Green Audit Report
of
SURI VIDYASAGAR COLLEGE

2019-2020

INTERNAL QUALITY ASSURANCE CELL (IQAC)

SURI VIDYASAGAR COLLEGE

COLLEGE PARA, SURI, DIST. BIRBHUM, WEST BENGAL – 731 101.

CONTENT

EXECUTIVE SUMMARY

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the green campus for the institute which will lead for sustainable development. Suri Vidyasagar College is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher studies, the college has initiated 'The Green Campus' programme few years back that actively promote various projects for environment protection and sustainability.

Purpose of this audit is 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 etc. With this in mind, specific objectives of the audit is to evaluate adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on students' health and learning, college operational costs and the environment. The criteria methods and recommendations used in the audit were based on the identified risks.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

CHAPTER - 1

INTRODUCTION

1.1 Green Audit

Environmental or Green Audit is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices adopted to meet the environmental requirements (EPA, 2003). In other words, it is a management tool, comprising of systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with Institutional policies, which would include regulatory requirements and standards applicable.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modi has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned the "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. 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.

1.2 *Why Green Audit*

- To ensure that the performance of the institution with respect to environmental activities is in compliance with existing laws and regulations.
- To check the functionality and their operating success including water supply, energy related matters and other similar matters that are related to green operations in the campus
- To formulate or update the institution's environmental policy, if warranted.
- To measure the environmental impact of operational process related to green activities in the campus.
- To measure the performance of each green related operations and actions in the campus.
- To generate a data base of green activities for continuous monitoring to assess the success of each of them.
- To identify future potential liabilities.
- To align the institution's developmental and day to day activities with the stated vision, mission, strategies.
- To identify possible ways to reduce expenditure and running costs on equipments, appliances, etc. or try enhance revenue income.
- To improve process and materials efficiency, and in response to stakeholder requests for increased is closure.

1.3 Goals of Green Audit

College has conducted a green audit with specific goals as:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by university.
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issues.
- To motivate staff for optimized sustainable use of available resources.

1.3 Objective of Green Audit

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. The specific objectives are:

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

1.5 About Criteria 7 of NAAC

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, no vehicle day, Rainwater harvesting, etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

1.6 Benefit of Green Audit to an Educational Institute

There are many advantages of green audit to an Educational Institute.

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management.
- To create a green campus.

- To enable waste management through reduction of waste generation, solid and waste.
- To create plastic-free campus and evolve health consciousness among the Stakeholder.
- Recognize the cost-saving methods through waste minimizing and managing.
- Authenticate conformity with the implemented laws.
- Empower the organizations to frame a better environmental performance.
- Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental management approach and Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the University and its environment.
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the University.
- Finally, it will help to build a positive impression through green initiatives for the upcoming NAAC visit.

1.7 *Introduction of Auditing Firm*

Name of Firm	M/s. Sonar Bharat Environment & Ecology (P) Ltd.
Address	35, C. R. Avenue, 3rd floor, Kolkata - 700012
Contact Details	033-40031179/033-22113034

Details of team Member

Sr. No.	Name	Designation/ Technical	Technical Experience /Qualification
1	Shri Parimal Sarkar	Legal Expert	➢ M.Sc. in Disaster Management ➢ Post Graduate Diploma in Environmental Law from National Law School, Bangalore ➢ Lead Auditor in ISO 14000 (Environmental Management)
2	Shri Subrata De Sarkar	General Manager	➢ General Manager in Central Public Sector undertaking. ➢ 12 years experience in Environmental Auditing ➢ Lead Auditor in ISO 50001:2011
3	Shri Suman Chchattaraj	Environmental Specialist	➢ M.Tech in Environmental Science ➢ 20 years experience in Environmental Impact Studies and Auditing

Energy Audit Team

SN	Name	Designation/ Qualification	Experience
1	Shri Suvra Majumdar	➢ Post Graduate Diploma in Energy Management (MBA) ➢ B.Tech (Electrical Engineering)	➢ 15 years experience of Energy audit
2	Shri Gautam Ghosh	➢ Diploma in Mechanical & Electrical Engineering from Calcutta Technical School	➢ 27 Years experience of working in electrical engineering department in different industries. ➢ 12 years experience in independent electrical auditing

1.8 List of Instruments

Following are the instrument used at the time of the Energy Audit.

Sr.	Instrument	Make/Sr.No.
1	Digital LUX Meter	HTC/2222600
2	Digital Micro OHM Meter	Innova/I-259
3	Digital Multi Meter	Kusam Meco/162180630
4	Digital Clampmeter	Waco/1910149152
5	Meger	Waco/307421
6	Load analyser	Waco/2954563

