

GREEN AUDIT REPORT



GOVERNMENT SHIVALIK COLLEGE, NAYA NANGAL DISTT: ROPAR, PUNJAB

AUDIT CONDUCTED ON: 28 & 29.8.2023

CONDUCTED BY:

R.K. ELECTRICALS & ENERGY AUDIT SERVICES (ISO Co.)

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CERTIFICATE

It is certified that "**Govt. Shivalik College situated at Naya Nangal, Punjab**" performed a detailed Green Audit of their campus on 28.08.2023 to 29.08 2023 during the academic year 2022-2023. The campus is spreaded over 16.0 acres and approximately 40% area is under green cover. The campus management has well maintained about 148 no all the plants i.e., herbs, shrubs, medicine plants and trees. There is also faunal diversity at college campus. Based on the submitted all required data and credentials for evaluation, the campus's actions and measures have been verified and found to be commendable. The efforts made by staff and students in the areas of lush green environment and sustainability are much appreciated and encouraged.

For R.K. ELECTRICALS & ENERGY AUDIT SERVICES

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1. ACKNOWLEDGEMENTS

“R.K. ELECTRICALS & ENERGY AUDIT SERVICES” expresses sincere thanks to the

1. Ms. Seema Principal

for giving us an opportunity to conduct the Green Audit of the building Government Shivalik College Naya Nangal.

The Study team members of **R.K. ELECTRICALS & ENERGY AUDIT SERVICES** sincerely thanks **Dr. Bindu Sharma, the Project Coordinator &** support staff members of Government Shivalik College Naya Nangal who have rendered their all-possible co-operation and assistance during the entire period of assignment.

For R.K. Electricals & Energy Audit Services

2. EXECUTIVE SUMMARY

R.K. ELECTRICALS & ENERGY AUDIT SERVICES was entrusted the Green audit of **Government Shivalik College, Naya Nangal**. The management of the college is conscious with regard to improve sustainability and complementary to its Green Policy. The purpose of this audit was to ensure that the practices followed in the campus are in accordance with the green policy adopted by the institution, it works on several facets of Green Campus including water conservation, electricity conservation, tree plantation, waste management, paperless work, mapping of biodiversity Keeping in view these issues in mind, the specific objectives of the audit are to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards.

The College aims to minimize the environmental impact of its operations and move towards restoring environmental integrity, promote social justice, equity and diversity contribute to human health and maintain its financial viability.

As part of its commitment to sustainability, the college has developed a Sustainability Policy and Sustainability Strategy and is now developing a series of Sustainability Action Plans on energy and greenhouse, water, transport and waste to support implementation of the Policy and Strategy.

This document deals with Green Audit of **Government Shivalik College, Naya Nangal** for the academic year 2022-2023.

2.1. The brief description of Premises

Project Title: Green Audit of Government Shivalik College, Naya Nangal	
Client: Principal, Government Shivalik College, Naya Nangal,	
Contact Person: Mr. Nishant, the Project Coordinator	
Date of Audit: 28.08.2023 to 29.08 2023	
Source: Data collection from the staff & Physical verification/Inspection	
Date of report: 31.08.2023 Report Number: RKS/GA-29/2023	
Work Carried out by:(Team Composition)	Er. R.K. Sharma (BEE's Energy Auditor) EA-10080, Green Building AP Mrs Savita Sharma MSc (Ecology Environment) Er. Varun Sharma B. Tech (EE), MBA, PGD (Indl Safety) Er. Vibhor Aggarwal (BEE C/Energy Auditor)

3. INTRODUCTION

3.1. Back ground of Government Shivalik College, Naya Nangal The Bhakra- Nangal Complex is a unique achievement of Independent India. The complex had remained without an institute of higher education during many years of its existence. Although efforts were made from time to time to start a college at Naya Nangal yet it could not see the light of the day till 1979 when this college came into existence. The College is situated at a site measuring about 16.0 acres in picturesque surroundings on the right bank of the Satluj, on the Nangal-Bhallan Road about 2.5 kms. from Nangal Dam. The College was taken over by the Government of Punjab on May 12, 1997. The College complex comprises three Teaching Blocks (Three-storeyed each), a Library-cum-Administrative Block, a student's Centre, a Sports Complex and a Cycle Stand.

The college is affiliated to Punjabi University, Patiala. It has a spacious and beautiful campus with manicured lawns, fully equipped modern laboratories; a highly rated well-stocked Library with wide collection of books, periodicals, journals and magazines. The college has sprawling playground, a gymnasium and a Canteen. The computer labs consist of latest version of computers with broadband internet facility, LAN and required soft wares. The college has highly qualified, experienced and devoted faculty out of which 11 are Ph.Ds. and 08 are M. Phils. The College is efficiently run with the help of 38 members of administrative and technical staff. The college also promotes research work among its faculty. Students' full participation and involvement is encouraged in curricular and extra-curricular activities like Youth Welfare, NSS, NCC and Red Cross and cultural activities. Efforts are also made to inculcate various healthy practices and values among the students.

The Library also has a UGC Network Resource Centre with free Wi-Fi access to students. The Administrative Block is also Wi-Fi enabled. The college is dedicated to the pursuit of excellence in every sphere. Percentage of success rate at the undergraduate level has been much higher than the University percentage which is quite impressive. At P.G. level the success rate is almost 100% with most of the students obtaining first classes. The Drop out rate is within 5%.

3.2. Vision

The college aims to internalize among the students a strong commitment to human values and social justice and sensitize them to evolve a scientific temper and spirit, as reflected in the Motto of the college - Deh Shiva Var Mohe Shubh Karman te Kabhu na taro- Nishche kar apni Jeet karo ("Grant me this Boon, O God, May I never refrain, from righteous acts, may I fight without fear, all foes in life's battle with confident courage, claiming the Victory")foes in life's battle with confident courage, claiming the Victory")

3.3. Mission

The mission is to create a progressive model of lifelong learning, teaching, evaluation and research which is in sync with the changing needs of industry, commerce, public & private sector. The mission of the college is to create a progressive and creative cadre of youth, able minded, dynamic and epitome of ethical values; being in tune with the evolving demands of society and sensitive to regional, national and international aspirations.

3.4. Objectives

The objectives of the institution are:

- Providing Job-oriented and Professional courses besides easy access to quality education in the traditional courses in Science, Humanities and Commerce to meet the long-standing demand and expectations of the predominantly rural and backward population of the area. The college has proposed the followings courses under UGC (B.Voc Scheme):
 1. Retail Management and information Technology.
 2. Food Processing
- Widening the scope of education at both vertical and horizontal levels.
- Providing educational empowerment to female population, especially from rural areas and from economically and socially weaker sections.
- Internalizing a strong commitment to human values and social justice among the youth and sensitizing them to evolve a scientific temper and independence of mind and spirit as reflected in the motto of the college.
- To mould students into rational thinkers, competent workers and socially aware citizens.
- To sensitize the students towards inclusive social concerns, human rights and environmental issues.
- The vision, mission and objectives of the institution are communicated to the students, teachers, staff and other stakeholders through college prospectus, notices and with formal & informal interactions during Orientation Programmes, P.T.A meetings, HEIS Board of Governors' meetings & Staff meetings.
- Acquiring new professional courses for the knowledge and skills enhancement of our student as well as pass out students.

4. OBJECTIVES OF THE STUDY

4.1 Green Audit

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyze environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO₂ from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green & Environment Audit Report. 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.

4.2 Utility of Green Audit

These are used to help improve existing human activities, with the aim of reducing the adverse effects of these activities on the environment. The audit team will study organization's environmental effects in a systematic and documented manner and will produce a green audit report

4.3 About National Assessment and Accreditation Council (NAAC): is a government in India that assesses and accredits Higher Education Institutions (HEIs). It is an autonomous body funded by the University Grants Commission and headquartered in Bangalore

(NAAC) conducts assessment and accreditation of Higher Educational Institutions (HEI) such as colleges, universities or other recognised institutions to derive an understanding of the 'Quality Status' of the institution.

In a nutshell, improving quality is the immediate goal that NAAC wants institutions to think and act on.

Advisory Note: NAAC issued advisory note on 26th May 2022 vide their letter No.14-29/2022 that it should be ensured that ISO certificates are from certifying agencies accredited either by NABCB or any member AB of IAF. The certificate should carry the logo of the AB concerned which is attached as annexure at page 57

5. METHODOLOGY

Methodology adopted for achieving the desired objectives viz: physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following area to summarize the present status of environment management in the campus:

- I. Geographical Metrological parameters
- II. Water consumption and management
- III. Electricity consumption and management
- IV. Air quality assessment and management
- V. Sound pollution monitoring
- VI. Waste management
- VII. Biodiversity status of the campus

6. GEOGRAPHICAL AND METROLOGICAL PARAMETERS



Lush Green Campus of Govt Shivalik College Naya Nangal Campus as seen in satellite image (Source – Google Earth)

Naya Nangal is a town, near Rupnagar city and the Bhakhra Dam in Rupnagar district of Punjab, India. It is part of Nangal, and is a planned town having sectors similar to the city Chandigarh. The town was created for employees of National Fertilizers. It has a railway station and a market divided sector wise.

6.1. Weather Bins

This area has a humid subtropical climate characterized by a seasonal rhythm: hot summers, cold winters, unreliable rainfall and great variation in temperature. Naya Nangal weather by month weather averages:

During three months of monsoon season from July to September, the moist air of oceanic origin penetrates into the district and causes high humidity, cloudiness and good monsoon rainfall. The period from October to November constitutes post monsoon season. The cold weather season prevails from December to February followed by the hot weather season or Pre-monsoon season which ends up to the last week of June.

