according to the season and occasion.

- 2. **Library** - The library is the most significant and sacred place for the generation of knowledge. It not only inculcates the habit of reading but stimulates a deeper quest for knowledge among students. Our college library is a very rich treasure house of wisdom of great thinkers, philosophers and scientists. It is one of the best libraries in Haryana with a very vast and rich collection of more than 67000 books, 90 periodicals, 40 national and 4 international peer reviewed journals. Besides this, we have 20000 journals and 1,25000 books available online through British Library and n list. The library has a complete database of books & journals which is fully computerized and are easily accessible.
- 3. **Transport** - College has a fleet of 8 buses to facilitate girl students in and around Yamuna nagar. Presently approximately 700 girls are commuting from 208 villages and from 800 different stops, within a radius of 55 KM from our city.



SPORTS

HOSTEL



WELL EQUIPED GYMS

SMART CLASS



# AUDIT PARTICIPANTS

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On behalf of College

Name	Designation
Dr. Harvinder Kaur	<i>Principal</i>
Dr. Neena Goyal	<i>Associate Professor</i>
Dr. Mandeep Kaur	<i>Assistant Professor</i>
Dr. Prabhjot Kaur	<i>Assistant Professor</i>
Ms. Sandeep Reen	<i>Assistant Professor</i>
Dr. Poonam Saini	<i>Assistant Professor</i>
Ms. Charu Panwar	<i>Assistant Professor</i>
Ms. Ramanjot Kaur	<i>Assistant Professor</i>
Mrs. Monika Chopra	<i>Assistant Professor</i>
Ms. Deepika Sharma	<i>Assistant Professor</i>

On behalf of EHS Alliance Services

Name	Position	Qualifications
Dr. Uday Pratap	Lead Auditor	<i>Ph.D., PDIS, QCI – WASH, Lead Auditor ISO 14001:2015</i>
Ms. Pooja Kaushik	Co-Auditor	<i>M.Sc., Field Expert, QCI – WASH</i>

## EXECUTIVE SUMMARY

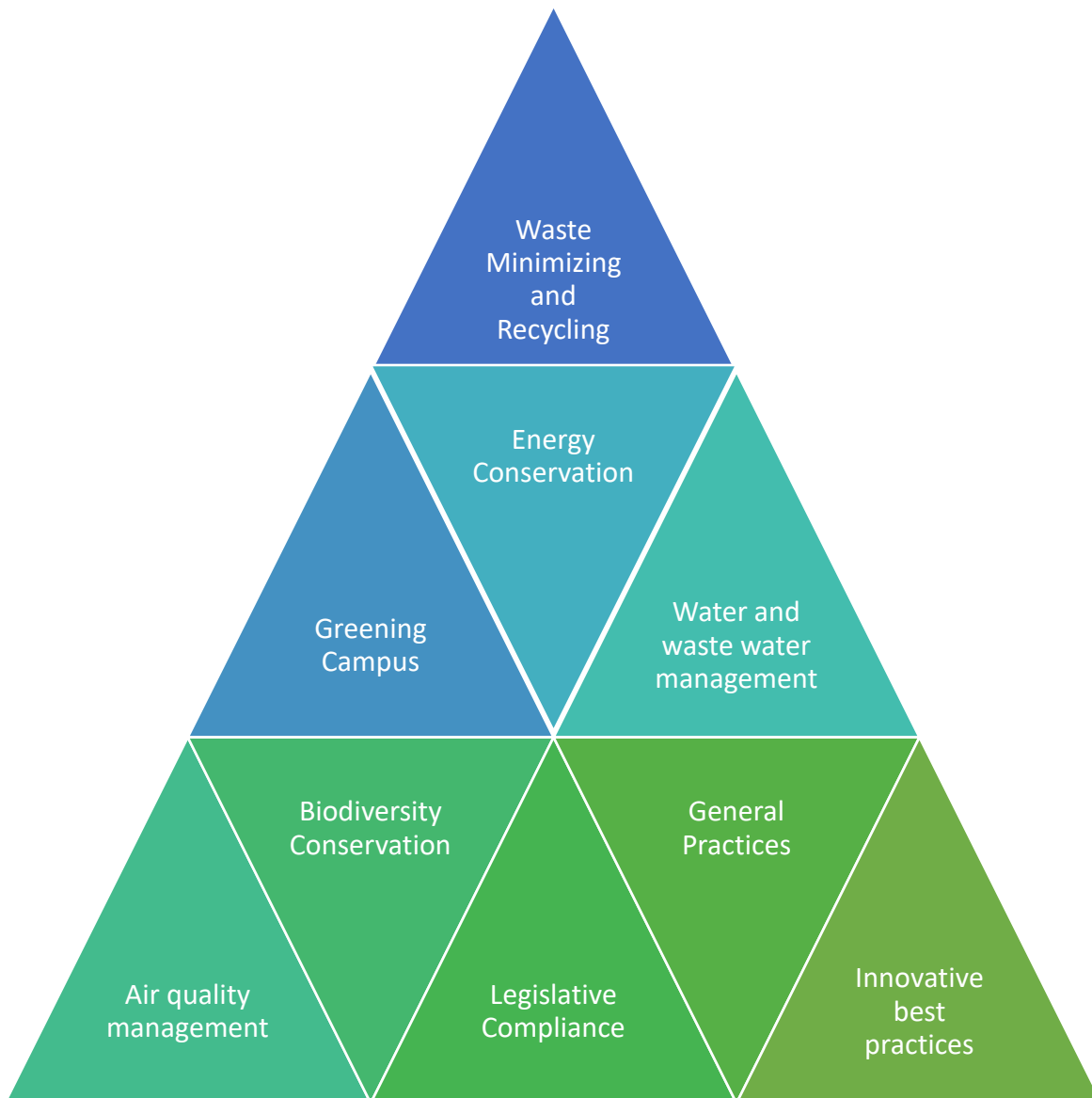
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The environment audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes out-dated unless there is some mechanism in place to continue the effort of monitoring environmental compliance. Our approach to promote a Green Campus to inculcate the sustainable value systems among the students, so that they carry the learning and practices them in their future endeavours. This will ensure that Sustainability and Environmental practices get embedded in all the institutions and organizations in the country.

A Green Campus is a place where environmentally friendly practices and education combine to promote sustainability in the campus which ultimately offers an institution the opportunity 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.



This is the second environment audit of college for doing their bit towards environmental protection and environmental awareness at local and global front. Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.



## WASTE MANAGEMENT

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## TYPE OF WASTE ON COLLEGE CAMPUS

To create effective waste management plans, college first need to know the type of waste being generated at the campus. Below, we have compiled a list of various kinds of waste commonly generated on institutional campus:

1. **FOOD WASTE** - College campus generates food waste. The average mess and canteen generates approximately 10 kg of food waste a day. The reasons for food waste on an educational campus may be over purchasing food to ensure a sufficient supply and then throwing it away, especially in all hostel messes where plentiful stores are essential. And in the cafeteria or hostel mess, students may pile food onto their trays, find it unappealing once they sit down and dutifully scrape it into the garbage. Immediate attention is given to the food waste minimization techniques.
2. **RECYCLABLE PAPER, CARDBOARD, PLASTIC, GLASS AND CANS** - Campus tends to produce vast quantities of these recyclables. Even in the digital age, many students, professors and staff members still prefer handwritten notes and end up with piles of unwanted paper once their courses and projects are complete. And shipments of necessary items throughout the year are likely to arrive in recyclable plastic and cardboard packaging. The same is sold/auctioned to the scrap vendors time to time.
3. **STUDENT CLOTHES AND HOUSEWARES** - As we have mentioned above, many students find it more convenient to throw away their clothes and dorm furnishings at the end of the year than donate or recycle them.
4. **E-WASTE** - Student and facility electronics often form a large portion of a campus's waste — As campus continually upgrade their computing facilities and office computers to keep up with the latest technology, the old computers have to go somewhere. So do old printers, phones, copy machines and other electronics that receive upgrades over the years. Discarded student electronics often become part of a campus's waste stream as well.
5. **CHEMICAL WASTE** - Chemical waste on a college campus may come from numerous sources. Campus laboratories generate waste chemicals, as do cleaning services. The detergents used in campus laundry rooms eventually become waste as well. Much of these chemical substances are hazardous waste under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and must undergo specific disposal processes according to state environmental rules and regulations.
6. **MAINTENANCE WASTE** - In the maintenance department, spent paints, solvents, adhesives and lubricants all form potentially hazardous waste. Because they are difficult to recycle, spent incandescent light bulbs usually become landfill waste. Spent fluorescent light bulbs, which contain small amounts of mercury, typically require special handling because of the environmental and health risks they pose.