1.9 List of Laboratory Instruments for Environmental Monitoring

Sl. No.	Name of Equipment	Make	Model
1	GAS CHROMATOGRAPH WITH FID, TSD.	VARIAN	CP3800
2	GAS CHROMATOGRAPH MASS SPECTROMETER WITH ECD	VARIAN	CP 3800 SATURN 2200
3	GAS CHROMA TOGRAPH WITH FID for Air	DANI	Master GC
4	ION CHROMATOGRAPH	Thermo Fisher Scientific	DIONEXICS 1100
5	H.P.L.C.	VARIAN	SERIES 200
6	FTIR	Thermo Fisher Scientific	Nicolet IS10
7	ATOMIC ABSORPTION SPECTRROPHOTOMETER	VARIAN	AA 2406TA 120
8	MERCURY ANALYSER	EC	MAS 5840
9	FLAME PHOTOMETER	LOWERENCE & MAYO	381
10	SPECTRO PHOTOMETER	VARIAN	CARY 50
11	BOD INCUBATOR	MULTISPAN	DIGITAL
12	ELECTRONIC MICRO BALANCE	Citizen	CMSF

1.10 List of Field Equipment Department

Sl. No.	Name of Equipment	Make	Model
1	Field Dust Sampler	Envirotech/Lata Envirotech	APM – 550, PM 2.5 & 10
2	Respirable Dust Sampler	Envirotech/Lata Envirotech	APM-460BL
3	Stack Kit Sampler	Envirotech/Lata Envirotech	APM-620, PM-602
4	Sound Level Meter (AUTOMEDTIC)	Envirotech	SLM-101
5	Sound Level Meter	Lutron	SLM-4001
6	Local Air Quality Sampler	Vayubodhan	APM-414
7	Auto Metric Whather Monitor	Spectrum Technology	WM-272
8	Depth Sampler	NA	NA

1.11 General steps involved in Green Audit

a) Systematic and exhaustive data collection.

b) Evidence based documentation of activities.

c) Regular monitoring.

d) Provide standards and methods for improvement by establishing cost effective green action plan.

CHAPTER – 2

SURI VIDYASAGAR COLLEGE

2.1 About the College

Suri Vidyasagar College, named after the famous social reformer, litterateur, and fight for women's empowerment, Pandit Iswar Chandra Vidyasagar, has enter edits 78th year of eventful glory, bearing all the storms and buffets since its inception in 1942 as a wing of Vidyasagar College, Kolkata. In 1948, it was elevated to the status of a Degree College and given the name 'Suri Vidyasagar College' under the auspices of Calcutta University. Since 1960, the institute has been associated with the University of Burdwan, and it is presently a constituent College. Former President of the Republic of India, Honourable Shri Pranab Kumar Mukhopadhyay, was an eminent alumnus of this college.

Suri Vidyasagar College has devoted itself since its inception to the goal of imparting higher education, ensuring quality education, and providing research and extra-curricular activities in the best possible manner in order to spread the benefit of higher education in a relatively backward but glorious location. The NSS and NCC wings are doing excellent work in social reform and personality development.

Suri Vidyasagar College is 9.18 acres in size and Buildup area covers approximately 1.183Acre (51,544 Sq. Feet), which is located between the latitudes Latitude of 23°53'47.25"N to23°53'56.70"N and the Longitude of 87°31'57.64"E to 87°32'9.56"E.The College is proud of its eco-friendly Green Campus, which houses 22 departments teaching traditional and modern subjects, digital class rooms, state-of-the-art laboratories, a well-equipped Gymnasium, Language laboratory, distance education and open university study centres, the playground, residential accommodation for both teaching and administrative staff, a Post Office, and a Bank, among other things.

Under the University of Burdwan, the college provides 22 undergraduate courses and one postgraduate programme (Zoology).The college has 3870 students, 106 teaching faculty, and 27 non-teaching employees, and it is expected to grow rapidly.The college library is well- equipped with around 55,000 volumes, journals, reprographic machines, and so on, and it is rapidly progressing towards total digitization of its contents under the direction of two Librarians. At the end of 2016,our institute was re-accredited by NAAC with a rating of B++, the highest of any institute in the district of Birbhum.

2.2 Introduction

Environmental auditing, often known as green auditing, refers to assessments that enable us systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. Environmental compliance and management system short comings, as well as related corrective activities. Green auditing is an effective method for determining how and where the most energy or water resources are being utilised, the type and volume of waste generated, and considerations on how to implement adjustments and save money may then be made. It can raise health awareness while also promoting environmental awareness, morals, and ethics. Overall, it is critical in providing employees and students with a better awareness of the green impact on campus.

2.3 History of College

As far as the historical evidence goes, the first attempt to establish a college in Suri, the headquarters of Birbhum district, started in the year 1934. Under the tutelage of the then local landlord and educationist- Shri Amita Ranjan Mukhopadhyay, popular doctor Kaligati Banerjee, advocate Babu Harikinkar Samanta and other social activists, a working committee was formed, for this mission. The committee started collecting funds from local residents and it was decided that one of the members, Shri Tulsidas Chakraborty would buy them a large mansion by the name of 'Bose Saheber Kuthi', which would then form their base and also double up as the perfunctionary college building until a new one comes up. Funds were raised in the tune of twenty thousand rupees. But, with time the efforts waned and the funds dwindled. Fresh vigour was again observed in 1940. Under the leadership of Birbhum Zilla Board Chairman Shri Harikinkar Samanta, local dignitaries, including MLA Shri Debendranath Das, Shri Rampati Basu, Maulavi Nurul Absar, Md. Nake Moktar, Abdul Majid Choudhury along with the committee members submitted a deputation to the then Bengal 'Prime Minister' and Education Minister-in-Charge, Fajlul Haque, and petitioned for his assistance to bring up the college.