6.2. Rain fall

The normal annual rainfall of Naya Nangal typically receives about 149.84 millimetres (5.9 inches) of precipitation and has 135.29 rainy days (37.07% of the time) annually. July and August are the rainiest months. Rest of the annual rainfall occurs during other months of the

year in the form of thunder storm and western disturbances. Rainfall in the district increases from southwest to northeast. Therefore, climatically, the district has a very hot in summer and frequently scorching heat is in full swing. The climate of Nangal area can be classified as tropical steppee, semi arid and hot which is mainly dry except in rainy months and characterised by intensely hot summer and cold winter. During three months of monsoon season from July to September, the moist air of oceanic origin penetrates into the district and causes high humidity, cloudiness and good monsoon

7. WATER CONSUMPTION AND MANAGEMENT

7.1. Water extraction and Storage

The Campus has made the provision for storage the water for the facility of the staff and students in the college The college has about 23 overhead water storage PVC tanks placed on college buildings which are filled from overhead water tank operated by local Municipal Corporation.

7.2. Drinking water and quality

Reverse Osmosis Plant - Reverse osmosis (RO) is a membrane separation process, driven by a pressure gradient, in which the membrane separates the solvent (generally water) from other components of a solution. The membrane configuration is usually cross-flow. The campus has provided purified R.O. drinking water to all the students and staff in the campus by installing RO filters with all water coolers in campus.



Measured pH value and TDS Value of RO filtered drinking water

Auditors checked the quality of the drinking water after it is treated from RO Plant by taking a sample and found the quality water which is as under:

Sr. No.	Particulars of checked item	Value	Remarks
1	Sample of drinking water for testing PH Value	7.7	Good
2	Sample of drinking water for testing TDS (total dissolved solids) Value	108 ppm	Fair

Findings and comments

1. The PH value of safe drinking water lies between 6.5 & 8.5

Tested the sample of drinking water and found to be 7.7 which is Neutral PH value for safe drinking water

2. The TDS value of safe drinking water is less than 300 ppm

The TDS value of tested sample found to be 108 which is good and safe for drinking water

7.3. Water Conservation

Govt College, Naya Nangal has developed for the various water-use categories in the office buildings and for monitoring and operational procedures. They are grouped according to indoor water use, outdoor water use, and monitoring and operational procedures.



← Press and flush water urinals have been installed in GSC, Naya Nangal, thus minimising water wastage in wash rooms.

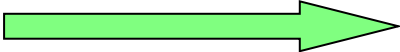

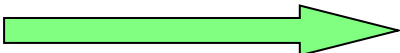

However, it is recommended that sensor-based Urinals be installed in washrooms so as to further minimise water use in this activity →



7.4. Use of Efficient Water Urinals/Fixtures

- **Low water use urinals:** Govt College, Naya Nangal is using standard systems urinals. Water is applied by pressing the water taps and is disconnected as and when hand pressure is removed thus saving water wastage.
- **Smart flush systems:** Now a days smart flush system using 0.8 litres per flush have also been launched. It is advised to Govt Shivalik College Naya Nangal Campus management to install smart sensor-based taps to further avoid water wastage in urinals.
- **Waterless urinals:** There are various technologies available for waterless urinals. In oil barrier technology, the urinals operate using an oil wall between the urine and the atmosphere, preventing odour from escaping.
- **In another technology,** the barrier has been replaced by a seal with a collapsible silicone tube that closes after the fluid has passed through it, to prevent gases from flowing into room.
- **Other system** uses biological blocks which include microbial spores and Surfactants which can be placed into any urinal, thus eliminating water use

Other Areas which need attention for water conservation include

-  **Identifying and Fixing Leaks**
-  **Review Leakages periodically & take corrective measures**
-  **Re-use Water**
-  **Re Cycle Water**

7.5. Identifying and Fixing Leaks

The hidden water leaks can cause loss of considerable water and energy without anyone being aware of it. A small leak can amount to large volumes of water loss. Leaks become larger with time, and they can lead to other equipment failure. Fix that leaky pipe, toilet, faucet, or roof top tank to save considerable amount of money and water

7.6. Review Leakages periodically and take corrective measures

Regular maintenance of the toilets should be carried out. Test for leaks and make necessary repairs promptly. Keep the toilet in working order by periodically inspecting and replacing flappers and other defective parts.

7.7. Reuse & Recycle

The waste water is discharged into MC pipelines. However, it is advised to set up small sewage treatment plant which can filter and re-use spent water from washrooms and use for landscape irrigation etc.

7.8. Rain Water Harvesting and conservation

One of medium of harvesting rainwater is providing the incoming rainwater directly to the ground. This will increase the ground water level of the location and also helps in achieving the ground water at same or at less level than the existing level,

7.9. Rain water Harvesting: GSC, Naya Nangal is advised to construct near main building block, rain water from college buildings including low land area and water from other blocks, roofs and through roads can be effectively collected in the underground rain water recharge wells and can be utilized for irrigation, in urinals or for storage tanks of firefighting systems.



A small pit has been dug near main gate of GSC, Naya Nangal to collect rain water from Bank Building in campus and from near by grounds, but this is inadequate and a there is

scope of larger pit which can collect rain water from all the buildings of campus, parking lots and grounds.



An Example of Rain Water harvesting underground well which may be constructed in GSC, Naya Nangal Campus

7.10. Rain fall

The average annual temperature in Naya Nangal is 23.2 °C | 73.7 °F. The annual rainfall is about 245mm

July and August are the rainiest months. Rest of the annual rainfall occurs during non of the year in the form of thunder storm and western disturbances. Rainfall in the district increases from southwest to northeast. It is the nearest to the catchment area of Bhakra Dam area (Sutlej River) that run through the state. Climatically, the district has a very hot in summer and frequently scorching heat is in full swing. The climate of Nangal can be classified as tropical steppe, semi arid and hot which is mainly dry except in rainy months and characterised by intensely hot summer and cold winter.

During three months of monsoon season from July to September, the moist air of oceanic origin penetrates into the district and causes high humidity, cloudiness and good monsoon rainfall. The period from October to November constitutes post monsoon season. The cold weather season prevails from December to February followed by the hot weather season or Pre-monsoon season which ends up to the last week of June.

CLIMATE GRAPH // WEATHER BY MONTH NAYA NANGAL AREA

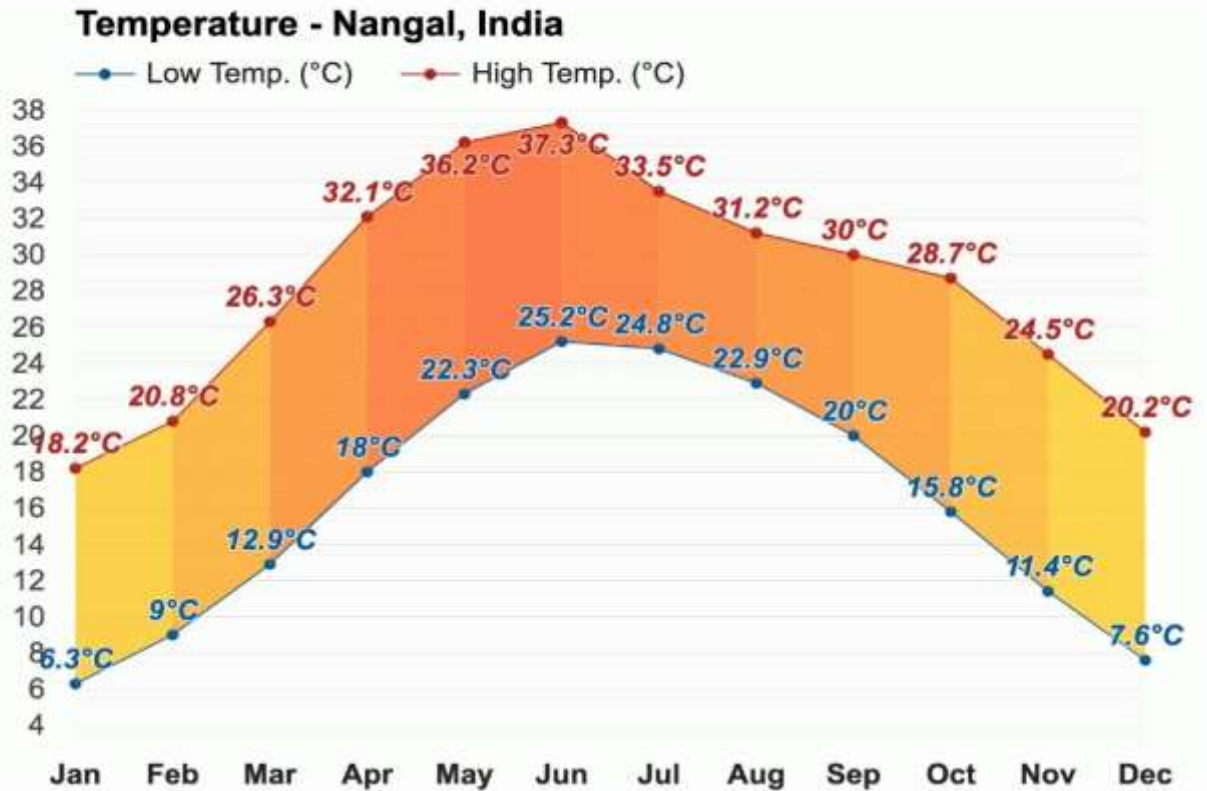
In Naya Nangal, the climate is warm and temperate. The summers here have a good deal of rainfall, while the winters have very little. The Köppen-Geiger climate classification is Cwa. (Great Northern plains are represented by Cwg climate. This type of climate is found in most parts of the Northern Ganga Plains. In this type of climate, the summer temperature rises to 40°C which falls to 27°C in winter.) The average annual temperature in Naya Nangal is 23.4 °C | 77.5 °F. In a year, the rainfall is 245 mm | 9.6 inch.