7. **BIOLOGICAL WASTE** - Biological waste from laboratories will require special handling and disposal as per BMW Rules, 2016. Guru Nanak Girls College has installed number of furnace to manage lab's waste at different labs.
8. **FURNITURE** - Furniture waste on a college campus has a couple different sources. The campus itself may also get rid of old furniture as it modernizes its classrooms, cafeterias, computer labs and study spaces. Annually sold to junk dealer.
9. **BOOKS/MAGAZINES/NEWSPAPERS** - Books accounted for solid waste generation and institutions often generate tons of textbook waste. As courses upgrade to new editions, they may end up throwing their newly obsolete textbooks into the garbage if donation programs cannot use them. Students of Guru Nanak Girls College donates their text books and notes to junior students, or else are auctioned to reseller.
10. **C & D WASTE** - Expansion of campus building and renovation works result significant amount of construction and demolition waste that should be either used for back filling or disposed off through authorised dumping site by CPCB/SPCB.
11. **SOLID WASTE** - The College is managing solid waste by providing via composting and bio gas plant.
12. **HORTICULTURE WASTE** – College campus has lavished greenery and grounds that results significant horticulture waste which is managed by municipal cooperation.

## ENERGY CONSERVATION

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1. **List ten ways that you use energy in your institute. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.**

### **A. Electricity**

- *Lights, Fans, Air conditioners*
- *Lab equipment*
- *Computers in labs, faculty rooms & offices*
- *Electrical Appliances in Pantry*

### **B. LPG**

- *Cafeteria and hostel mess*

### **Ways to use less energy**

- *Replacing the conventional bulbs to LEDs*
- *Solar PV installed on building roofs*



- Use of natural light when possible
- Use large appliances together to reduce energy use.
- Cleaning of Filters on regular basis and replace them whenever needed.
- Turn off the switch on the socket after use.

**2. Are there any energy saving methods employed in your institute? If yes, please specify. If no, suggest some**

- Electricity is saved by use of LED bulbs for illumination.
- In Canteen, LPG is saved by use of pressure cookers for cooking food
- Switch off fans and lights when not in use
- Various energy conservation awareness programs for students and staff
- Keep the computers and ACs on power saving mode.

**3. How many CFL/LED bulbs has your institute installed?**

*Approx 80 % of Total Conventional bulbs and tubelights are replaced by LED Lights.*

**4. Do you run “switch off” drills at institute?**

Yes

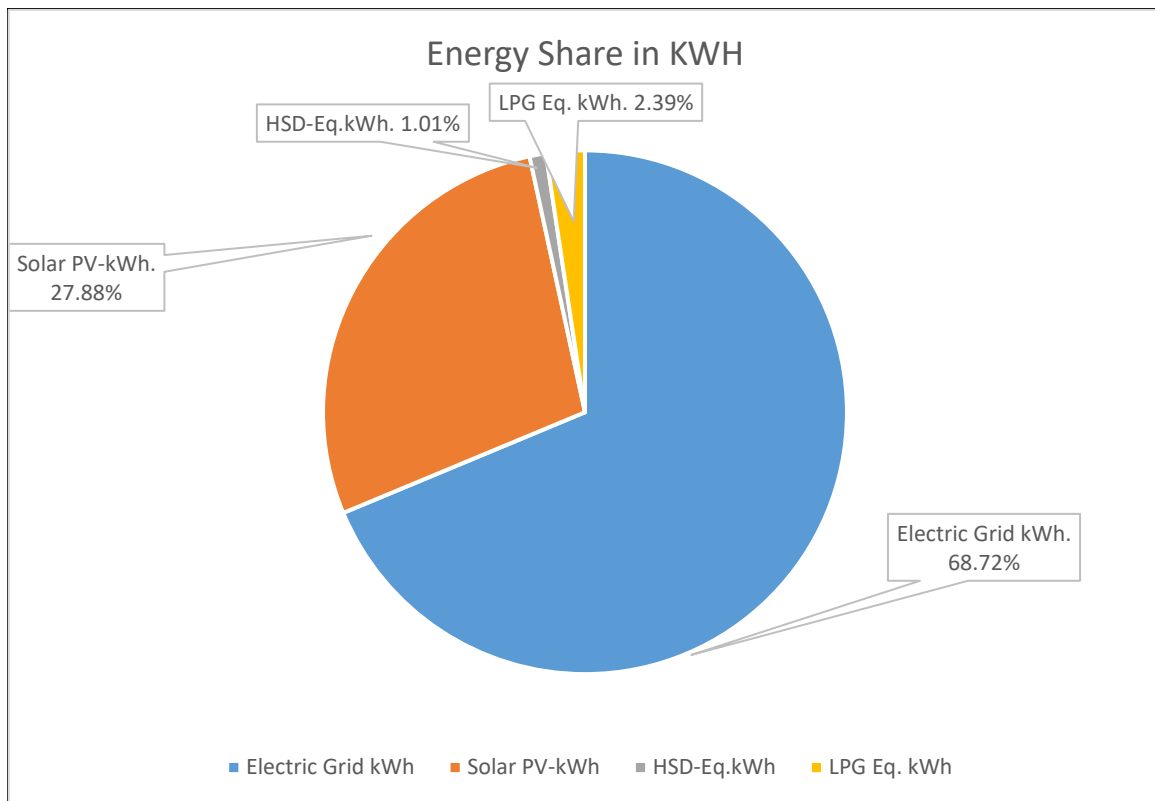
**5. Are your computers and other equipment’s put on power-saving mode?**

Yes

**6. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?**

*Yes, In office hours*

<b>Energy Share</b>	<b>kWh</b>	<b>Percentage</b>
Electric Grid kWh	177444	68.72%
Solar PV-kWh	72000	27.88%
HSD-Eq. kWh	2600	1.01%
LPG Eq. kWh	6170	2.39%
<b>Total -kWh</b>	<b>258214</b>	<b>100%</b>