By then, the World War II had started and in India, Calcutta became the prime target of the Japanese. December of 1941 saw fierce bombing on Calcutta by the Japanese forces. This caused widespread panic and people started fleeing Calcutta for the neighbouring townships and villages. It was these circumstances that set the stage for the inception of Suri Vidyasagar College.

In his reminiscence, Jyoti Kishore Chowdhury, the then Principal of Vidyasagar College, Kolkata wrote: 'During those days, fear of bombing was so deep, the college had to be closed and a decision was taken to shift the college elsewhere'.

With the help of Prof. Tribhangamurari Mondal of Birbhum, plans were chalked out to setup the college at a school in Sainthia, a small township and business place near Suri. But, the efforts proved futile as this was disapproved by the then SDO of Suri, Shri Naren Chowdhury. Instead, he referred them to Dr. Kaligati Banerjee of Suri who grabbed the opportunity with both hands. A meeting was called in 1942, at the house of Dr. Kaligati Banerjee. Other than himself, the meeting was adorned by such esteemed luminaries as Shri. Nityanarayan Bandopadhyay, Shri. Umaprasanna Mukherjee (Olu Babu), the president of bar library-Shri Abinash Chandra Mitra, Shri P.C. Chandra, Shri Bankim Mukhopadhyay, Maulavi Nurul Absar, Md. Nake Moktar and Principal

J.K. Chowdhury. They then assembled at Shri. Amitaranjan's house for further assistance. In this regard, a proposal was placed before the Governing Body of Calcutta Vidyasagar College, which they approved along with an initial funding of Rs. 5000/-. Furnitures of the women section of I.Sc. Department were sent to Suri via train. Finally, under the guidance of Principal J.K. Chowdhury and with the newly appointed Vice-Principal (Suri campus) Tribhangamurari Mondal at the helm of affairs, Suri Vidyasagar College came into existence. On 9th March, 1942, under the chairmanship of former Calcutta Vidyasagar College student- Shri. Abinash Chandra Mitra, the college started its journey as a branch of "Vidyasagar College", Calcutta. Classes started in the house adjoining Shri. Amitaranjan's Kali Temple (Kali Bari), while the new building was being constructed south of the adjoining Banyan Tree of the selected place for the new college. Classes shifted to the new building in June 1942. Total number of students in the 1942-43 batch was 212 only. For them, students hostel were also set up in rented rooms at Kendua Village (known as Kendua Chhatrabas), in the out skirts of Suri. After 1948, it became an independent college with the name "Suri Vidyasagar College". The first Principal of the Suri Vidyasagar College was Prof. J. K. Chowdhury from 09.03.1942 to 28.02.50 and the first Vice-Principal was Prof. Tribhanga Murari Mondal.

The College volunteered for institutional accreditation by NAAC, Bangalore, in November 2005. After analysis the executive committee of the NAAC awarded a grade of B+, on February, 2006. Now, in the second decade of the 21st century, the college stands tall, spreading the message of knowledge and wisdom to the society. Today, spread over an area of 25 Bigha, 5 Katha and 8 chatak, the college consists of 19 Academic Departments out of which 15 offer Honours & General courses, 4 General Courses and 1 P.G. Course in Zoology. In 1996, the total built up area of the college was 29,856 sq. ft. Another 14,755.31 sq. ft. was added between 2001 and 2004. Currently the total built area is around 70,000 sq. ft. which contains classrooms, laboratories, library, office, seminar halls, canteen, Gymnasium and students' hostels (separate for Boys and Girls).

The College in its second cycle accreditation by NAAC has improved its grade to B++ in 2016 which is a earmark to celebrate its Platinum Jubilee. The institute is now a RUSA 2.0 funded institute. One separate building with four Class rooms has been constructed and Girls Toilet has been renovated and extended with modern amenities. Additional Class rooms have been constructed with the grant from Higher Education Department, Govt. of West Bengal during last five years.

Location of the College

Location of the College is College Para, Suri, Dist. Birbhum, Pin Code – 731 101.

Communication and Transportation

The College is well connected from Bolpur & Burdwan station and by road. The College is located within 1 km from Suri station and 1km away from Suri (NBSTC) Bus stand. Distance from Suri College to Andal Airport is around 61.7 Kms.

2.4 Vision of the College:

- Our vision is to go ahead with confidence and courage to educate the students more and more with morality, nobility and magnanimity of soul removing all barriers to comprehensive education of good quality to serve society better. Our Vision: Wisdom, Sacrifice, Service

2.5 Mission of the College:

- The declared goals and objectives of Suri Vidyasagar College are: Wisdom, Self-Sacrifice and Social Service (Jnana, Tyaga, Seva) embedded in the Emblem of the college. The missions of the college are:
- Imparting Higher Education,
- Development of Personality and • Raising Socio-Cultural Awareness.

CHAPTER - 3

GREEN AUDIT METHODOLOGY

3.1 Utility of Green Auditing

Green audit is used to improve existing anthropogenic activities, with the object to reduce the adverse effects of these activities upon environment. An environmental auditor will study an organization's efforts to conserve the environment in a systematic and documented manner and will produce an environmental audit report.