Climate Nangal: Weather By Month

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	24.0 (75.2)	28.0 (82.4)	37.0 (98.6)	40.0 (104.0)	44.0 (111.2)	43.0 (109.4)	43.0 (109.4)	38.0 (100.4)	36.0 (96.8)	35.0 (95.0)	29.0 (84.2)	26.0 (78.8)	44.0 (111.2)
Average high °C (°F)	18.16 (64.69)	20.85 (69.53)	26.16 (79.09)	32.18 (89.92)	36.41 (97.54)	37.33 (99.19)	33.66 (92.59)	31.21 (88.18)	30.78 (87.4)	29.35 (84.83)	24.95 (76.91)	20.55 (68.99)	28.47 (83.25)
Daily mean °C (°F)	13.36 (56.05)	16.52 (61.74)	21.89 (71.4)	28.13 (82.63)	32.78 (91.0)	34.3 (93.74)	31.05 (87.89)	28.67 (83.61)	27.7 (81.86)	24.92 (76.86)	19.85 (67.73)	15.24 (59.43)	24.53 (76.15)
Average low °C (°F)	7.06 (44.71)	9.45 (49.01)	13.43 (56.17)	18.65 (65.57)	22.84 (73.11)	25.8 (78.44)	25.32 (77.58)	23.46 (74.23)	21.12 (70.02)	17.16 (62.89)	12.69 (54.84)	8.87 (47.97)	17.15 (62.87)
Record low °C (°F)	2.0 (35.6)	4.0 (39.2)	6.0 (42.8)	11.0 (51.8)	15.0 (59.0)	19.0 (66.2)	22.0 (71.6)	19.0 (66.2)	15.0 (59.0)	11.0 (51.8)	6.0 (42.8)	3.0 (37.4)	2.0 (35.6)
Average precipitation mm (inches)	53.35 (2.1)	84.07 (3.31)	74.36 (2.93)	54.1 (2.13)	70.14 (2.76)	142.43 (5.61)	494.91 (19.48)	548.38 (21.59)	226.84 (8.93)	16.32 (0.64)	9.47 (0.37)	23.74 (0.93)	149.84 (5.9)
Average precipitation days (≥ 1.0 mm)	4.82	6.64	7.55	10.0	12.36	14.64	26.64	28.0	16.64	4.18	1.64	2.18	11.27
Average relative humidity (%)	46.28	49.05	39.59	29.01	24.88	33.83	62.17	74.87	65.54	41.33	35.58	38.0	45.01
Mean monthly sunshine hours	8.19	10.65	11.12	12.43	13.77	13.97	13.56	12.96	11.31	9.51	8.59	8.49	11.21

AVERAGE TEMPERATURE NAYA NANGAL AREA (YEARLY)

Average temperature Nangal, India



Average rainfall Nangal, India



Rainfall data of Nangal area for Year 2022-23

Thus, it is recommended to provide rain water harvesting and recharging system i.e. Installation of more recharge wells / rain water harvesting pits for recharging ground water tables.

There would be no direct monetary benefits, but there would be some improvement in the water table. The precipitation varies 54.1 – 548.38 mm | 2.13 - 21.59 inches between the driest month and the wettest month. The average temperatures vary during the year by 23.4 °C | 77.5 °F. The month with the highest relative humidity is August (74.87 %). The month with the lowest relative humidity is May (24.8 %) The month with the highest number of rainy days is August (20 days). The month with the lowest number of rainy days is November (2.0 days) Naya Nangal are in the northern hemisphere. Summer starts here at the end of June and ends in September. There are the months of summer: June, July, August, and September.

Findings and comments

1. Use low water /smart flush system or water less urinals
2. Water Leakage was found in some washrooms, which needs to be corrected and routine inspection is advised.
3. For drinking purpose, RO systems have been installed at various places along with water coolers. In RO systems, while purifying approximately 1 litre of raw water, about 3 Liters of water is wasted. The waste water can be utilized in washrooms or landscape / green area irrigation systems, thereby reducing water intake.
4. Provide rain water harvesting system in the campus
5. Educate Users: The conservation of water reduces water waste and energy costs too, on both operation and production. Educated consumers will be better able to identify problems and think innovatively about ways to conserve or reuse water within the facility. Not only will the work environment benefit, but these tools can be taken back to the home, where individuals and families can use these practices to play an even larger role in the preservation of rapidly dwindling fresh water resources.

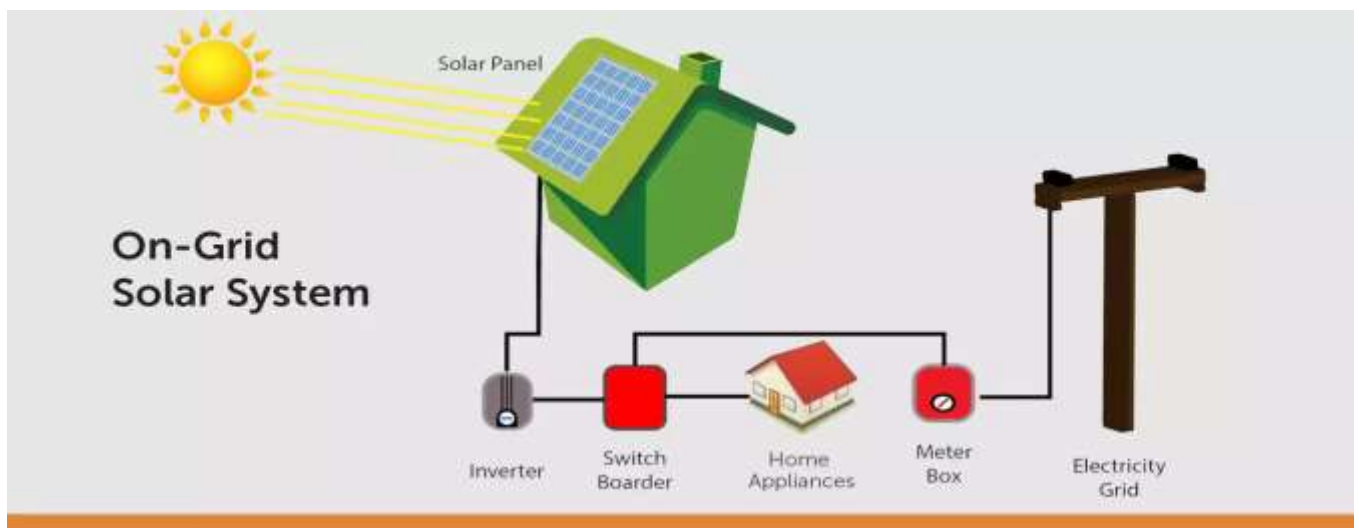
8. ELECTRICITY CONSUMPTION AND MANAGEMENT

Government Shivalik College, draws power from PSPCL through LT line. Now, It is supported by a newly installed Solar Power Plant of capacity 30 KWP. This Solar Power Plant shall provide clean green energy to college during working hours. When there is surplus supply from this setup, the power generated by Solar panels is supplied to Utility grid thru bi-directional meter installed.

8.1. Detail of electricity billing

MONTH 2022-23	Utility Energy Consumption-KWH
July	3234
Aug	4029
Sept	6080
Oct	6853
Nov	5326
Dec	3512
Jan	3423
Feb	3680
March	3071
April	4554
May	7155
June	5993
TOTAL	56950

Government Shivalik College has installed On Grid Solar Power Plant of 30 KWP





Grid connected Solar PV Plant installed in Govt. Shivalik Campus



Grid Solar Power Plant installed in Govt. Shivalik College Campus

By the installation of the above installed solar power plant there shall be 29% saving in annual electricity consumption

8.2. LED lights: About 45 no. conventional lighting has been replaced with LED lighting thus lowering the electricity consumption in the campus

8.3. LUX MEASUREMENT

A high-quality **DIGITAL LUX METER** was used to measure the illumination levels at various locations of Govt. Shivalik College and the recommended level of lightning in these areas is given in the table:

8.4. The recommended light level as per standard is shown below:

Location	Recommended Lux
Normal work station space, open or closed office	500
Conference Rooms	300
Training Rooms	500
Internal Corridors	200
Auditorium	150-200
Entrance Lobbies, Atria`	200
Stairwells	200
Toilets	200
Dining Areas	150-200

Recommended Standard Light Level Details

8.5. Study finding of Lux level

The building authorities provided the details of luminaries installed within their Building premises. The auditors surveyed area and measured Lux level which is as under:

Sr. No	LOCATION	Measured Lux	REMARKS
1	NAAC & RUSA office	290	Satisfactory
2	LT -3, Staff room	260	Satisfactory
3	CR-14 Seminar Hall	290	Satisfactory
4	75, Office room	237	Satisfactory
5	635, Registrar room	270	Satisfactory
6	Principal room	475	Satisfactory

