



SARIYA COLLEGE ,SURIYA

GREEN AUDIT REPORT

2022-2023

PREPARED BY
EHS ALLIANCE SERVICES

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CERTIFICATE



CERTIFICATE

PRESENTED TO

SARIYA COLLEGE, SURIYA

Hazaribag Road Rly. stn., P.O.- Suriya, Dist.- Giridih, Jharkhand, PIN- 825320

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 2022-23

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.

A handwritten signature in blue ink, appearing to read 'H. Das', written over a horizontal line.

SIGNATURE



10.02.2024

DATE OF AUDIT

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ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the management of Sariya College, Suriya 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 **Mr. Manohar Singh Bagga- Secretary and Dr. Santosh Kumar Lal - Principal** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank **Mr. Pramod Kumar - Assistant Professor and Audit Coordinator**, for his 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

Mr. Asit Diwakar - Assistant Professor

Mr. Ashish Kumar Singh - Assistant Professor

Mr. Sitaram Suman - Accountant

DISCLAIMER

EHS Alliance Services Audit Team has prepared this report for Sariya College, Suriya 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

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

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

Sariya College, Suriya a premier institution for Co- education at Sariya, Giridih District in the State of Jharkhand. It is a Permanently Affiliated. College of Vinoba Bhave University, Hazaribag. It was founded in the year 1984 with an aim to impart higher education to the rural students. The dreams of the poor students who are deprived of higher education have been translated into reality by this glorious institution. Our College caters to the academic and professional needs of boys & girls not only from Sariya but also from adjoining rural areas and nearby states.

The college initially started functioning with only 14 students in the Arts and Commerce Stream and had few teaching staffs. The State Govt. and the university provided temporary affiliation in Arts, and Commerce faculties from the session 1984-85 then from the session 2011-14 the State Govt. and Vinoba Bhave University, Hazaribag provided Permanent Affiliation to the college in the faculty of Arts(General), and Commerce up to Honours & General level. Sariya College is registered under society registration act- and is also registered under section 2(F) and 12(b) of UGC of Govt. of India.



MISSION, VISION & VALUES

MISSION

- To build the nation by creating a class of moral, intellectual and committed citizens
- To strengthen the human resources
- To provide Indian knowledge and values along with modern knowledge and values
- To intellectual academic excellence, social responsibility, moral uprightness and team spirit
- To train students physically intellectually, socially, morally, emotionally, vocationally to attain
- To contribute to society through the pursuit of education, learning at the highest levels of excellence.
- To provide quality education through academic cultural and physical activities and prepare the students as responsible and useful citizens.

VISION

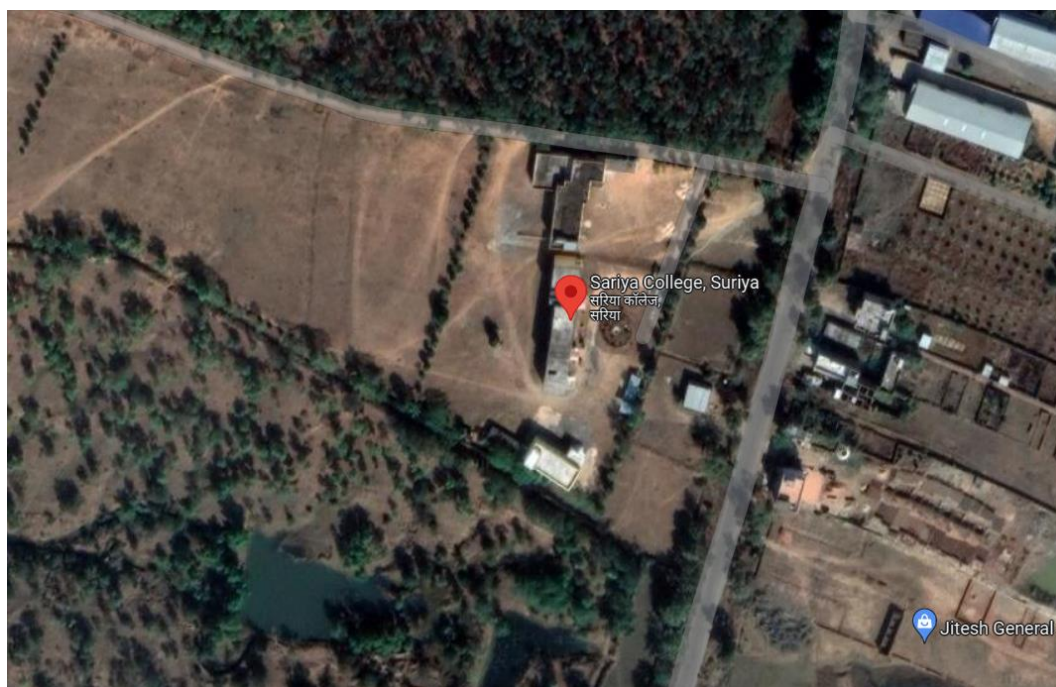
- To be recognized as a premier institute that Practices quality education, Providing a vibrant environment for the holistic development of students.
- Enriching the capacity of students to learn and lead with integrity and wisdom
- Installing human values and a sense of responsibility towards the society.
- To cater to the educational needs of the area and mold the students into responsible citizens of the country.
- To modernize the society through education
- To promote the synthesis of knowledge with special emphasis on unity of scientific and spiritual pursuits to revitalize our country's rich heritage.