3.2 Objectives of the Study

The basic objective of green audit is to promote environment management and conservation in the college campus. Purpose of the audit is to identify, quantify, describe and prioritize the framework of environmental sustainability in compliance with the applicable regulations, policies and standards. Major objectives of carrying out green audit are:

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

3.3 Methodology

In order to perform green audit, methodology included different techniques such as physical inspection of the campuses, observation and review of the documentation, interviewing key persons and data analysis, measurement of the present status of environment management in the campuses:

- Water quality assessment, consumption and management
- Air quality assessment and management
- Electricity consumption and management
- Sound pollution monitoring
- Waste management
- Bio diversity status of the campus
- Land use and land coverage
- Rain water Harvesting
- Use of alternate energy sources.

CHAPTER - 4

LAND USE ANALYSIS, SURI VIDYASAGAR COLLEGE, WEST BENGAL

4.1 General overview of the concept of land use:

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

4.2 Methodology adopted for land use mapping

Three types of data that are GPS points, field survey data and Google earth data for Geo-referencing have been used in this study. Land use map of the study area have been prepared using field survey

CLASSIFICATION SCHEME FOR LAND USE ANALYSIS OF BUILT UP AREA

Level-I	Level-II
1. Built- up land area	1.1 Dense 1.2 Moderate 1.3 Sparse

Therefore, attempt has been made in this study to map land use for Suri Vidyasagar College with a view to detect the land consumption in the built-up land area.

LAND USE DATA OF COLLEGE OF SURI VIDYASAGAR COLLEGE

CATEGORIES OF LAND USE	AREA IN SQ METRES
OPEN SPACE AND PLANTATION	31553.30
Ground Coverage	5615.80
TOTAL AREA	37169.10

Ground coverage of 15.11% (i.e 5615.80 sq metres) consists of the buildings.

FINDINGS:

Suri Vidyasagar College, which was established in the year 1948, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 84.89% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

CHAPTER – 5

WATER QUALITY ASSESSMENT CONSUMPTION & MANAGEMENT

Water quality analysis was conducted by Qualissure Laboratory Services

5.1 Water Quality Analysis Test Report

DOC NO : QLS/SAMP/08-D/00

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No.	: QLS/MR/W/20-21/C/387
	Date	: 03.09.2020
	Sample No.	: QLS/MR/W/20-21/387
	Sample Description	: Drinking Water
	Sample Location	:Aquaguard Near Principal Office
	Sample Drawn On	: 10.08.2020
	Date of Performance	: 10.08.2020-11.08.2020

Analysis Result

(A) Microbiological Analysis

Sl. No.	Characteristic	Limit as per Drinking Water Standard : IS:10500, 2012Amd. 2	Test Method	Result
1.	Total Coliform Bacteria/100ml	Not Detectable	IS 15185-2016	Not Detected
2.	E.coli /100ml	Not Detectable	IS 15185: 2016	Not Detected

(B) Chemical Analysis

Sl. No.	Test Parameter	Test Method	As per Drinking Water Standard : IS:10500, 2012Amd. 1 & 2		Result
			Desirable Limit	Permissible Limit	
1.	pH Value at 25°C	IS 3025 (Part 11)- 1984 RA: 2012	6.5-8.5	No Relaxation	7.49
2.	Turbidity in NTU	IS 3025 (Part 10)- 1984 RA: 2012	1	5	<1.0
3.	Total Dissolved Solids (TDS) in mg/l	IS 3025(Part 16)- 1984 RA: 2012	500	2000	356
4.	Calcium(as Ca) in mg/l	IS 3025 (Part 11)- 1984 RA: 2012	75	200	59.8
5.	Chloride(as Cl) in mg/l	IS 3025 (Part 10)- 1984 RA: 2012	250	1000	94.7
6.	Iron (as Fe) in mg/l	IS 3025(Part 53)-1988 RA: 2014	1.0	No Relaxation	0.21
7.	Magnesium(as Mg) in mg/l	IS 3025 (Part 46)-1994 RA: 2014	30	100	33.6
8.	Nitrate (as NO_3) in mg/l	IS 3025 (Part 34)-1988 RA: 2014	45	No Relaxation	<0.9
9.	Free Residual Chlorine in mg/l	IS 3025 (Part 26): 1986(RA 2014)	0.2	1.0	<0.1
10.	Sulphate (as SO_4) in mg/l	IS 3025 (Part 24)-1986, RA: 2014	200	400	39.1
11	Alkalinity (as $CaCO_3$) in mg/l	IS 3025 (Part 23)- 1986, RA: 2014	200	600	192.0
12.	Total Arsenic(as As) in mg/l	IS 3025 (Part 37):1988,RA 2014	0.01	No Relaxation	<0.03
13.	Total Hardness (as $CaCO_3$) in mg/l	IS 3025 (Part 21)-1983, RA: 2014	200	600	286.8

for Qualissure Laboratory Services
Reviewed & Authorized By

(Benimadhab Goral)
Authorized Signatory

Drinking water facility at Suri Vidyasagar College

The water that is utilised for drinking is clean and well-maintained.Six RO water filters have been built on our college campus to provide safe drinking water, two of which include chilling facilities. A solar energy-powered water tank connection is available for emergency use at the Girls' Hostel and Quarter. Except for one or two instances, no water is lost during the survey as a result of leaks or overflow from overhead tanks. Moreover water is released from each water reservoir regularly and cleaned at regular interval to maintain the hygiene of the tank.