7	Lecture theatre	280	Satisfactory
8	LT-15, Computer lab 1	310	Satisfactory
9	CR-15, Computer lab 2	300	Satisfactory

Assessment of the Lighting with the Lux meter

Findings, Conclusion and outcome of the current Energy Audit Report (2023-24)

i) Campus lighting system: With the retrofitting of remaining conventional lighting with the LED lighting and LED fixtures, proposed average energy savable is 7.5% from total savings

ii) Study of Fan system in the institute: With the retrofitting of some conventional ceiling fans with the energy efficient BLDC ceiling fans, proposed average energy savable is 5 % from total savings.

iii) Air-conditioning system in the college: With the retrofitting of remaining conventional air conditioners with BEE 5 star rated energy efficient air conditioners, proposed average energy savable is 3%

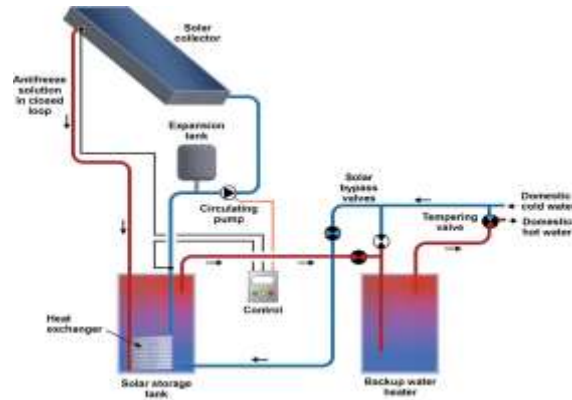
iv) Renewable Energy Application (Solar power plant): Solar energy is one of the most widely used renewable source of energy one can use renewable energy technologies to convert solar energy in to electricity, it is very reliable source of energy and can significantly reduce the electricity bills, as such, campus management has recently installed 30 KWp roof top grid interactive which shall be saving 29% in annual electricity consumption

thus, reducing considerable carbon emissions

v) Switching off lights, when not required: Some postures & stickers installed at all important locations so that staff and students remain conscious about it.

vi) Awareness campaigns: Awareness campaigns made in the campus for energy conservations covering lighting and renewable source of energy in the campus like solar parking/street lighting.

This shows that **the authorities of Government Shivalik College, Naya Nangal** is very conscious about energy conservation and has already started replacing balance conventional lighting with LED lighting and installed a solar power plant to facilitate and promote energy efficiency in the campus. As per measurement of lighting in the rooms of campus by the auditors with the high-quality Lux meter, the light level found good and comfortable for health of the occupants.



Proposed Solar water heater

Solar water heaters are proposed to be installed in canteen area to harness more Solar energy, the hot water from these solar water heaters can be used for cooking and washing purposes



Proposed Solar Street Light

Solar street lights are proposed to be installed in the campus area to harness more Solar energy

9. AIR QUALITY ASSESMENT

9.1. The Air Quality Index

The **Air Quality Index** (AQI) is an index for reporting daily air quality. It tells us how clean or polluted the air is, and what associated health effects might be a concern. The AQI focuses on health effects which may experience within a few hours or days after breathing polluted air.

9.2. IN DOOR ENVIORONMENTAL QUALITY

Health and comfortable life is the top most priority of every building user. Corresponding to health and wellbeing, the quality of a built environment for its occupant inside a building is referred to as in door environmental quality. Indoor environmental quality involves noise disturbance, occupant density, in door lighting, day lighting, ventilation, room temperature, cleanliness and indoor humidity. All these factors add up and form indoor environmental quality.

The AQI is divided into three categories. **CO2, TVOC & HCHO** Each category has health concern. This is shown below in the table.

AQI Basics for Pollution			
CO2	TVOC	HCHO	Description of Air Quality
< 600 ppm	< .6mg/m3	< .08mg/m3	Air quality is excellent, and air pollution poses no risk.
>600 < 1000 ppm	>0.6 < 1.6mg/m3	>0.08 < 0.12mg/m3	Air quality is good. and air pollution poses no risk..
>1000 ppm	>1.6 mg/m3	>0.12 mg/m3	Air quality is good. Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.

9.3. Auditors measured some Air Quality Parameters at different locations in the buildings

Sr No.	Location	CO2	TVOC	HCHO	Temperature in degree centigrade	Relative Humidity in %	PM 2.5 $\mu\text{g}/\text{m}^3$	PM 10 $\mu\text{g}/\text{m}^3$
1	Main building (indoor)	406	0.010	0.00	30	53	34.87	131.67
2	Park near Main building	406	0.016	0.000	32	53	34.91	131.9

MEASUREMENT OF AIR QUALITY PARAMETERS INSIDE GOVERNMENT COLLEGE CAMPUS

Index	Nitrogen Dioxide, Hourly mean ($\mu\text{g}/\text{m}^3$)	Sulphur Dioxide, 15 minute mean ($\mu\text{g}/\text{m}^3$)	PM _{2.5} Particles, 24 hour mean ($\mu\text{g}/\text{m}^3$)	PM ₁₀ Particles, 24 hour mean ($\mu\text{g}/\text{m}^3$)
1	0-67	0-88	0-11	0-16
2	68-134	89-177	12-23	17-33
3	135-200	178-266	24-35	34-50
4	201-267	267-354	36-41	51-58
5	268-334	355-443	42-47	59-66
6	335-400	444-532	48-53	67-75
7	401-467	533-710	54-58	76-83
8	468-534	711-887	59-64	84-91
9	535-600	888-1064	65-70	92-100
10	≥ 601	≥ 1065	≥ 71	≥ 101

Findings & Comments

By analysing the above data, outdoor Air quality index is 99, and PM 2.5 and PM 10 parameters are not healthy but moderate and hence some pollution control measures are advised as the college is in proximity of major Fertilizer Industry.



AQI	Air Pollution Level	Health Implications	Cautionary Statement (for PM2.5)
0 - 50	Good	Air quality is considered satisfactory, and air pollution poses little or no risk	None
51 -100	Moderate	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
101-150	Unhealthy for Sensitive Groups	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.

AQI	Air Pollution Level	Health Implications	Cautionary Statement (for PM2.5)
151-200	Unhealthy	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion
201-300	Very Unhealthy	Health warnings of emergency conditions. The entire population is more likely to be affected.	Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
300+	Hazardous	Health alert: everyone may experience more serious health effects	Everyone should avoid all outdoor exertion

10. SOUND POLLUTION MONITORING

The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound,

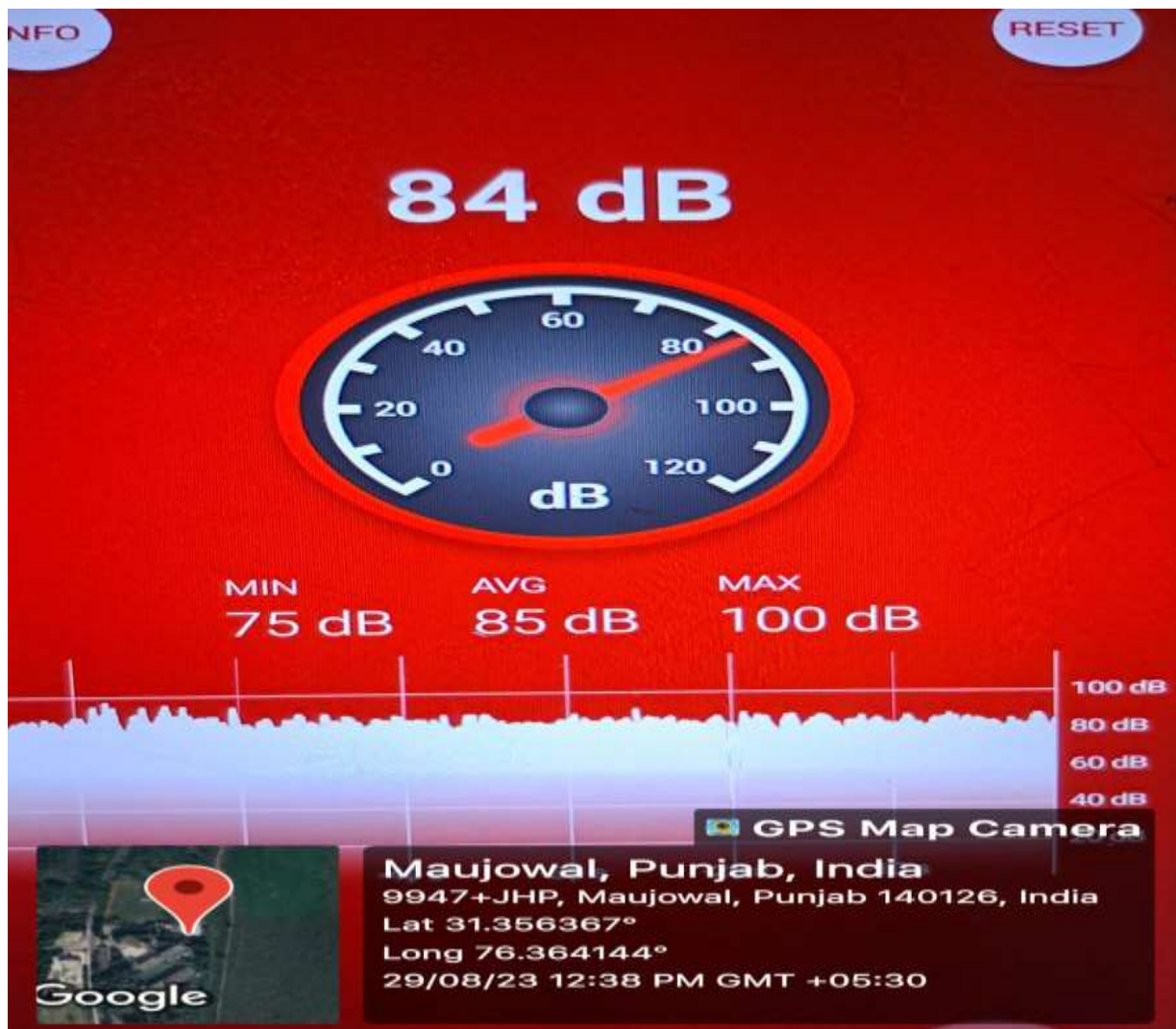
1. **loudness**
2. **frequency.**

Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels. Just audible sound is about 10 dB, a whisper about 20 dB, library place 30 dB, normal conversation about 35-60 dB, heavy street traffic 60-75 dB, boiler factories 120 dB, jet planes during take-off is about 150 dB, rocket engine about 180 db. The loudest sound a person can stand without much discomfort is about 80 db. Sounds beyond 80 dB can be regarded as pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city to avoid sleep disturbances. For international standards a noise level up to 65 dB is considered tolerable.