# WATER AND WASTE-WATER MANAGEMENT

## 1. List uses of water in your institute

*Basic use of water in campus:*

*Drinking – 78.72 KL/month*

*Gardening – 25.08 Kl/month*

*Kitchen and Toilets – 233.38 KL/month*

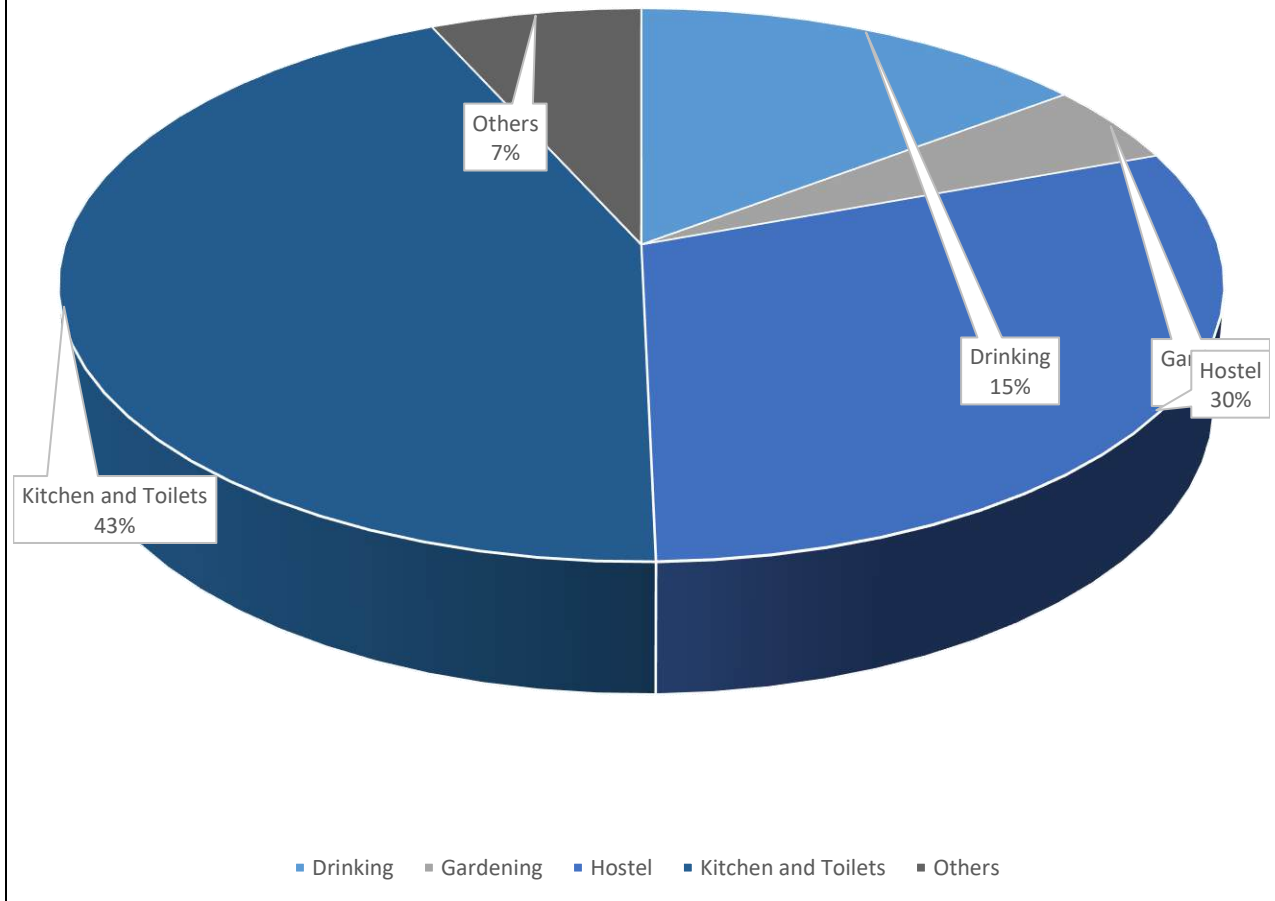
*Others – 36.13 KL/month*

*Hostel – 162 KL/Month*

*Total = 535.31 KL/Month*



Water Consumption (KL per Month)



## 2 How does your institute store water? Are there any water saving techniques followed in your institute?

*Available total water storage of the college is  $500 \times 8 = 4,000$  liters*

- *Avoid overflow of water-controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Sensor based taps are installed*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*



### 3. Locate the point of entry of water and point of exit of waste water in your institute. (Entry and Exit)

*Entry - Water comes from Municipal Corporation and Borewell*

*Exit- From Canteen, Toilets, Hostel, Bathrooms and Labs through covered drainage which is connected to sewage treatment plant, and treated water is used for gardening purpose*

### 4. Write down ways that could reduce the amount of water used in your institute

**Basic ways:**

- Close the taps after usage
- Water Conservation awareness for new students
- Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage
- Sensor based taps and push tap are installed to save water

### 5. Does your institute harvest rainwater?

*The college has three rainwater harvesting pits for better groundwater recharge. The stored water in this tank can be used for gardening purposes*



## 6. Is there any water recycling System?

Yes, Guru Nanak Girls College has fully functional STP (5 KLD) which treated the waste water. And treated water is being used for gardening purpose



*Drawing of STP/ETP*

# AIR QUALITY MANAGEMENT

## 1. Are the Rooms in Campus Well Ventilated?

Yes, as per National Building Code, guidelines

## 2. Window Floor ratio of the Rooms?

Very Good, ample daylight utilization because of big windows.

## 3. What is the ownership of the vehicles used by your campus?

There are 10 buses, 2 cars, 1 E-Rikshaw in college.



#### 4. Provide details of Institute-owned vehicles?

10 Buses – Diesel  
2 Cars – Petrol  
1 E-Rikshaw

#### 5. PUC done?

Yes

#### 6. Specify the type of fuel used by your campus's vehicles

10 Buses – Diesel  
2 Cars – Petrol  
1 E-Rikshaw

#### 8. Air Quality Monitoring Program (If, Any)

No





# ENVIRONMENT LEGISLATIVE COMPLAIANCE

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**1. Are you aware of any environmental Laws Pertaining to different aspects of environmental management?**

*Yes*

**2. Does your institute have any rules to protect the environment? List possible rules you could include.**

*Yes, Guru Nanak Girls College's- Eco club is conscious about the environment protection and takes proper measures in terms of awareness campaigns, activities, webinar, seminars, etc.*

**3. Does Environmental Ambient Air Quality Monitoring conducted by the Institute?**

*No*

**4. Does Environmental Water and Waste water Quality monitoring conducted by the Institute?**

*No*

**5. Does stack monitoring of DG sets conducted by the Institute?**

*No*

**6. Is any warning notice, letter issued by state government bodies?**

*No*

**7. Does any Hazardous waste generated by the Institute?**

*No*





# GENERAL INFORMATION

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**1. Does your institute have any rules to protect the environment? List possible rules you could include.**

- *Periodic Plantation drive*
- *Ban on single use plastic*
- *Biodegradable waste management through Composting and bio gas plant*
- *Water and energy conservation through posters*

**2. Are students and faculties aware of environmental cleanliness ways? If Yes Explain**

*Yes. Guru Nanak Girls College creates awareness through ECO Club activities, Webinars, cleanliness drives in the community.*

**3. Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?**

*Yes, World Environment Day, Ozone Day, Earth Day, World water day, World wetland Day, Earth hour and more are celebrated by campus.*

**4. Does Institute participate in National and Local Environmental Protection Movement?**

*Yes*

**5. Does Institute have any Recognition or certification for environment friendliness?**

*Yes*

**7. Does Institution conduct a green or environmental audit of its campus?**

*This is the second external audit carried out by the college.*



# INITIATIVES CARRIED OUT BY COLLEGE

---

## ➤ **Solid Waste Management**

- Systematically engage with the 3Rs of environment friendliness (Reduce, Reuse and Recycle).
- Collect paper waste produced on campus and collaborate with scrap dealers for recycling.
- Reduce use of paper by supporting digitization of attendance and internal assessment records.
- Reduce requirement of printed books by updating the e-books and e-journals collection of the college library.
- Take initiatives to spread awareness amongst students about food wastage and ways of minimizing it
- The habit of reusing and recycling non-biodegradable products
- Organizing workshops for students on solid waste management.
- There is ban on single use plastic and plastic crockery in the campus.
- College is in process to install sanitary waste disposal facility by installing incinerator as per CPCB guidelines for the management of sanitary waste -As per Solid Waste Management Rules, 2016

## ➤ **Liquid Waste Management**

- Maintain leak proof water fixtures.
- Minimize the use of water by constructing more Indian style toilets instead of western style toilets.
- Continued employment of a caretaker to take immediate steps to stop anywater leakage through taps, pipes, tanks, toilet flush etc.
- Reuse of wastewater generated by the Reverse Osmosis (RO) system in washrooms.

## ➤ **E-waste Management**

- College has a separate storeroom for the safe storage of electronic waste. After a certain interval of time college disposes of the E-waste to concerned agencies through the auction process.

## ➤ **Rain water harvesting**

- The central area of the new building of college has a rainwater harvesting system for better groundwater recharge. The stored water in this tank can be used for gardening purposes.

## ➤ **Renewable Energy**

- The college has also installed solar PV (80 KW) on the rooftop of building.
- The College is using solar lights for street lights.
- The college believes in using cleaner energy such as LED lighting.