Fig. 1 : Drinking water facility of the College

(A) Water source for Gardening, **(B)** Tubewell, **(C-D)** Water filter with basin, **(E)** Small pump for drinking water, **(F)** Meters in Pump House, **(G-H)** Water Cooler with purifier, **(I-J)** Solar power-driven water pump with tank.

DOC NO : QLS/SAMP/08-D/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Location Sample Drawn On Date of Performance	: QLS/MR/W/20-21/C/388 : 03.09.2020 : QLS/MR/W/20-21/388 : Waste Water :Near Canteen Main Drain : 10.08.2020 : 10.08.2020-11.08.2020

Analysis Result

Sl. No.	Parameter	TEST METHOD	Result	Limit as per CPCB for discharge of effluents	
				Inland Surface Water	Public Sewers
1	pH at 25°C	APHA 23rd Edition-2017, 4500 H+	7.19	5.5 to 9.0	5.5 to 9.0
2	Total Suspended Solid in mg/l	APHA 23rd Edition-2017, 2540 D	16	100	600
3	Chemical Oxygen Demand (as COD) mg/l	APHA 23rd Edition-2017, 5220B	29	250	---
4	Biochemical Oxygen Demand (as BOD) mg/l	IS 3025 (Part 44)-1993, RA:2014	16	30	350
5	Oil & Grease in mg/l	APHA 23rd Edition-2017, 5520A	<2.1	10	20

for Qualissure Laboratory Services
Reviewed & Authorized By

(Benimadhab Gorai)
Authorized Signatory

CHAPTER – 6

AMBIENT AIR QUALITY ASSESSMENT AND MANAGEMENT

6.1 Air Quality Test Report

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Mark	: QLS/MR/A/20-21/C/513 :03.09.2020 : QLS/MR/A/20-21/513 : Ambient Air : Near Principal Room

Analysis Result

Location : Near Principal Room			Date of sampling :10.08.2020-11.08.2020	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 30°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 66%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10µm) in µg/m³	68	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5µm) in µg/m³	32	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in µg/m³	6.4	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in µg/m³	23.6	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in µg/m³	621	2000	IS: 5182 (Part-10):1999,RA-2014
NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.				

for **Qualissure Laboratory Services**
Reviewed & Authorized By

(Benimadhab Gorai)
Authorized Signatory

AMBIENT AIR TEST REPORT

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Mark	: QLS/MR/A/20-21/C/514 :03.09.2020 : QLS/MR/A/20-21/514 : Ambient Air : Near Teacher's Room

Analysis Result

Location : Near Teacher's Room			Date of sampling : 10.08.2020-11.08.2020	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 30°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 66%	
Sl. No.	Pollutants	Result	Limit as per CPCB	Method of Test Reference
1	Particulate matter (<10μm) in $\mu g/m^3$	82	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5μm) in $\mu g/m^3$	41	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in $\mu g/m^3$	6.8	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in $\mu g/m^3$	24.9	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in $\mu g/m^3$	659	2000	IS: 5182 (Part-10):1999,RA-2014

NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.

for Qualissure Laboratory Services
Reviewed & Authorized By

(Benimadhab Gorai)
Authorized Signatory

CHAPTER – 7

NOISE MONITORING

7.1 *Ambient Noise Monitoring Status:*

DOC NO : QLS/SAMP/08-C/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description	: QLS/MR/A/20-21/C/614 : 03.09.2020 : QLS/MR/A/20-21/614 : Ambient Noise

Sampling Done By:B.Mondal

Sampling Guideline : As per IS: 9876: 1981 (RA-2001)

Sample No.	Date of Monitoring	Location	Leq dB (A) Day Time	Leq dB (A) Night Time
811	10 - 11.08.2020	Near Principal Room	55.7	44.9

Code/ Category	Leq dB (A)Day Time	Leq dB (A)Night Time	
A/Industrial	75	70	**NOTE:** *Day Time : 06.00 Hr. – 22.00 Hr.* *Night Time : 22.00 Hr. – 06.00 Hr.*
B/Commercial	65	55	
C/Residential	55	45	
D/Ecological Sensitive	50	40	