VALUES

Sariya college, Suriya in a process of self and community reflection that would lead us to recognize and heighten awareness of the higher values we and our institution have already practiced and articulated, to seek agreement about those values, and to develop an institutional culture that holds itself accountable to those values.

Geo Location

Geo Coordinates from Google maps:
24.1498943, 85.8747263



AUDIT PARTICIPANTS

On behalf of Sariya College, Suriya

Name	Designation
Mr. Manohar Singh Bagga	<i>Secretary</i>
Dr. Santosh Kumar Lal	<i>Principal</i>
Mr. Pramod Kumar	<i>Assistant Professor and Audit Coordinator</i>
Mr. Asit Diwakar	<i>Assistant Professor</i>
Mr. Ashish Kumar Singh	<i>Assistant Professor</i>
Mr. Sitaram Suman	<i>Accountant</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, ISO 14067:2018</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 ones. Green audit provides an approach for the same. It also increases overall awareness among the folks working in the institution towards the eco-friendly environment.

This is the regular practice 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 footprint of the campus. Initially, a questionnaire was shared to know about the existing resources of the campus and the resource consumption patterns 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 the second external audit organized by the College

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

Students

Male: 1861 Female: 1831 Total: 3692

Teachers (including guest faculty)

Male: 13 Female: 2 Total: 15

Non-Teaching Staff

Male: 12 Female: 0 Total: 12

Total Strength

Male: 1886 Female: 1833 Total: 3719

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

There are two hundred and twenty-three working days in a year.

4. Where is the campus located?

The campus is located near Railway Station, Hazaribagh, Road Po: Suriya, 825320, District: Giridih, Jharkhand

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

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

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

Municipal dump yard	Not in vicinity of institute
Garbage heap	No Garbage heaps
Public convenience	Public convenience is available
Sewer line	Not available
Stagnant water	No stagnant water
Open drainage	No
Industry – (Mention the type)	No
Bus / Railway Station	Hazaribagh road railway station
Market / Shopping complex	Not 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 -1 Kg
Hazardous Waste - 1 Kg
Others < 1 Kg*

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

Sariya College, Suriya is using composting for solid waste management, rainwater storage tank are there for water conservation.

4. Do you use recycled paper in institute?

No

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

College is spreading the awareness about recycling through different activities and campaigns to students, staff and local nearby villages

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

Not yet achieved.

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes, about 424098.07 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>119</i>
<i>Small Trees</i>	<i>57</i>
<i>Hedge Plants</i>	<i>516</i>
<i>Grass Cover sqm</i>	<i>424098.07 sq. ft</i>

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

Yes, 2 staff (maali) deployed in horticulture department

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

*8 Plantation Drives were carried out in last FY. Total 370 plants/trees were planted.
Survival rate is more than 60%.*

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

Yes

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 – 89.35 KL/month

Gardening – 443.25 KL/month

Kitchen and Toilets – 112.50 KL/month

Others – 227.26 KL/month

Hostel – 0.00 KL/Month

Total = 872.36 KL/Month

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

College stores water in overhead tanks.