- **Air Pollution Reduction**
  - Personal Vehicles (Students) are not allowed in the campus
- **Eco Club Activities**
  - National sports day was organized on 29th Aug 2024
  - International yoga day was celebrated on 23rd July 2024 by organizing a district yoga championship
  - Elocution competition was organized on 6th Nov 2023 in association with M R Pai Foundation
  - Poster making and slogan writing competition was organized on 13th Aug 2024
  - Pledge taking Oath ceremony was organized on 13th Aug 2024
  - International Women's Day was celebrated on 11th March 2024
  - Annual Athletic Meet was organized on 21st March 2024
  - Workshop was organized for preservation of milk products, vegetables and fruits in Krishi Vigyan Kendra, Damla on 13<sup>th</sup> march 2024

## RECOMMENDATIONS

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- Eco-friendly parameters should be included in the purchase of articles and goods for the campus.
- Car-pooling practices can be adopted by campus to minimise air pollution.
- The periodic maintenance schedule for solar PV, rainwater harvesting and STP to achieve optimised efficiencies.
- Environmental Monitoring i.e. Stack Monitoring of DG sets, Water monitoring, air quality monitoring needs to be conducted periodically (as per SPCB).
- Agreement with third party authorised vendors should be done for different types of waste management, such as BMW, paper waste, Plastic waste, etc.
- Reduce carbon emission by reducing the LPG and diesel consumption
- Initiate the use of solar geysers in hostel
- Water metering records should be in practice for water auditing and balancing.
- Borewell permission should be taken from CGWA.



# CONCLUSION

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This audit involved extensive consultation with all the campus team, interactions with key personnel on a wide range of issues related to environmental aspects. Overall, 40% of college campus is for landscaping. Guru Nanak Girls College is dedicated to promote the environment management and conservation in the campus and community. The audit has identified some suggestions for making the campus premise more environment friendly. The recommendations and suggestions are mentioned for campus to initiate actions.

The audit team opines that the overall site is well-maintained from environmental perspective. The recommendations in this report highlight many ways in which the college can work to improve its actions and become a more sustainable institution.

# REFERENCES

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



# ANNEXURE I – ENVIRONMENTAL RECOGNITION AND COMPLIANCE



## GURU NANAK GIRLS COLLEGE SANTPURA, YAMUNA NAGAR

(Affiliated to Kurukshetra University, Kurukshetra)  
Ph. 01732- 224372, Fax: 01732-200546  
( Accredited Grade "A" by NAAC)

### Green Campus Initiatives Policy

#### **Objectives of the Policy**

- To protect and conserve ecological systems and resources within the campus.
- To ensure judicious use of environmental resources to meet the needs and aspirations of the present and future generations.
- To integrate environmental concerns into policies, plans and programmes for social development and outreach activities.
- To work with all stakeholders and the local community to raise awareness and seek the adoption of environmental good practices and the reduction of any adverse effects on the environment.
- To continuously improve our contribution to climate protection and adaptation to climate change and to conserve global resources.
- To continuously improve the efficient use of all resources, including energy and water, and to reduce consumption and the amount of waste produced, recovering and recycling waste where possible.
- To make the campus plastic free.
- To conduct environmental and energy audits from time to time.
- To minimize the use of paper in administration through having policy for E-governance.

### ***Green Initiative Policy***



## GURU NANAK GIRLS COLLEGE SANTPURA, YAMUNA NAGAR

(Affiliated to Kurukshetra University, Kurukshetra)  
Ph. 01732-224372, Fax: 01732-200546  
(Accredited Grade "A" by NAAC)

### Policy for Water Conservation

Water is the most valuable resource on the earth. It is an obligation of the humanity to save water resources for the future generations. To protect water environment and save the fresh water

'Water Conservation Policy' has been adopted by our institution.

- Institution promotes economical use of water. Water must not be wasted at any cost.
- To fix the water leakage regular checking of leaks in pipes, toilets, taps, faucets, showers (in hostel) is mandatory.
- Institution promotes Investment in water saving equipments like double level flushing system in frequently used toilets, Urinals in gents' toilets and sprinklers in grassy lawns.
- Washing Machines are provided in hostels to minimize the use of water.
- More thrust is given to use refillable water bottles by the Staff and students on daily basis. To achieve this goal RO water coolers are provided on each floor.
- Strict instructions are given to sweepers to use floor mops and avoid wasting bucket loads of water to clean the dirt.
- Rain water harvesting is adopted by the Institution to collect and store rain water in Water Recharge Well/ Rain Harvesting Tank.

  
Offg. Principal

  
Director

### Water Conservation Policy



# ANNEXURE II – PHOTOGRAPHS OF ENVIRONMENTAL INITIATIVES



ETP Plant



Auto Push tap for water conservation



RO for water purification



Awareness poster making activity



Environment Awareness Posters



Color-coded dustbins



Sprinklers for water conservation



E-rikshaw for reducing pollution



Washing Machine in Hostel to Save Water



Vertical garden



Cleanliness drive



National sports day celebration





Elocution competition



Herbal Garden



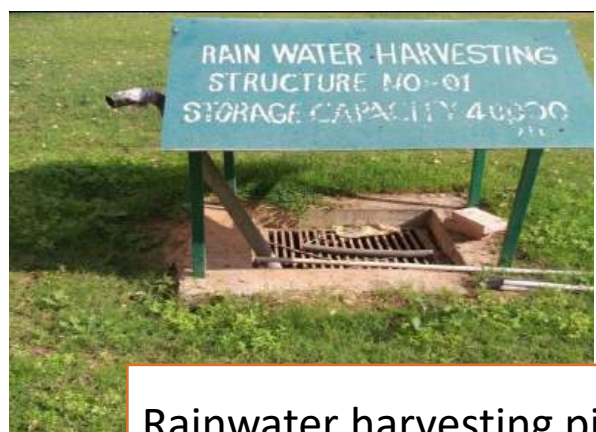
Flower Show



Awareness session in Krishi Vigyan kendra



World Environment Day Celebration by ECO CLUB



Rainwater harvesting pit

\*\*\*\*\* END OF THE REPORT \*\*\*\*\*



# **GURU NANAK GIRLS COLLEGE**

## **ENERGY AUDIT REPORT**

**2023-2024**

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Prepared by  
**EHS ALLIANCE**



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# CERTIFICATE



## CERTIFICATE

PRESENTED TO

# GURU NANAK GIRLS COLLEGE

Santpura, Yamuna Nagar, 135001, Haryana

That has been assessed by EHS Alliance Services for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

## ENERGY AUDIT

ACADEMIC YEAR 2023-24

The energy-saving initiatives carried out by the institution have been verified in the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards all types of energy used in the institution and sustainability are highly appreciable and noteworthy.

  
SIGNATURE



16.01.2025  
DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001  
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM



# ACKNOWLEDGEMENT

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EHS Alliance Services would like to thank the management of Guru Nanak Girls College for assigning this important work of Energy Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank ***Dr. Harvinder Kaur – Principal*** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank ***Dr. Neena Goyal, Associate Professor - Audit Coordinator***, for her continuous support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

***Dr. Mandeep Kaur - Assistant Professor***

***Dr. Prabhjot Kaur - Assistant Professor***

***Ms. Sandeep Reen - Assistant Professor***



# DISCLAIMER

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EHS Alliance Services Energy Audit Team has prepared this Energy Audit Report for Guru Nanak Girls College based on 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 conclusions are arrived following best estimates 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.

If you wish to distribute copies of this report external to your organization, then all pages must be included.

EHS Alliance, its staff and agents shall keep confidential all information relating to your organization and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies. EHS Alliance staff, agents and accreditation bodies have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.