Frequency is defined as the number of vibrations per second. It is denoted in Hertz (Hz). Sound pollution is another important parameter that is taken into account for green auditing of the Campus. Different sites were chosen for the monitoring purpose

The Auditors measured sound level at different location as under:

S.No	Description	db (Avg)
1	Near office area in main building	84
2	Near Library	62
3	Near Canteen area	86
5	Near LT-1	92



Findings and comments: Sound level found satisfactory

11. WASTE MANAGEMENT

Waste management includes the activities and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process.

Waste can be solid, liquid, or gas, each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, biological and household. In some cases, waste can pose a threat to human health. Waste is produced by human activity, for example, the extraction and processing of raw materials. Waste management is intended to reduce adverse effects of waste on human health, the environment or aesthetics.

Waste management practices are not uniform among countries (developed and developing nations) regions (urban and rural areas), and residential and industrial sectors can all take different approaches.

11.1. Dust Bins & Lifting of Waste

Government College, Naya Nangal has placed waste bins for proper segregation of solid wastes in the different locations of the campus

Details of dustbin at GC Naya Nangal

Dustbin	Make	Qty.	Capacity
1	Plastic Dublin	Blue & Green with Stand - 4	30 Lts
2	Steel	8	20 Lts



Separate Dustbins for Collection of Dry and Wet Waste have been placed at various places in GC Naya Nangal Campus for systematic disposal of waste.



11.2. Kitchen Waste

The Canteen in Govt College, Naya Nangal, Management runs for all the students, Staff and supporting Staff and has policy of zero food waste policy. It has created awareness for the same through posters in the canteen. The food waste log is maintained daily and makes sure people produce less food waste and as a community it excels in reduction of food waste.

For taking care of Solid waste (Dry and Wet) from various buildings, kitchens, canteens, etc, GSC Naya Nangal management has tie up for lifting garbage and waste from campus with a local Municipal contractor. The waste collection vehicle of this contractor visits the campus twice a day for collection of waste which is already separated in Green and Blue dustbins (separate for dry and wet waste). Approximate waste collection tunes to 1 Quintals per month

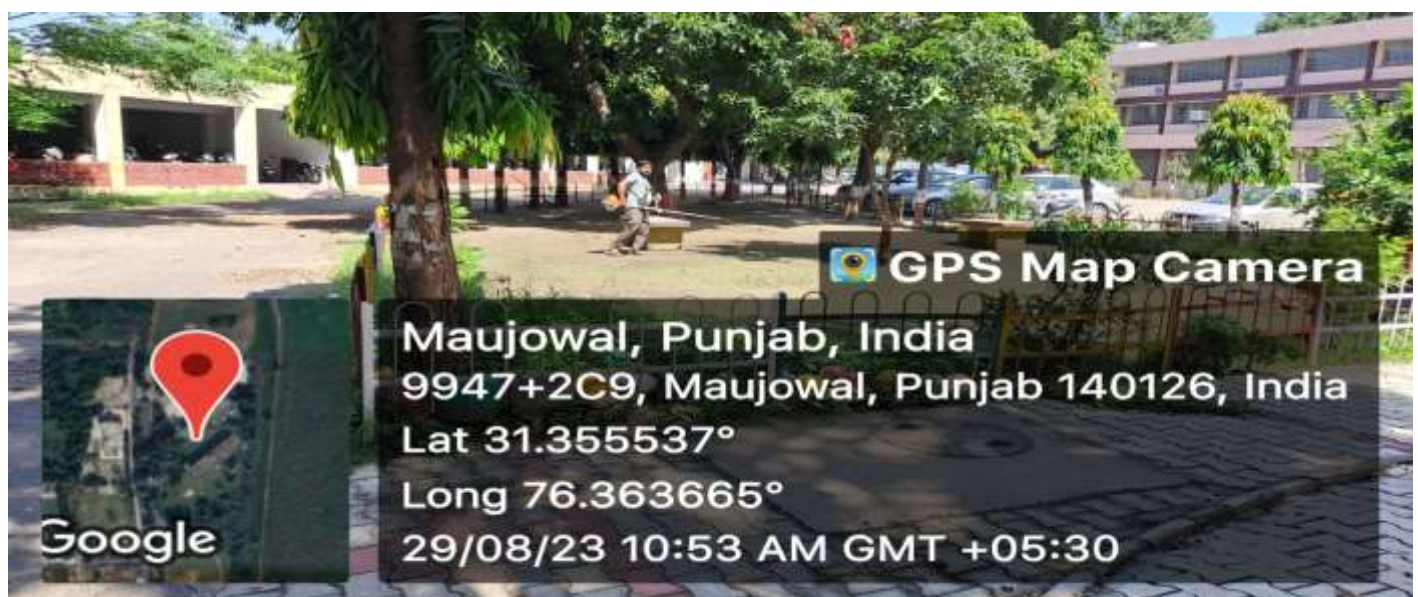


Picture Of Waste Being Collected from College Campus by Designated Waste Vendor of Municipal Corporation

12. BIODIVERSITY IN CAMPUS

Introduction

Government College, Naya Nangal situated in the vicinity of farms and agricultural areas is rich in biodiversity. To conserve this biodiversity, it is important to have an understanding of the bio-diversity of an area so that the local people can be aware of the richness of bio-diversity of the place they are living in and their responsibility to maintain that richness.



In today's world, among the popular conservation measures which are taken to spread wildlife and environmental awareness, butterfly gardens can be placed in a significant position. To create butterfly garden, we need to know which associate plants and other fauna are present in the surrounding. This study allows us to understand the faunal and floral diversity of the surrounding areas of the college premises and their inter-relationship.

12.1. Objectives:

The main objective of this study is to get a baseline data of bio-diversity of the area which will include:

- Documentation of the Landscape area use
- Documentation of the floral diversity of the area, its trees, herbs, shrub etc.
- Documentation of the major faunal groups like mammals, reptiles, amphibians, birds and butterflies.

12.2. Method of Study

Brief methodology for the floral and faunal survey is given below:

The total area was surveyed by walking at daytime.

Sampling was done mostly in random manner

Surveys were conducted for the maximum possible hours in daytime.

Tree species were documented through physical verification.

For faunal species we emphasized mainly on the direct sighting. Also call of various birds and amphibians and nesting of some faunal species were considered as direct evidences.

Reptiles were found mostly by looking in potential shelter sites like the under surface of rocks, logs, tree hollow sand leaf litter and also among and underneath the hedges. Sometimes some species, particularly the garden lizards were also observed in open spaces (on twigs and branches and even on brick constructions) while they were basking under direct and bright sunlight. Active invertebrates like the insects require more active search. For larger winged insects like butterflies, random samplings were carried and point sampling was also done.

12.3. Landscape Use

The baseline landscape consumption is calculated as 12.5 Litres/m²/day. Whereas, the actual landscape requirement is done as per the plantation species/trees/turf grass. Also, during the actual calculation the annual impending rainwater is also considered.

Location	Area (Sq- Mtr)
Near UG library	587.45 SQ Mtr
Near PG library	29.25 SQ Mtr and others
College	64750 SQMtr

The total landscape area of around 64750 Sq.mtr in the campus premises utilize sprinklers and natural ditches to irrigate the green area

Landscape watering schedule

How Much & How Often		Seasonal Frequency - Days Between Waterings				Water This Deeply (Typical Root Depth)
Water to the outer edge of the plant's canopy and to the depth indicated. Watering frequency will vary depending on season, plant type, weather and soil.		Spring Mar - May	Summer May - Oct	Fall Oct - Dec	Winter Dec - Mar	
Trees	Desert adapted	14-30 days	7-21 days	14-30 days	30-60 days	24-36 inches
	High water use	7-12 days	7-10 days	7-12 days	14-30 days	24-36 inches
Shrubs	Desert adapted	14-30 days	7-21 days	14-30 days	30-45 days	18-24 inches
	High water use	7-10 days	5-7 days	7-10 days	10-14 days	18-24 inches
Groundcovers & Vines	Desert adapted	14-30 days	7-21 days	14-30 days	21-45 days	8-12 inches
	High water use	7-10 days	2-5 days	7-10 days	10-14 days	8-12 inches
Cacti and Succulents		21-45 days	14-30 days	21-45 days	if needed	8-12 inches
Annuals		3-7 days	2-5 days	3-7 days	5-10 days	8-12 inches
Warm Season Grass		4-14 days	3-6 days	6-21 days	15-30 days	6-10 inches
Cool Season Grass		3-7 days	none	3-10 days	7-14 days	6-10 inches

These guidelines are for established plants (1 year for shrubs, 3 years for trees). Additional water is needed for new plantings or unusually hot or dry weather. Less water is needed during cool or rainy weather. Drip run times are typically 2 hours or more for each watering.