for Qualissure Laboratory Services
Reviewed & Authorized By

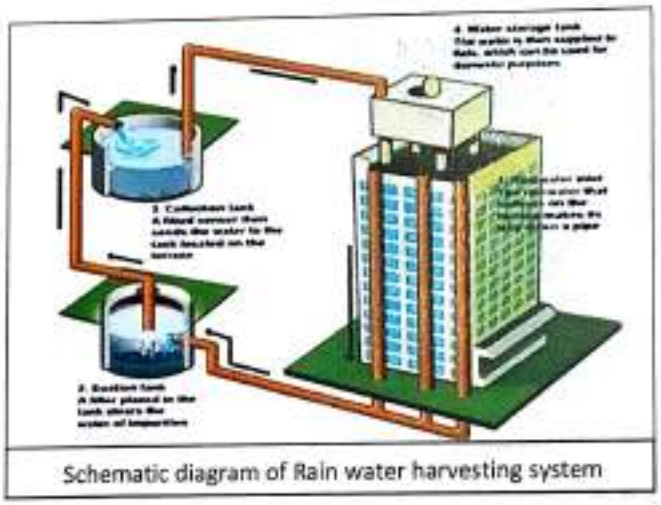
(Benimadhab Gorai)
Authorized Signatory

CHAPTER - 8

RAIN WATER HARVESTING SYSTEM

The primary goal of rain water harvesting at Suri Vidyasagar College Campus is to raise ground water levels by collecting and storing rain water from roof top run-off. The College lies in a semi-arid and sub-humid zone. The campus'ss oil is lateritic in nature. The soil is exceptionally porous and has a high capacity for in filtration. In our campus rain water harvesting system has been installed at Aurobinda Bhavana. The roof runoff water is collected through network of pipe lines and store it within two large tanks situated at ground level in front of Aurobinda Bhavana. This stored rainwater is used for cleaning and gardening purpose.

Rainwater Harvesting Tank on roof top of Aurobinda Bhavana



Schematic diagram of Rain water harvesting system

Fig. 2 : Rain Water Harvesting System

CHAPTER - 9

ELECTRICITY CONSUMPTION (IN UNIT) AND MANAGEMENT

9.1 General Details:

Sl.No.	PARTICULARS	DETAILS	
1	Name & Address of College	Suri Vidyasagar College College Para, Suri, Birbhum West Bengal–731101	
	Web Site	https://surividyasagarcollege.org.in	
2	Name of Contact Officer	Dr. Tapan Kumar Parichha	
	Designation	Principal	
	Name of Alternative Officer	Dr. Soumya Ranjan Bhattacharyya	
	Designation	IQAC-Coordinator	
3	Telephone No. Mobile No.	NA 9830829832	
	Fax No. e-mail ID	svctkp@gmail.com	
	No. of shift (Morning & Day)	7am to 5pm	
	No. of Employees (Approx)	105	
4	Electricity Consumption	Imported (Purchased) 4439	
5	Specific Energy Consumption	Fuel	Electricity
		656/-	Rs. 59,139/- (Per (month)
6	LPD	1,848/-	
7	EPI	0.22	

9.2 Electrical Details

a) Transformers

	No. 1
Voltage Ratio	N/A
KVA	N/A
% Impendence	N/A

b) Electricity Consumption

	Particulars	Demand
A	Contract demand KVA	18.27
B	Maximum demand	17.99
C	Total Energy units consumed / year	53274
D	Avg. Power Factor(P.F.)	0.97
E	Avg. Energy bills(Rs/month)	Rs.59,139/-

c) Detailed list of Electric Motors operating in the college

S.NO.	NAME OF THE PLANT	RATING OF MOTOR (KW)	NO. OF MOTORS
1	Suri Vidyasagar College, Suri, Birbhum	3.34	4 nos.

d) **Connected Load**

	EQUIPMENT	TOTAL NUMBERS	LOAD IN KW (TOTAL)
A	Motors : Greater than 10kW	NIL	NIL
	: Less than 10 kW	4Nos.	3.34 KW
B	AC & Ventilation with TR capacity		
a)	Others (Package ACs/ Split ACs / Windows ACs) with TR	**Room AC of Split/Window type –** 50.99	
C	Total Process Load (in kW)	54.33 KW	
D	Total Lighting Load (in kW) & Luminaries details	**No's of lighting luminaries** (LED+T/L+ (including fan) Tube Light, Led Light, etc.= 27.06 KW Electric Fan - 46.38 KW	
	Total Load (in kW)	**127.77 KW**	

A. Lux Measurements :

Sl.no.	Room	LUX level	Remarks
1.	**Arabinda Bhavan**		
	Ground Floor	302,301,301,298,298	
	1st floor	303,305,302,305,304	
	2nd floor	300,303,306,312,305	
2	**Rabindra Bhavan**		
	Ground Floor	306,305,303,297,301	
	1st floor	305,302,299,304,308	
3	**Auditorium (New hall)**		
	Ground Floor	299,304,306,302,307	
4	**Gandhi Bhavan**		
	Ground Floor	305,306,305,298,299	
	1st floor	308,306,302,301,304	
5	**Vivekananda Bhavan**		
	Ground Floor	304,306,306,310,303	
	1st floor	299,300,304,307,305	
6	**Humanities Building**		
	Ground Floor	305,304,312,309,304	
	1st floor	303,300,307,309,303	
7	**Administrative Building**		
	Ground Floor	303,311,314,302,306	
	1st floor	311,308,314,302,309	
8	**Rabindra Chatravas**		
	Ground Floor	300,302,303,299,307	
	1st floor	302,305,304,300,307	
9	**Mrinalini Chatriniwas**		
	Ground Floor	301,303,308,304,307	
	1st floor	302,304,309,301,305	
10	**Micro Biology**		
	Ground Floor	309,308,304,303,304	
	1st floor	301,303,302,304,305	
11	**NSOU Building**		
	Ground Floor	312,308,309,303,304	
	1st floor	308,311,304,306,308	
12	**RUSA**		
	Ground Floor	303,302,304,309,307	
	1st floor	303,306,304,309,305	