**Vijay Singh**  
Lead Auditor EMS & Energy



**Dr. Uday Pratap**  
Co-Auditor EMS & Energy



# ABBREVIATION

---

<b>A</b>	<b>Amps</b>
<b>AC</b>	<b>Air Conditioner</b>
<b>AC</b>	<b>Alternating Current</b>
<b>AMET</b>	<b>Academy of Maritime Education and Training</b>
<b>CFL</b>	<b>Compact fluorescent lamp</b>
<b>CIP</b>	<b>Comprehensive Inspection Program</b>
<b>DC</b>	<b>Direct Current</b>
<b>HSD</b>	<b>High Speed Diesel</b>
<b>Hz</b>	<b>Hertz</b>
<b>kg</b>	<b>Kilogram</b>
<b>kVA</b>	<b>kilo-volt-ampere</b>
<b>kW</b>	<b>kilo Watts</b>
<b>kWh</b>	<b>kilowatt hour</b>
<b>kWp</b>	<b>Kilowatt peak</b>
<b>LED</b>	<b>Light Emitting Diode</b>
<b>LPG</b>	<b>Liquefied Petroleum Gas</b>
<b>MMS</b>	<b>Module mounting structure</b>
<b>MPPT</b>	<b>Maximum Power Point Tracker</b>
<b>NAAC</b>	<b>The National Assessment and Accreditation Council</b>
<b>SEC</b>	<b>Specific Energy Consumption</b>
<b>SPV</b>	<b>Solar Photovoltaic</b>
<b>STC</b>	<b>Standard Test Condition</b>
<b>TV</b>	<b>Television</b>
<b>V</b>	<b>Volts</b>
<b>W</b>	<b>Watts</b>
<b>W/m<sup>2</sup></b>	<b>watt per square metre</b>



# OVERVIEW OF THE COLLEGE

---

Guru Nanak Girls College, Santpura, Yamunanagar was established in 1973 by the great visionary and philanthropist, Sant Pandit Nischal Singh ji Maharaj. In an era when girls were confined within the barriers of domesticity, Sant ji initiated this noble task of educating them and thereby opening before them new vistas of knowledge and self- sufficiency. Firm on his arduous mission of emancipating women from the shackles which illiteracy force upon them, Sant ji planted this sapling which today has blossomed into a premier multi-faculty postgraduate institution.



The Managing Committee of Guru Nanak Girls College is strengthened and motivated at every step by the pious vision of its founder, Pandit Sant Nischal Singh Ji who dreamt of equipping the daughters of nation with the armour of education so as to make them self-reliant, confident, ethical and progressive individuals who endeavours to surge towards the glorious historical watersheds of humanism, spirituality and professional success.

The college has a fleet of 8 buses to bring students from the areas within a radius of 55kms. By providing easy and affordable conveyance to rural girls, we try to inch closer to our founder's dream of making education accessible to the rural folk. We have a highly qualified, experienced and diligent staff who act like mentors to the students and who consistently imbibe new methodologies in their teaching so as to make it student friendly.





The college organizes both academic and excursion trips for the students. Placement cell of the college takes them to job fests and counsels them about the career opportunities.

The college has fully furnished labs. Teachers make sure that the students imbibe practical knowledge of the subjects. There are three Computer labs, a studio and an editing lab, Dept. of Science has laboratories of Botany, Physics, Chemistry, Biotechnology and Biochemistry. The Dept. of Home Science has a Food & Nutrition lab, a Clothing & Textile lab and a cafeteria. There are two labs for Music –Instrumental and Vocal. A well equipped Language lab is used to develop English Communication Skills of students. There is a centrally air conditioned auditorium, a Seminar Hall with audio-visual facilities and a well stacked library which houses some rare books of divinity and some rare manuscripts.



## VISION

### ***Vision For Future Small Steps: Big Leaps***

- With a very specific objective of imparting education to girls, the college has many courses which increase job prospects and are also within the reach of weaker sections of the society. The top Management, the Principal and the staff keep themselves abreast with the current needs of the society.
- Bus facilities are provided to the girls coming from rural areas within the radius of 50 Kms.



- Students are provided with different types of scholarships so that they are able to continue their studies.
- Teachers visit rural areas to motivate the students to pursue higher education after 10+2.

With a progressive view to upgrade the college, there are different plans in place to improve & enhance the infrastructure – to provide adequate facilities to start new courses, enriching the faculty, increasing the teaching quality, developing e-content for our students in their easy to understand language from their own teachers are to name a few. We strongly believe that the futuristic vision of our college Management will make the dreams a reality. The plans are:

- To expand community college under UGC scheme
- To start more buses in rural areas
- To sign MOU with other universities / industries / NGOs
- To establish separate wings for Self-Financing Courses

## VALUES

### *Traditions and Value Orientations of the Institution*

Our founder Sant Pandit Nischal Singh Ji Maharaj laid emphasis on keeping the students rooted to their culture and moral values. To fulfill his dream, we have developed following practices which inculcate the value system and nurture in the young minds the healthy traditions of Indian society

- Respect for all the religions.
- The college has maintained a large number of books on various religions and faiths and encourages the students to read them. Such practice would inculcate in them the feelings of religious tolerance and brotherhood of mankind.
- Morning Prayer is a daily routine in our college.
- The college has in its premises Gurudwara Sahib which is open to all.
- From time to time our college organizes seminars and invites various religious scholars to present their views.
- Celebration of cultural festivals like Lohri, Teej, Basant Utsav, Dussehra and Prakesh Utsav of Guru Ram Das ji followed by langar is a regular practice.
- The college follows the teachings of the Great Guru and visionary Guru Nanak Dev Ji who propagated 'Sarbat Da Bhala' & 'Ek Pita Ekas Ke Hum Barik'. Students from different parts of the country belonging to different castes and creeds come here for higher education.



**Geo Coordinates: 30.1292564,77.2917283**

## Facilities in the campus

- 1. Sports Facility** – The college provides facilities for various Sports & Games as Weightlifting, Yoga, Fencing, Archery, Table-tennis, Volleyball, Kho-Kho etc. to participate according to interest & Capability of oneself to build overall personality and health. College celebrates International Yoga Day, National Sports Day, International Women Day by organising Sports Events for the women of the society. College conducts Annual Athletic Meet for its students. Besides College participates in Kurukshetra University Inter College Competitions & District Level championships of different Sports Disciplines as well our athletes participate at State, National, zonal & All India Inter University competitions in various games and sports. We are champions in the University for the last six times in Weightlifting since 2018. Since last two times we are champions in Hockey in 2022 & 2023 and won positions in other team games as Table Tennis, Yoga, Fencing, Archery and in individual medal winners in the games like Wrestling, Athletics, Fencing, Weightlifting etc.
- 2. Hostels** - Hostels of Guru Nanak Girls College aim at providing budget oriented and sociable accommodation for the girls. The college has three hostels – Two within the main campus and third in Govind Puri. The total accommodation capacity of these three hostels is 180 ; presently occupied by 90 girls .Each of these hostels has a female warden who is herself a faculty member of the college. Hostels have two, three, four and six seater rooms available,



which can be chosen according to the individual’s need. Hostels provide spacious, well lighted and airy rooms for comfortable stay of our students.

The food served to the hostellers is prepared under supervision by taking care of nutritional needs of the students and hygienic practices. The fresh meals provided to the residents are of different cuisine and relevantly served according to the season and occasion.

**3. Library** - The library is the most significant and sacred place for the generation of knowledge. It not only inculcates the habit of reading but stimulates a deeper quest for knowledge among students. Our college library is a very rich treasure house of wisdom of great thinkers, philosophers and scientists. It is one of the best libraries in Haryana with a very vast and rich collection of more than 67000 books, 90 periodicals, 40 national and 4 international peer reviewed journals. Besides this, we have 20000 journals and 1,25000 books available online through British Library and n list. The library has a complete database of books & journals which is fully computerized and are easily accessible.

**4. Transport** - College has a fleet of 8 buses to facilitate girl students in and around Yamuna Nagar. Presently approximately 700 girls are commuting from 208 villages and from 800 different stops, within a radius of 55 KM from our city.



SPORTS

HOSTEL



WELL EQUIPED GYMS



SMART CLASS



# AUDIT PARTICIPANTS

On behalf of college

Name	Designation
Dr. Harvinder Kaur	<i>Principal</i>
Dr. Neena Goyal	<i>Associate Professor</i>
Dr. Mandeep Kaur	<i>Assistant Professor</i>
Dr. Prabhjot Kaur	<i>Assistant Professor</i>
Ms. Sandeep Reen	<i>Assistant Professor</i>
Dr. Poonam Saini	<i>Assistant Professor</i>
Ms. Charu Panwar	<i>Assistant Professor</i>
Ms. Ramanjot Kaur	<i>Assistant Professor</i>
Mrs. Monika Chopra	<i>Assistant Professor</i>
Ms. Deepika Sharma	<i>Assistant Professor</i>

On behalf of EHS Alliance Services

Name	Position	Qualifications
Mr. Vijay Singh	Lead Auditor	<i>M.Sc. M. Tech (Environment Science &amp; Engineering), Energy Auditor, Post Diploma in Industrial Safety Management</i>
Dr. Uday Pratap	Co-Auditor	<i>Ph.D., EMS: Lead Auditor ISO14001:2015, QCI-WASH</i>





# EXECUTIVE SUMMARY

---

The purpose of this Energy Audit was to seek opportunities to improve the energy efficiency of the Guru Nanak Girls College. Reducing the energy consumption despite improving the human comfort, health and safety were of primary concern.