The best irrigation system is sprinkler which is one of effective way to save water, better yield and possibility of using soluble fertilizers and chemicals, less problem of clogging of sprinkler nozzles due to sediment laden water

12.4. Findings

Matching with the green and sustainable practices, the college campus has facility for proper sewage disposal thru local Municipal Corporation, RO drinking water points, solid waste management system and separate parking facilities for 2 and 4 wheelers. Around 40 percent of the total campus area is covered with lush green lawns & plantation covering plants & tree species, thus giving pure oxygen to the students and making campus a treat to eyes.

12.5. Faunal Species

The list of Fauna indicates that the college campus is significantly rich in faunal diversity. Significant number of bird nests can be seen at many places.

12.6. List of Butterflies

No.	Common Name	Scientific Name
1	Common Rose	Pachliopta aristolochiae
2	Lime Butterfly	Papitto demolis
3	Tailed Jay	Grapheme agamemnon
4	Small Grass Yellow	Furema Brigitte
5	Common Grass Yellow	Eurema hecabe
6	Common Quaker	Neopithecops Zamora
7	Dark Grass Blue	Zizeeria karsandra
8	Indian Wanderer	Pareronia hippie
9	Lemon Emmigrant	Catopsila Pomona
10	Mottled Emmigrant	Catopsila pyranthe

12.7. List of Birds

No	Common Name	Scientific Name
1	House Crow	Corvus splendens
2	House Sparrow	Passer domesticus
3	Common lora	Aegithrna tipsia
4	Common Kingfisher	Alcedo atthis
5	Common Myna	Acridotheres tristis
6	Common Pigeon	Colnmba livia

7	Common Sandpiper	Actitis hypoleucos
8	Common Tailorbird	Orthotomus sutortus
9	Coppersmith Barbet	Megalaima haemacephala
10	Common Hawk Cuckoo	Hierococcyx varlus
11	Common Hoopoe	Upupa epops

12.7. List of Amphibians

No.	Common Name	Scientific Name
1	Frog	Enphldctis cyanophlyctis
2	Indian Toad	Duttaphrynus melanostictus

Faunal groups observed in GSC Campus, Naya Nangal with species number

1.	Birds	15
2.	Reptiles	4
3.	Amphibians	6
4.	Butterflies	22





Commonly found Faunal Species in the area





Commonly found Faunal Species in the Campus

12.8. Floral species:

The list of Flora indicates a significant diversity of plants which indicates the overall richness of the place. The most diverse group is tree total 374 trees list as below:

TYPES OF PLANT SPECIES		
Sr.No	Species name	Quantity
TREES		
1	Bahera	7
2	arjun	6
3	Safeda	10
4	kasurina	3
5	Bil	1
6	kusum	2
7	Tinia	1
8	Ashoka	38
9	Tut	5
10	Dek	4
11	Tun	5
12	silver oak	30
13	Simbal	1
14	Bad	1
15	KACHNAR	1
16	Pipal	3
17	Bottle brush	2
18	NEEM	5
19	jamun	1
20	aamla	2
SHRUBS		
1	ROSE	5
2	TEJ PATTI	1
3	bougainvillea	2
4	china rosr	1

5	jasmine	1
HERBS		
1	LEMON GRASS	1
2	ASHWAGANGA	2
3	BADI ELACHI	2
4	SHIKAKAI	1
5	ALOE VERA	2
6	TULSI	2

Variety of Grass in campus as under

No.	Common Name	Scientific Name
1	Sensational plus one	Mexican Grass

Disposal of Green Waste in Campus:

Dry leaves and other organic waste is well disposed off in college campus itself by collecting fallen leaves and dumping in Compost Pits. Compost pits are used to make manures and fertile compounds by dumping decaying biodegradable items. It contains numerous vital elements for plant growth and is hence frequently used as fertilizer.

GSC Naya Nangal Campus has an old compost pit which needs to be re-constructed to enhance its capacity and optimal utilization.



An Example of Compost Pit for Bio Disposal of fallen leaves which may be constructed in Campus.

Advantages of Compost Pits:

- Assists in Storm water Management.
- Promotes Healthier Plant Growth.
- Conserves Water.
- Reduces Waste.
- Combats Climate Change.
- Reduces Project Maintenance Costs.
- Improves Soil Health.
- Prevents Soil Erosion.

Findings:

Biodiversity status of GSC Naya Nangal campus found satisfactory.

Expenditure Summary incurred on tree plantation activities / green initiatives taken in last year (Aug-2022 to April-2023)

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Office of Principal, Govt.Shivalik College, Naya Nangal-140126

ਵੱਲ

R. K. ELECTRICALS & ENERGY AUDIT SERVICES 1131,
PROGRESSIVE ENCLAVE, SECTOR 50 B,
CHANDIGARH

ਪੱਤਰ ਨੰ./1131/2023/51 ਮਿਤੀ 11-11-2023

ਵਿਸ਼ਾ - ਸਾਲ ਦੌਰਾਨ ਕਾਲਜ ਕੈਂਪਸ ਵਿੱਚ ਗਰੀਨ ਸਬੰਧੀ ਗਤੀਵਿਧੀਆਂ ਦੇ ਖਰਚੇ ਬਾਰੇ।

ਸ੍ਰੀ ਮਾਨ ਜੀ,

ਉਪਰੋਕਤ ਵਿਸ਼ੇ ਸਬੰਧੀ ਲਿਖਿਆ ਜਾਂਦਾ ਹੈ ਕਿ ਕਾਲਜ ਕੈਂਪਸ ਵਿੱਚ ਗਰੀਨ ਸਬੰਧੀ ਗਤੀਵਿਧੀਆਂ ਦੇ ਖਰਚੇ ਦਾ ਵੇਰਵਾ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਹੈ ਜੀ -

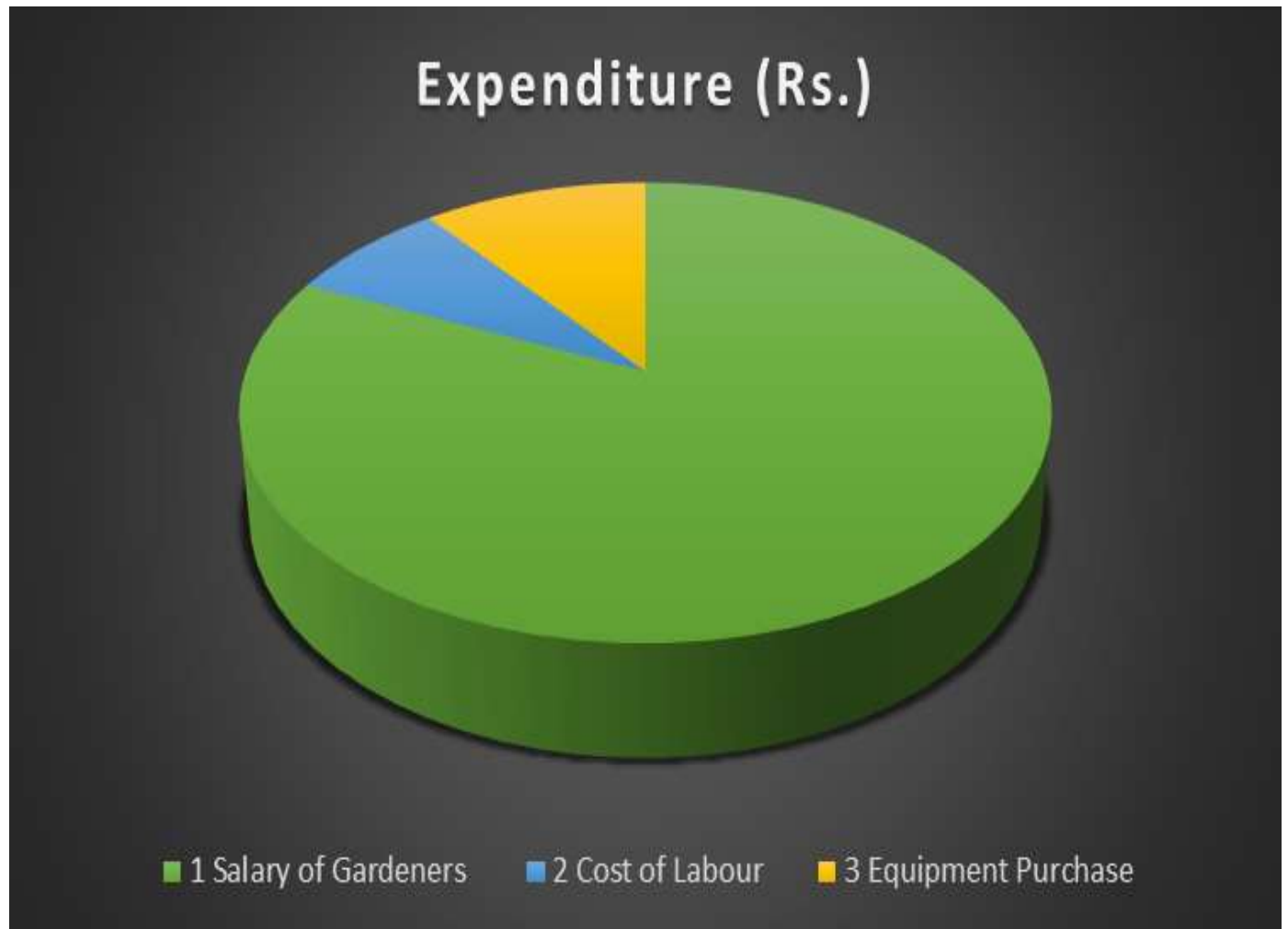
Sr. No.	Name of Activity	Expenditure
1	Brush Cutter	25000
2	Shrub Master	45000
3	Electric Glass cutter	30000
4	Loan Mover	40000
5	Labour Expenditure	100000
6	Mali 2 (Resource)	360000
7	Mali 1 (Regular)	720000
	Total	1320000