Illumination Level Comparison

Area	Average Lighting Level (LUX)	NBC Recommended
Arabinda Bhavan	303	300-500
Rabindra Bhavan	303	300
Auditorium (New hall)	303	300
Gandhi Bhavan	303	300
Vivekananda Bhavan	304	300
Humanities Building	305	300
Administrative Building	308	300
Rabindra Chatravas	302	300
Mrinalini Chatriniwas	304	300
Micro Biology	304	300
NSOU Building	307	300
RUSA	305	300

Remarks: Lights needs cleaning at an interval of one month and old light to be replaced by new to get desired LUX value

9.3 Use of Alternate Energy

The institute has taken an important step for reduction in pollution level by installation of solar panel and photo voltaic cell for generating electricity.

For reducing carbon emission, and dependence on fossil fuel, the institution has resorted to using green energy by harnessing solar power.

Generated power is transferred to the grid.

This helps in reducing carbon emission.

Fig. 3 : Solar System

CHAPTER - 10

WASTE MANAGEMENT

The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October, 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. To implement this mission, collective mass effort is necessary. For proper segregation and management proper use of waste bins is the only solution for waste management purpose in the college campuses.

10.1 Solid Waste

Suri Vidyasagar College has set up separate bins to ensure proper segregation and collection of the biodegradable, non-biodegradable and hazarders waste products generated in the campus. The responsibility of recyclable waste is however still not taken up due to devoid of recycling device to carry on the procedure. However, several solid wastes such as glass, cans, which and brown papers, batteries, print cartridges, cardboard, furniture, damage pen, carbon papers etc are either sold to vendors for recycling or despatch via municipality disposal van in regular basis. The biodegradable waste such as humas, rest portion of vegetables etc. which are used in college canteen, Staff quarters and Boys' and Girls' hostels are used for preparing bio fertilizers.

Vermi compost units are observed near New Hall for fertilizers also. College has developed few good practices, such as single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc and campus is declared as Plastic Free zone. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are reused in the laboratories.

Fig. 4 : Waste Management in the college campus

(A) Dustbin for solid and liquid waste, **(B)** Large dustbin for solid non-biodegradable waste product; **(C)** Reservoir for Solid bio-degradable waste product; **(D)** Vermi compost units **(E)** Disposed of waste product storage bags carrying van from Suri municipality by NCC.

10.2 Liquid Waste

The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from laboratory of different departments, toilets of college, hostel, kitchen and canteen. Those waters are used for gardening purpose.

10.3 E-Waste

Substantial qualtity of e waste is generated due to extensive use of computer.

All members particularly students have been advised not to throw used pendrive etc. any where, but to keep in designated bins.

E-Waste is accumulated in a separate room, stock of such waste as on date is quite substantial.

CHAPTER - II

BIODIVERSITY STATUS OF THE COLLEGE CAMPUS

11.1 Introduction

Suri Vidyasagar College campus is very rich in the term of biodiversity. To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to have an understanding of the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

11.2 Objective

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

1. Documentation of the floral diversity of the area: its trees, herbs, shrubs, climbers and aquatic vegetations.

2. Documentation of the major faunal groups like mammals, reptiles, amphibians, birds and among the insects, butterflies and dragonflies.

3. Documentation of the specific interdependence of floral and faunal life.

Survey Area

The green area of Suri Vidyasagar College covers approximately 3.96 acres out of 9.18 acres, which is about 43.15 percent of the total area, and is strategically distributed across different sections of the campus. The green spaces include gardens, courtyards, an open field, and a play ground, providing ample opportunities for relaxation, outdoor activities, and study in a natural setting.