Beyond just identifying the energy consumption pattern, this audit sought to detect and categorize the most energy efficient appliances. Additionally, some daily practices relating common appliances have been shared which may help reducing the energy consumption. Data collection for energy audit of the campus was carried out by the EHS Alliance Team. The Energy Audit Report accounts for the energy consumption patterns of the institution on actual survey and detailed analysis during the audit.

The work comprehends the area wise consumption traced using suitable equipment. The analysis was carried out by our team with the support of the staff members from Guru Nanak Girls College. The report provides a list of possible actions to preserve and efficiently access the available source, resources and their saving potential was also identified. We look forward towards optimization that the authorities, students and staff members would follow the recommendations in the best possible way. The report is based on certain generalizations including the approximations wherever necessary. The views conveyed may not reveal the general opinion. They merely represent the opinion of the team guided by the interviews of clients. We are happy to submit this Energy audit report to the Guru Nanak Girls College.

## ENERGY AUDIT - ANALYSIS

---

### 1. ENERGY CONSUMPTION

To understand the Energy Consumption trends and for analyzing the average monthly consumption we have collected electricity energy bills from July 2023 to June 2024

The details of “**Meter Connection**” at “**Guru Nanak Girls College**” are as follows-

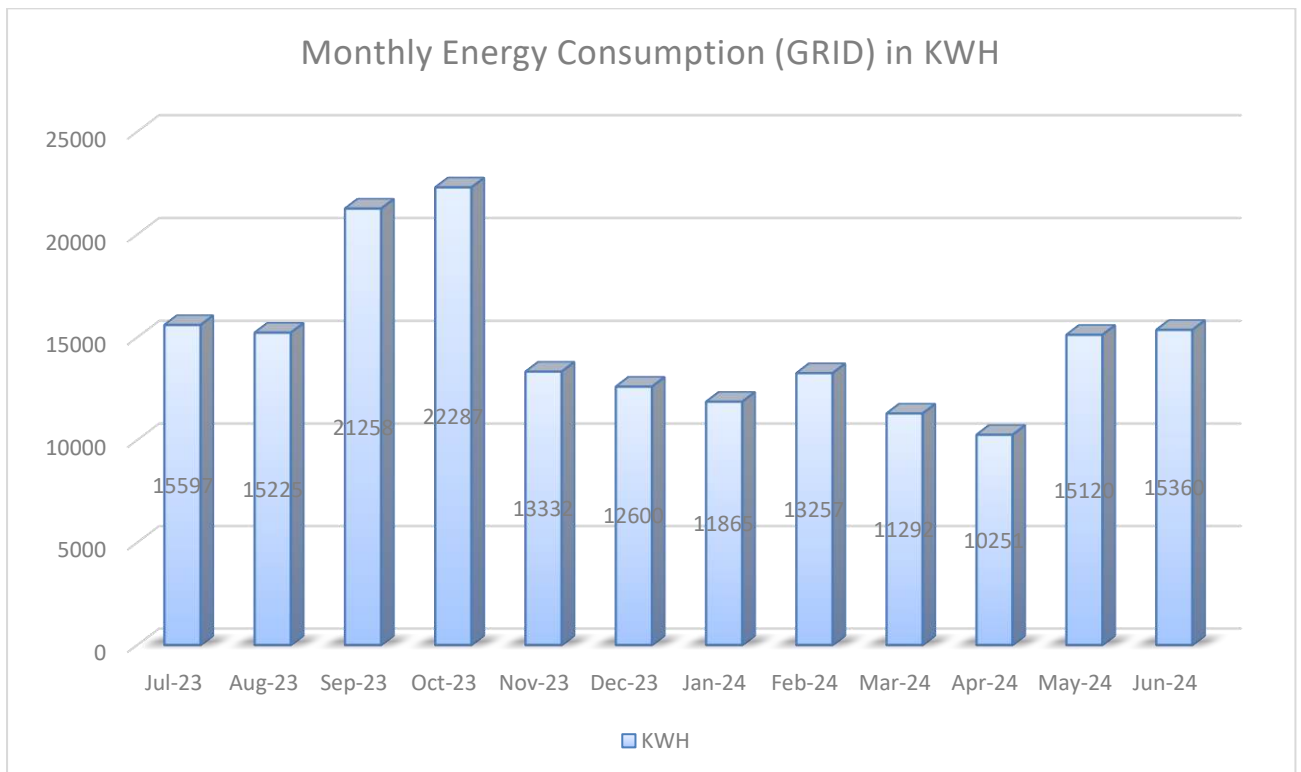
Name	-	Guru Nanak Girls College
CA No.	-	1566870000



## 1.1 Summary of Monthly Electricity Consumption and Total Bill Amount

To understand the Energy consumption trend and for developing the baseline parameter we have collected monthly energy bill for the 12 months i.e. from July 2023 to June 2024

Month	Grid Units	Amount	Solar Units	Total Units	Amount
Jul-23	15,597	8.00	6,000	0	1,24,776
Aug-23	15,225	8.00	6,000	0	1,21,800
Sep-23	21,258	8.00	6,000	0	1,70,064
Oct-23	22,287	8.00	6,000	0	1,78,296
Nov-23	13,332	8.00	6,000	0	1,06,656
Dec-23	12,600	8.00	6,000	0	1,00,800
Jan-24	11,865	8.00	6,000	0	94,920
Feb-24	13,257	8.00	6,000	0	1,06,056
Mar-24	11,292	8.00	6,000	0	90,336
Apr-24	10,251	8.00	6,000	0	82,008
May-24	15,120	8.00	6,000	0	1,20,960
Jun-24	15,360	8.00	6,000	0	1,22,880
<b>SUM</b>	<b>1,77,444</b>		<b>72,000</b>	-	<b>14,19,552</b>