Saving Techniques

- *Avoid overflow of water-controlled valves are provided in water supply system.*
- *Close supervision for the water supply system.*

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

Entry - Water comes from the borewell

Exit- From Canteen, Toilets, , and Labs through covered drainage which is connected to soak pit

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

1.5 ANIMAL WELFARE

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

6 dogs, 20+ butterfly species, 40+ Squirrels and 50+ 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, Sariya College, Suriya's **Eco club** actively organizes awareness through various campaigns and activities including seminars, poster competitions, etc.*

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO2 emission from Electricity

*(electricity used per year in kWh/1000) x 0.84
= 12859/1000x0.84
= 10.80 tons*

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

*(LPG/PNG used per year in KG) x 2.99
= 168 x 2.99
= 0.50 tons*

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

*(Diesel used per year in litres) x 2.68
= 12 x 2.68
= 0.03 tons*

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

*There are 2 college owned buses
= (2*2*2*223/100)*0.01
= 0.18 tons*

Total CO2 emission per year cumulative by electricity usage + bus and car is 11.51 tons

CARBON ABSORPTION BY FLORA IN THE INSTITUTION

There are 119 full grown trees and 57 semi grown trees of different species, on the campus spread over 424098.07 sq ft.

Carbon absorption capacity of one full grown tree 22 kg Co₂ Therefore Carbon absorption capacity of 119 full-grown trees $119 \times 22 \text{ kg Co}_2 = 2.62 \text{ tons of Co}_2$.

The carbon absorption capacity of 57 semi-grown trees is approx. 30% of that of full-grown trees. Hence the carbon absorption $57 \times 6.8 \text{ kg of Co}_2 = 0.39 \text{ tons of Co}_2$

There are approximately Hedge Plants 516 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 Co₂ where as some others absorb very low level of Co₂. In the absence of a detailed scientific study, 200g of Co₂, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is $516 \times 200 \text{ g} = 0.10 \text{ ton of Co}_2$

The lawns on the campus have buffalo grass, Mexican grass and indigenous grass species and cover a total area of 424098.07 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area $424098.07 \times 365 \times 0.1 \text{ g Co}_2 = 15.48 \text{ tons Co}_2$ per year.

Grand total of carbon absorption capacity of the campus is 18.59 tons.

GREEN INITIATIVES

- The institution uses composting for organic solid waste management.
- There is ban on single use plastic and plastic crockery in the campus.
- 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.
- The college has a rainwater harvesting tank for water conservation.
- The college has installed approximately solar panels (3.75 KWp)
- College organize plantation and cleanliness drives periodically.

RECOMMENDATIONS

- Green building guidelines for future expansion projects of the campus.
- Environmental parameters shall be included in purchase policy to achieve a cradle to grave approach for sustainability.
- College should start the use of Sprinklers gardening purpose
- Arrange training programmes on environmental management system and nature conservation for schools and local people.
- College should initiate a practice where all guests should be given a planter as a gift rather than a bouquet of flowers. Also, plantation should be carried out in nearby villages.
- Involve lower hierarchy staff and new students in environmental awareness programmes and campaigns.
- To eliminate the spillage and over usage of water in washbasins, urinals and toilet push taps are highly recommended.
- Enhance recycling. This can be done by creating a group where students can recycle books, personal clothes and other materials for needy students. This can be an initiative under the green program.
- Regular workshops related to Plastic free campus, plantation drives, 3R implementation, e-waste collection, menstrual hygiene, etc. should be carried out
- Messages should be displayed at various locations to Aware the People about Energy Savings

CONCLUSION

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

Overall 80% of Sariya College, Suriya 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 sprinklers for irrigation and conservation awareness message display at different locations in campus. Additionally, we strongly advise to increase awareness amongst the students, staff and local societies for 3R principle and conservation of water and energy.

REFERENCE

- 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 –ENVIRONMENT CONSCIOUSNESS PHOTOS



Well ventilated
building structure



Well maintained
college campus



Lush green campus



Sports Ground



Library



smart Classes



Computer lab



Spacious classrooms



Environment awareness poster



Transport service



Water storage tanks



Solar PV



Guava tree for bird's feeding



Plantation drive



Indoore plants for better air quality



BLDC fan for energy saving



Awareness message
display



Push Taps for water conservation

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