ਸਿਰਫ ਤੇਰਾਂ ਲੱਖ ਵੀਹ ਹਜ਼ਾਰ ਰੁਪਏ।


ਪਿੰਸੀਪਲ

S.NO	Name of Activity	Expenditure (Average)
1	Salary of Gardeners	Rs. 10,80,000/-
2	Cost of Labour	Rs. 1,00,000/-
3	Equipment Purchase (Bush cutter, Shrub master, electric grass cutter, lawn mover etc.)	Rs. 1,40,000/-

Average Annual Expenditure: Rs. **13,20,000/-** (Rupees Thirteen lacs, twenty thousand only)



13. RECOMMENDATIONS

1. The college campus is no doubt bio diversified but more plantations especially medicinal plantations are required in the campus. Plantation of fruit plants will attract more birds.
2. The Green Monitoring Team should consist of members from teaching staffs, non-teaching staffs, and students and if possible, try to include some local interested people.
3. Sustainable use of resource and ecology balance of the college campus must be maintained through the year.
4. The prolific use of insecticides/pesticides should be checked as these harmful chemicals are detrimental and instrumental for killing of insects/butterflies which are natural prey for the birds.
5. Enact stricter laws for single use plastic.
6. Sound, water and air quality monitoring be done on regular basis.
7. College Administration must explore possibility and implement setting of Rain Water Harvesting System. The area receives about 850 MM of Rainfall in rainy season and catching and storing this water instead of wasting can be utilized for landscape irrigation or in Urinals by proper treatment.
8. Balance conventional lighting be replaced with LED lighting which will reduce the electricity consumption considerably.
9. More awareness camps be organized by college students and staff in nearby villages for subtle (crop residue) management.
10. Management may consider setting up Micro forest which will benefit the environment in a great manner.

14. PROGRAMME AND INITIATIVES

Programme and Initiatives taken by Government Shivalik College Management and Students for promotion of Green and clean Environment in and around the College Campus

14.1. GREEN CAMPUS POLICY FRAMED BY GOVERNMENT COLLEGE AUTHORITIES

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Office of Principal, Govt. Shivalik College, Naya Nangal-140126

GREEN AUDIT POLICY

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

The institution is committed to conservation of biodiversity with focus on green concepts including water conservation, alternate sources of energy, solid waste management and vermicomposting.

GENERAL AND SPECIFIC OBJECTIVES OF GREEN AUDITING

The general objective of green audit is to prepare a baseline report on biodiversity and other resources, measures to mitigate resource wastage and improve resource quality and sustainable practices in the college premises.

The specific objectives are

1. To prepare a checklist of flora and fauna diversity in the college premises.
2. To suggest imperative measures to improve biodiversity within the college campus.
3. To monitor the energy consumption pattern of the college.
4. To assess the quantity of water usage within the college campus.
5. To suggest sustainable energy usage and water conservation practices.
6. To find out various sources of organic and solid waste generation and mitigation possibilities.
7. To inculcate values of sustainable development practices through green audit mechanism.


Principal
Govt Shivalik College
Naya Nangal-140126

GREEN AUDIT POLICY

Administrative department staff & students of GOVT. SHIVALIK COLLEGE NAYA NANGAL is committed to carrying out the following activity for sustainable development within the college premises.

1. To Use Solar Energy
2. To sensitize the students and staff on judicious use of water as it is a precious resource.
3. To maximize the use of ICT and minimize the use of paper. It will help to go towards Paperless Office.
4. To use the solid waste through vermicomposting on the campus and use it as a fertilizer.
5. To reduce the sound pollution in the campus
6. To protect and nurture the Flora and Fauna on the campus
7. To maintain green campus.
8. To motivate the use of public transport battery powered vehicles/ pooling system.
9. To minimize plastic usage.

CONSTITUTION FOR GREEN AUDIT

The Green Audit is carried out as per the environmental policy of the IADC-A and Green audit checklist. The objective of the audit is to check the existing practices and provide advice for the development of environmental policy and practice in the areas of:

- Waste Management - Solid waste management and E-waste management
- Water conservation and management
- Tree plantations
- Bio-diversity and threatened/ endangered species preservation
- Energy use and conservation
- Eco-friendly campus
- Green environment and clean campus



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14.2. Programs and Initiatives Taken by Staff and Students for Green Activities:



VAN MAHOTSAV - TREE PLANTATION AND CLEAN INDIA DRIVES ARE CONDUCTED IN AND IN NEARBY AREAS OF COLLEGE CAMPUS BY STAFF AND STUDENTS



TREE PLANTATION DRIVES ORGANIZED BY GOVERNMENT COLLEGE, NAYA NANGAL

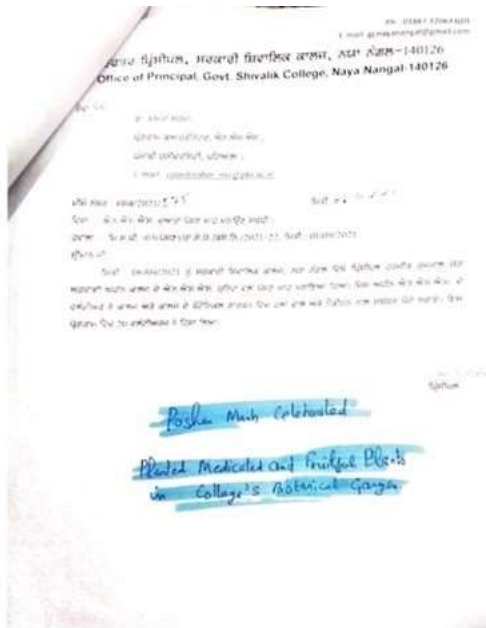


NSS Wing of GSC Naya Nangal Celebrates Van Mahotsav by Tree Plantation Drives





SEMINAR ON SAVE ENVIRONMENT AND ABOUT PLANTATION 03-08-2019 AND FRUIT TREE PLANTATION DRIVE ON OCCASION OF POSHAN MAAH





TREE PLANTATION DRIVES ON VAN MAHOTSAV AND SWACHH BHARAT ABHIYANS BEING ORGANIZED BY STUDENTS AND STAFF OF GSC NAYA NANGAL



15. CONCLUSION

Considering the diversity of **Government Shivalik College, Naya Nangal**, there is significant environmental research both by faculty and students. The environmental awareness initiatives are substantial. The installation of solar Power Plant system and replacement of conventional lighting with LED lighting are noteworthy. Besides, environmental awareness program initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of strategic management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development

For R.K. Electricals and Energy Audit Services

(END OF THE REPORT)

16. Credentials in r/o “R.K. Electricals and Energy Audit Services”

16.1. Certificate ISO 50001:2018(Energy Management Services)



CERTIFICATE

This is to Certify that the Management System of
R.K. ELECTRICALS & ENERGY AUDIT SERVICES

PROGRESSIVE SOCIETY, 1131, SECTOR 50 B, CHANDIGARH -
 160047, INDIA.

has been audited and found to comply with the requirements of:

ISO 50001:2018
(Energy Management System)

For the Scope of activities described bellow:

**DEALS IN ENERGY MANAGEMENT, ENERGY, ENVIRONMENT & GREEN AUDITS,
 THERMOGRAPHY OF ELECTRIC EQUIPMENT AND ELECTRIC INSTALLATIONS
 OF BUILDINGS & INSTITUTIONS AND INDUSTRIES.**

Certificate No.: 279101

<i>Date of initial registration</i>	<i>Date of this Certificate</i>	<i>Surv. audit on or before/ Certificate expiry</i>	<i>Recertification Due</i>
16-07-2022	16-07-2022	15-06-2023	15-06-2025

Validity of this certificate is subject to successful completion of surveillance audit on or before due date,
 in case surveillance audit not conducted this certificate shall suspended/cancelled.