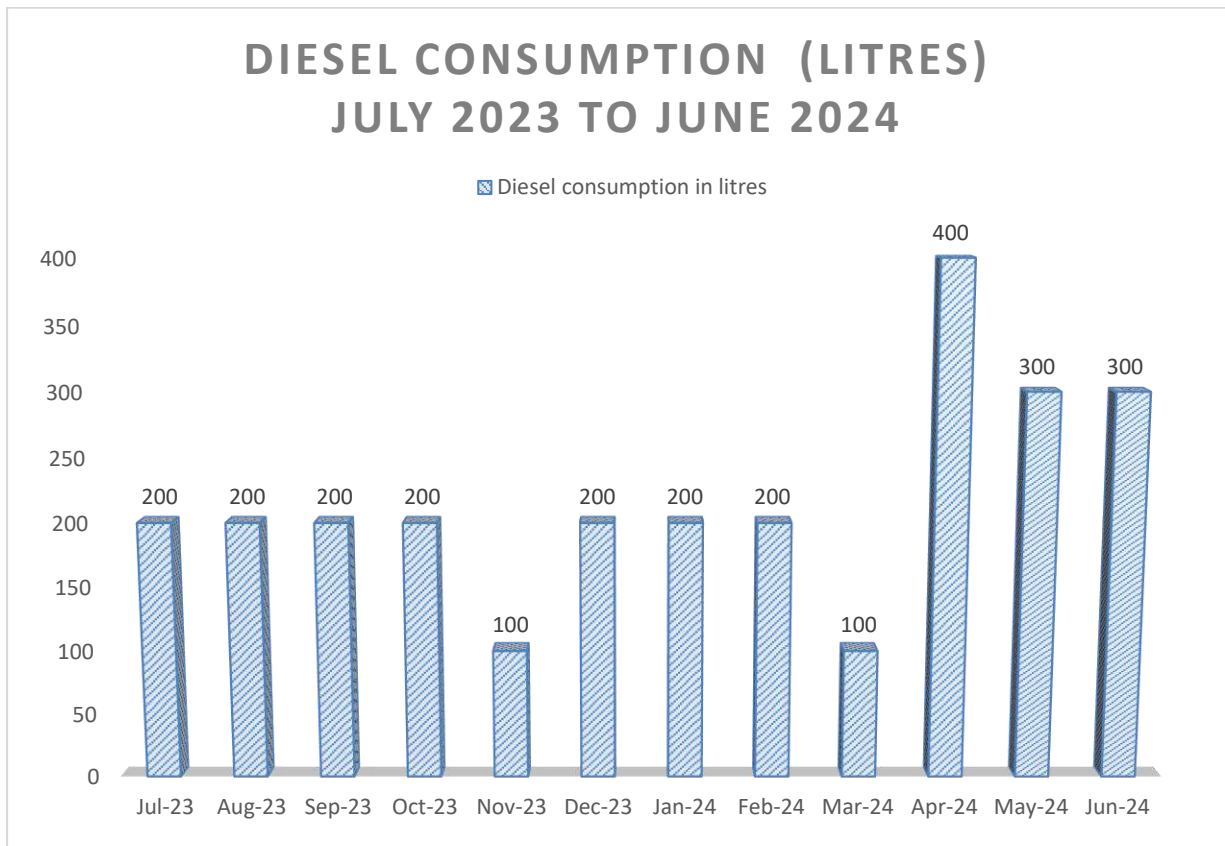




## 2. DIESEL CONSUMPTION

Below is the diesel consumption details in liters from July 2023 to June 2024.

Period	Diesel consumption (in litres)
Jul-23	200.00
Aug-23	200.00
Sep-23	200.00
Oct-23	200.00
Nov-23	100.00
Dec-23	200.00
Jan-24	200.00
Feb-24	200.00
Mar-24	100.00
Apr-24	400.00
May-24	300.00
Jun-24	300.00
<b>Total</b>	<b>2600.00</b>







### 3. ANALYSIS OF DG SETS

In the campus, there is only one Diesel Generator (DG) set for its electrical power needs in case of Grid power failure. DG sets capacity is 120 kVA.

DG Set Design Details		
<i>Description</i>	<i>Unit</i>	<i>DG at Station 1</i>
Rated capacity	kVA	120
Hz		50
Sl No.		RG 1-125WS-103
Make		Greaves
Volts	Volts	415
PF		0.8
Phase		3
RPM		1500
Amps	Amps	1000
Mfg.		29.03.2007

DG Set Operation details		
Operating hours during testing	Hours	0.50
% Loading	%	62.71
Energy Generation	kWh	31.64
Load	kVA	82.74
Fuel consumption during testing	Litre	5
Specific energy generation	kWh/litre	3.01

#### **Observation and Suggestions:-**

Soundproof silent generators are an efficient tool to keep both noise and vibration at low levels. For the power backup of the institution, the soundproof model is installed in the institution.

As per the trial taken during the energy audit the percentage loading of DG set is 62.71% which is ok and specific energy consumption of DG Sets 3.01 kWh/Litre which is satisfactory because as per manufacturer recommendation, best practices for SEC in DG sets range from 3.0 to 3.5 kWh/Litre and above.

We recommend college to initiate stack monitoring of DG set through authorized lab.



## 4. AC SYSTEM

*Energy Efficiency Ratio (EER):* Performance of smaller chillers and rooftop units is frequently measured in EER rather than kW/ton. EER is calculated by dividing a chiller's cooling

Capacity (in Btu/h) by its power input (in watts) at full-load conditions. The higher the EER, the More efficient the unit. The cooling effect produced is quantified as tons of refrigeration (TR). The above TR is also called as air-conditioning tonnage.

There are 21 Split ACs installed in Guru Nanak Girls College in various areas of various capacity which detail is given below: -

Sl No.	Location/Identification	Type(Window/Split)	Qty	RR. Tonnage	Room Temp. (°C)	AC-Tout (°C)	AC-Tin (°C)	Room-RH (%)	Area (m2)	Air velocity (m/s)	Enthalpy Hout	Enthalpy Hin	Heat Load in TR
--------	-------------------------	--------------------	-----	-------------	-----------------	--------------	-------------	-------------	-----------	--------------------	---------------	--------------	-----------------



1	Ground Floor	S	10	2	24	10	18	52	0.03	2.4	24	37	0.4
2	Ground Floor	S	1	2	23	12	20	52	0.03	2.3	25	38	0.3
3	Ground Floor	W	13	1.5	24	12	20	52	0.03	2.2	25	38	0.3
4	First Floor	S	7	1.5	24	11	19	52	0.03	2.6	24	37	0.4
5	First Floor	W	8	1.5	24	10	18	52	0.03	2.4	24	37	0.4
6	Second Floor	S	2	1.5	23	12	20	52	0.03	2.3	25	38	0.3
7	Second Floor	W	10	1.5	24	10	18	52	0.03	2.4	24	37	0.4
8	Third Floor	S	4	2	23	12	20	52	0.03	2.3	25	38	0.3
9	Third Floor	S	2	2	24	12	20	52	0.03	2.2	25	38	0.3
10	Third Floor	W	12	1.5	24	11	19	52	0.03	2.6	24	37	0.4
11	Robo lab	W	2	1.5	24	10	18	52	0.03	2.4	24	37	0.4
12	Library	W	1	1.5	23	12	20	52	0.03	2.3	25	38	0.3

Remarks: - We have checked Energy Efficiency Ratio of AC's and EER of AC's is fairly OK. But in future you should purchase 5-Star rated inverter based split AC's because power consumption of Inverter based BEE 5-Star rated AC's is less than non-star rated AC's.

Also, we recommend Guru Nanak Girls College to organize periodic maintenance schedule and take corrective actions for insulating of AC's refrigerant lines in order to protect energy losses.





## 5. FANS ANALYSIS

In the Guru Nanak Girls College, there are 342 fans installed, all are ceiling fans of 60W. The observation and suggestion are given below.

Sl No.	Location/Identification	Ceiling Fan-60W
1	Basement Lab 1	6
2	Basement Lab 2	6
3	Basement Lab-3	6
4	Basement Lab -4	6
5	Basement Lab -5 GSS	6
6	Basement Lab 6 (PE)	6
7	Basement Drive Lab	6
8	Basement Lab -CSE	4
9	Basement - Project Lab	6
10	Basement HVE Lab	6
11	Ground Floor	120
12	First Floor	99
13	Second Floor	120
14	Third Floor	141
15	NBH	253
16	Tej Hostel	178
17	Robolab	9
18	Library	40

<b>Total no of Ceiling Fans (70/80W)</b>	=	342	Nos.
<b>Total wattage of 60W Ceiling Fans</b>	=	20520	Watt
<b>Total wattage of BEE 5 Star rated Fans (30W)</b>	=	10260	Watt
<b>Total saving in Wattage after replacement</b>	=	10260	Watt
<b>Operating hours per day</b>	=	8	Hours
<b>Operating days per annum</b>	=	182	Days
<b>Energy charges per unit in Rs.</b>	=	8	INR
<b>Saving in Rs./annum</b>	=	119508	INR
<b>Investment INR</b>	2500	855000	INR
<b>Payback period</b>	=	7.15	YEARS

### Observation and Suggestions: -

In the college, all the ceiling fans are of 60 W but BEE 5 Star Rated of 30W Ceiling Fans are present in the market. We recommend to replace existing fans to BEE 5 Star rated 30W fans.



Note:- Energy saving will increase or decrease if operating hours of machine /equipment will be increased or decreased and payback period will also increase or decrease if cost of investment (Cost of machine/equipment/accessories of machine) will increase or decrease because cost of investment is taken on tentative basis.