 Director

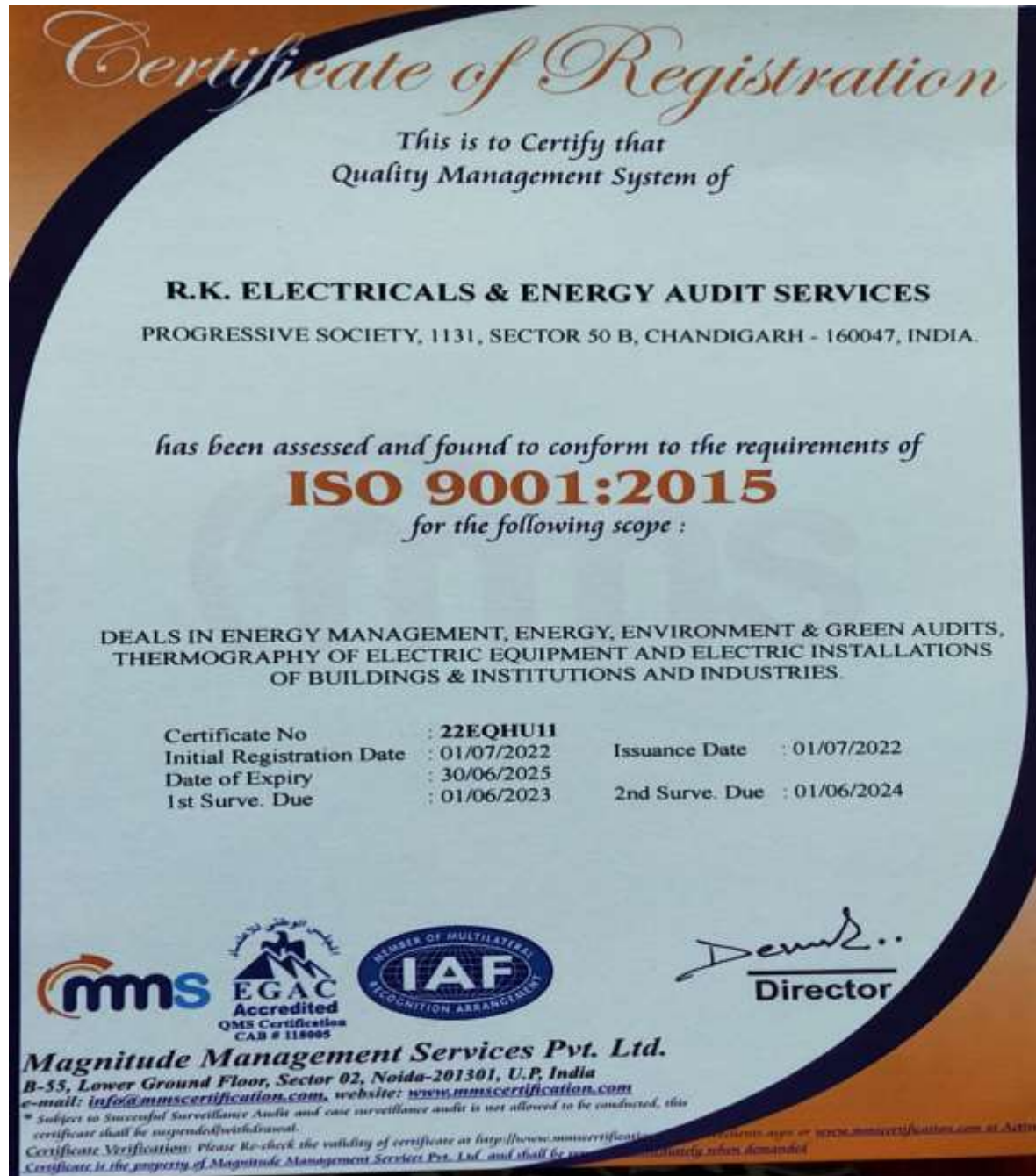
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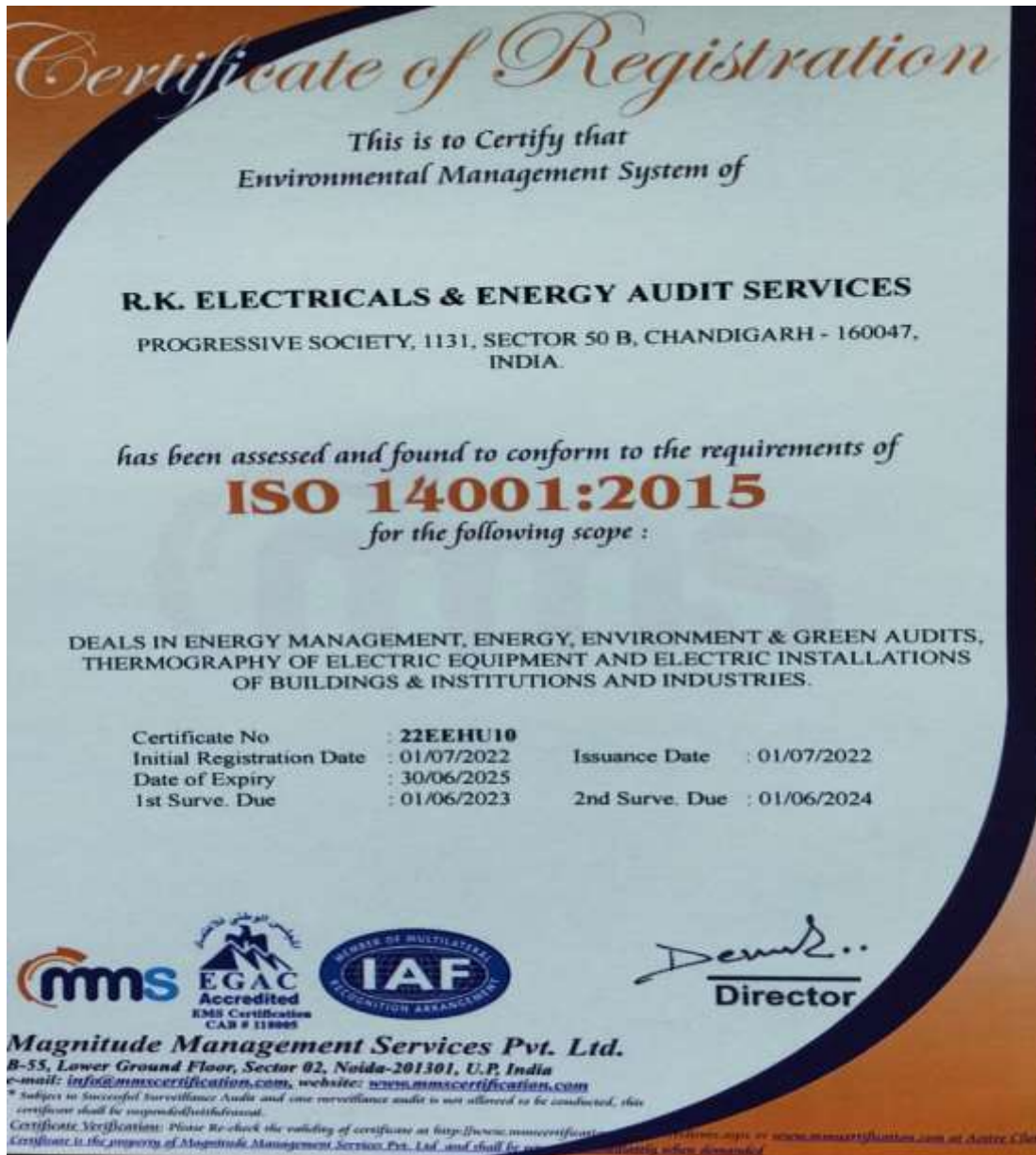
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16.2. Certificate ISO 9001:2015 Quality Management



16.3. Certificate ISO 14001:2015 (Environmental Management System)



16.4. Certificate of Energy Auditor EA-10080 MoP GoI



16.5. Certificate of IGBC Accredited Professional (IGBC India)



16.6. Annex. Guidelines



NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL, BENGALURU

F. No. 14-29/2022

26th May 2022

Advisory on ISO 9001/Green Certificates/Audits

As per the resolution of 96th meeting of the Executive Committee of NAAC held on 26th May 2022, in the manuals for Self-Study Report for institutional accreditation there are couple of metrics on quality audit; green audit, energy audit, and environmental audit;

This has led to several institutions going for certifications and falling prey to unscrupulous private certifying/audit agencies issuing certificates to unsuspecting academic institutions.

It is informed that there is an international system of accreditation of such audit/certifying agencies in which the National Accreditation Board of Certification Bodies (NABCB), a constituent Board of the Quality Council of India, attached to the Ministry of Commerce & Industry, is member from India (website - <http://nabcb.qci.org.in/index.php>). The international system for certification operates under the aegis of the International Accreditation Forum (IAF) and its member accreditation bodies (ABs) are listed on its website iaf.nu. Similarly, for inspection/audit, which is a one-time activity, the international system is operated under the International Laboratory Accreditation Cooperation (ILAC) of which also NABCB is a member. A list of ILAC members can be seen on its website <https://ilac.org/>

It is therefore advised that the following should be observed:

1. It should be ensured that the ISO 9001 certificates are from certifying agencies accredited either by NABCB or any member AB of IAF. The certificate should carry the logo of the AB concerned.
2. There is now an ISO standard for educational institutions, ISO 21001, and institutions may obtain certification under this standard from any certifying agency as mentioned in 1. above in lieu of ISO 9001 certification.

3. As for green certification, there are recognized standards such as ISO 14001 for environment management systems or ISO 50001 for energy management systems which promote green practices and certificates to these may be obtained following advice in 1. above.
4. Any other certification claimed to be green certification should be to a recognized standard and the agency should be accredited as mentioned in 1. above
5. In case any institution goes for a one-time green audit, it should ensure that the agency is accredited as per ISO 17020 for a recognized standard/criteria for green audits by NABCB or any member of ILAC and the report/certificate carries logo of the AB.

The logo of the AB on the certificate ensures that the audit/certifying agency is accredited for auditing/certifying educational institutions and hence essential.

All academic institutions who have already obtained such certificates should check that they have authentic certificates and if not, ensure that these are replaced as per above advisory within one year.

In case of any doubts, academic institutions may consult NABCB at nabcb@qcin.org.

Sd/-
Director, NAAC