## 6. ANALYSIS OF LIGHTING SYSTEM

### 6.1 Brief description of existing system

For assessing energy efficiency of lighting system, Inventory of the Lighting System has been noted / collected, with the aid of a lux meter, measurement and documentation of the lux levels at various locations at working level has been done.

### 6.2 Inventory of Lighting

Sl. No.	Location/ Identification	200W-LED High Mast	10 W LED D	18 W LED Light	12 W LED Round	36 W Tube light	18W LED Flood	20 W LED D
1	Basement	0	0	25	0	60	0	0
2	Ground Floor	0	0	32	0	48	40	13
3	First Floor	0	0	35	0	40	0	25
4	Second Floor	0	0	30	0	47	0	10
5	Third Floor	0	0	80	0	25	0	0
6	Main Gate	2	0	5	0	0	7	0
7	NBH Hostel	4	131	200	0	195	0	0
8	Tez Hostel	2	69	150	0	50	0	0
9	Robolab	0	0	0	0	18	0	0
10	Library	0	0	24	96	2	0	0

### 6.3 Lux Measurement

Description	Lux	Remark
<b>Class Rooms</b>	120 to 235	Acceptable
<b>Offices</b>	130 to 240	Acceptable
<b>Corridors</b>	35 to 90	Acceptable
<b>Washrooms</b>	45 to 76	Acceptable



<b>Outdoor</b>	36 to 95	Acceptable
<b>Computer Lab</b>	150 to 289	Acceptable
<b>Parking area</b>	45 to 94	Acceptable
<b>Canteen</b>	69 to 185	Acceptable

## Observation

College has initiated LED based lighting solution, but still there are 485 (36W) tube lights. LEDs save energy, the life span is much greater and emit virtually no heat. We recommend to replace the tube lights with LEDs.

Additionally, we recommend to install motion sensor-based lights in common areas such as library, washrooms, corridors, etc.

We also recommend to use solar lights for open areas like parking, ground, street lights, etc. and motion sensor lights for common areas such as library, corridors, washrooms, etc. Table below shows the performance characteristics comparison of all luminaries.

Table - Luminous Performance Characteristics of Commonly Used Luminaries					
Type of Lamp	Lumens/Watt		Colour Rendering Index	Typical Application	Typical Life
	Range	Avg.			
<b>Incandescent</b>	8-18	14	Excellent (100)	Homes, restaurants, general lighting emergency lighting	1000
<b>Fluorescent lamps</b>	46-60	50	Good w.r.t coating (67-77)	Offices, shops, hospitals, homes	5000
<b>Compact fluorescent Lamps (CFL)</b>	40-70	60	Very Good (85)	Hotels, shops, homes, offices	8000-10000
<b>High pressure mercury (HPMV)</b>	44-57	50	Fair (45)	General lighting in factories, garages, car parking. flood lighting	5000



<b>Halogen lamps</b>	18-24	22	Excellent (100)	Display, flood lightening, stadium exhibition grounds, construction areas	2000 - 4000
<b>High pressure sodium (HPSV) SON</b>	67-121	90	Fair (22)	General lighting in ware houses, factories, street lighting	6000 - 12000
<b>Low pressure sodium (LPSV) SOX</b>	101-175	150	Poor (10)	Roadways, tunnels, canals, street lighting	6000 - 12000
<b>Metal halide lamps</b>	75-125	100	Good (70)	Industrial bays, spot lighting, flood lighting, retail stores	8000
<b>LED Lamps</b>	30-50	40	Good (70)	Reading lights, desk lamps, night lights, spotlights, security lights, signage lights, etc.	40000 - 100000

## 7. OTHER POWER CONSUMPTION

### 7.1 Inventory of IT Infrastructure

Sl No.	Location/Identification	Deskt op	Lapt op	Printe rs	Scanne rs	Serve rs	Other
1	Registrar Office	6	2	2	1	0	0
2	Account Office	6	0	2	0	0	0
3	Robotic Lab 1	6	1	1	0	0	0
4	Robotic Lab 2	2	0	0	0	0	0
5	T&P Office	4	1	3	0	0	0
6	Exam Cell	7	1	2	0	0	Photocopy -1
7	Admission Cell	1	0	0	0	0	0



8	Board Room1	1	0	1	0	0	2 TVs
9	Board Room2	2	0	1	0	0	1 TV
10	TV Studio	2	0	0	0	0	1 TV
11	Principal Office	3	1	1	0	0	0
12	Director Room	5	1	2	0	0	1 Photocopy Machine
13	Estate Room	1	0	1	0	0	0
14	CSE Dept	10	0	2	0	0	0
15	CSE Staff Room	7	0	0	0	0	0
16	SDC Cell	4	0	1	0	0	0
17	MBA Dept	4	0	1	0	0	0
18	R&D Lab	1	0	0	0	0	0
19	LT-11	1	0	0	0	0	0
20	Civil Dept	3	0	1	0	0	0
21	3rd Floor	1	0	0	0	0	0
22	EE Dept	4	0	1	0	0	0
23	ME Dept	2	0	1	0	0	0





24	CL12	31	0	0	0	0	0
25	CL13	60	0	0	0	0	0
26	CL-14-A	31	0	0	0	0	0
27	CL-14 B	30	0	0	0	0	0
28	CL-15	30	0	0	0	0	0
29	CL-16	30	0	0	0	0	0
30	CL-17	30	0	0	0	0	0
31	CL-18	30	0	0	0	0	0
32	CL-19	30	0	0	0	0	0
33	CL-20	30	0	0	0	0	0
34	TEZ Lab	30	0	0	0	0	0
35	EE CL	24	0	0	0	0	0
36	ME CL	30	0	0	0	0	0
37	CL-26	40	0	0	0	0	0
38	CL-27	40	0	0	0	0	0
3	CL-28	40	0	0	0	0	0



9							
40	CL-29	40	0	0	0	0	0
41	CL-30	40	0	0	0	0	0
42	CL-31	30	0	0	0	0	0
43	CL-32	50	0	0	0	0	0
44	CL-33	30	0	0	0	0	0
45	CL-34	50	0	0	0	0	0
46	CL-35	50	0	0	0	0	0
47	Mechatronics Lab	5	1	4	0	0	0
48	Library	14	0	2	0	0	0
49	President Office	3	1	2	0	0	0
50	Vice President	2	0	2	0	0	0
51	NBH Hostel	3	0	0	0	0	0



## 7.2 Water pump details

Sr. No.	Description	Unit	Pump No.-1	Pump No.-2	Pump No.-3	Pump No.-4	Pump No.-5	Pump No.-6
1	Rated Power of Motor	KW	7.3x2	2.2	2.2	2.2	1.5	1.5
2	Motor Eff.	%						
3	Discharge Head	m	151	36	50	5	4	4
4	Suction Head	m		10	10	3	3	34
5	Pump Type	Submersible/ Monobloc/ Centrifugal Etc.	Submersible	Monoblock	Monoblock	Monoblock	Monoblock	Monoblock

## 7.3 Other Loads

Sl No.	Location/Identification	60W Exhaust Fan	160W Exhaust Fan
1	Third Floor -Staff Toilet	1	
2	Third Floor CSE Lab	1	
3	Third Floor CSE Lab17	2	
4	Third Floor CSE -18	2	
5	Third Floor CSE-19	1	
6	Third Floor- Dark Room	2	
7	Third Floor Physics Lab	2	
8	Third Floor Chemistry Lab	1	
9	Third Floor Boys Toilet	1	
10	Girls Toilet	1	
11	LT-41	1	
12	LT-42	2	
13	LT-43	1	
14	LT-45	1	
15	LT-46	1	
16	LT-47	2	
17	Second Floor	13	2
18	First Floor	10	1
19	Ground + Basement	7	8

## ANALYSIS

There should be regular maintenance schedule of equipment like pumps, exhaust fans and IT equipment. Electronics such as computers, printers, scanners, etc. more than 3 year or 5



years (as per their life) should be replaced with new computers/laptops. Ideal Temperature should be maintained for all electronic appliances.

## 8. CAPACITOR BANK

S. No	Capacity in KVAR	Quantity
1	Not Available	0



\*\*\*\*\* **END OF THE REPORT** \*\*\*\*\*