Location Map

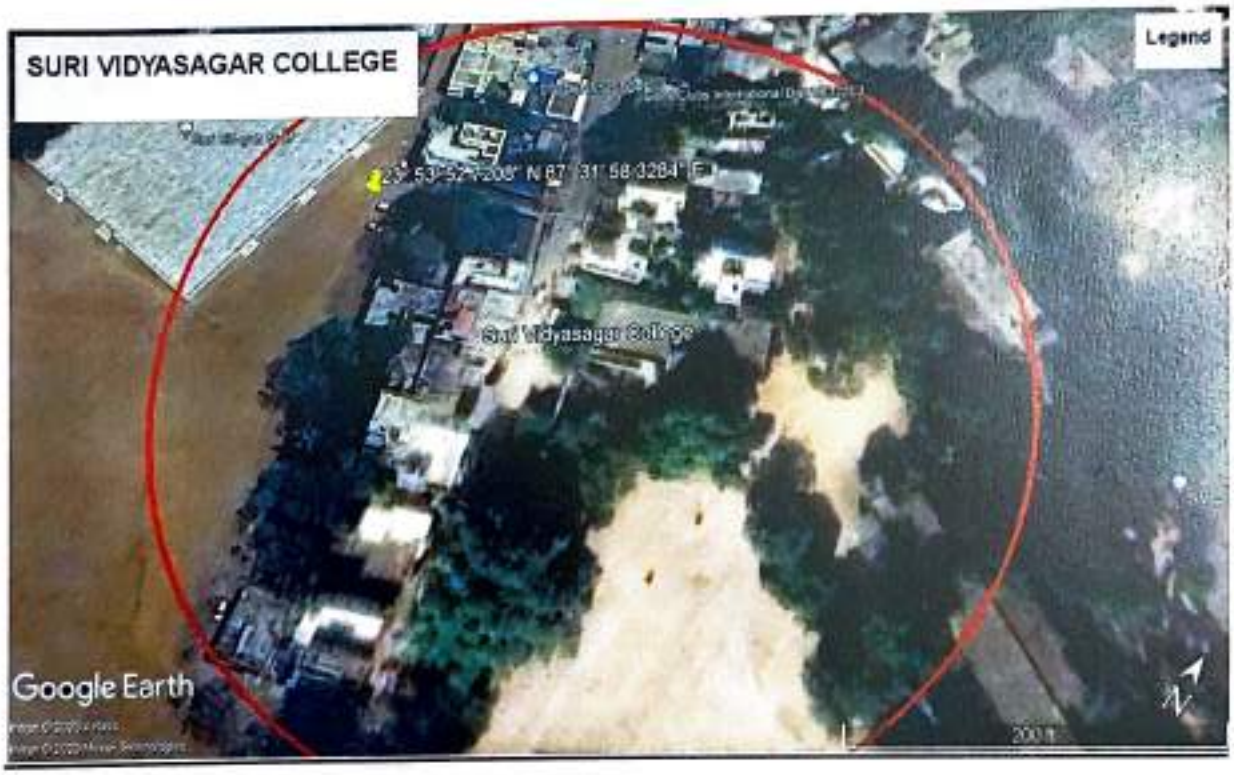


Fig. 5 : Location map

11.3 Method of Study

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

a) Sampling was done mostly is random manner.

b) Surveys were conducted for the maximum possible hours in day time.

c) Tree species were documented through physical verification on foot and photographed each species as much as possible.

d) The total area was surveyed by walking at day time.

e) 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.

f) Observing mammals depend critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however, are rare and difficult to detect. Small mammals like the field rats were found near their burrows, particularly during their entry or exit times in or out from their burrows respectively. In some cases, deposits and footprints were also observed that served as a potential clue for the presence and absence of the concerned species. These secondary evidences were all noted with time and space co-ordinates.

g) Birds are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. Sampling was done on the basis of direct sighting, call determination and from the nests of some bird species

h) Reptiles were found mostly by looking in potential shelter sites like crevices of building, logs, tree hollows and 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.

i) Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near pond, road beside wetland and in other possible areas. Diurnal search operations are also successful.

j) Active invertebrates like the insects require more active search. For larger winged insects like butterflies, dragonflies and damselflies, random samplings were carried and point sampling was also done.

k) The easiest way to observe many of the invertebrates is simply looking for them in the suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, in crevices in the walls and rocks and also in leaf litter, dung etc. slogs and snails are more conspicuous during wet weather and especially at night when they were found using torch.

11.4 Plant diversity in the College Campus

Suri Vidyasagar College premises having about 39.54 acres of land have unique plant diversities. These include flowering plants, leafy trees, medicinal herbs and innumerable wild bushes.

These plants are listed and depicted as following:

List of the Major Plants of the Garden

কৃষ্ণচূড়া *Delonix regia* (Bojer ex Hook.) Raf. Family: Fabaceae; Clade: Rosids	বান্দরলাঠি *Cassia fistula* L. Family: Fabaceae; Clade: Rosids	মিলজিরি *Senna siamea* (Lam.) H.S Irwin&Barneby Family: Fabaceae; Clade: Rosids
মেহগনি *Swietenia mahagoni*(L.) Jacq. Family: Meliaceae; Clade: Rosids	কনকচূড়া *Peltophorumpterocarpum*(DC.) Backer ex K.Heyne Family: Fabaceae; Clade: Rosids	বকুল *Mimusopselengi* L. Family: Sapotaceae; Clade: Asterids
শিশু *Dalbergia sissoo*Roxb. ex DC. Family: Fabaceae; Clade: Rosids	শিরিষ *Albizia lebbeck*(L.) Benth. Family: Fabaceae; Clade: Rosids	দেবদারু *Monoonlongifolium* (Sonn.) B. Xue & R.M.K. Saunders Family: Annonaceae; Clade: Magnolids
ঝাউ *Casuarina equisetifolia* L. Family: Casuarinaceae; Clade: Rosids	ছাতিম *Alstoniascholaris* (L.) R.Br. Family: Apocynaceae; Clade: Asterids	নিম *Azadirachta indica* A. Juss. Family: Meliaceae; Clade: Rosids
ইউকালিপটাস *Eucalyptus tereticornis* Sm. Family: Myrtaceae; Clade: Rosids	সেগুন *Tectona grandis*L.f. Family: Lamiaceae; Clade: Asterids	বট *Ficus benghalensis* L. Family: Moraceae; Clade: Rosids
পাকুড় *Ficus virens*Aiton Family: Moraceae; Clade: Rosids	আম *Mangifera indica* L. Family: Anacardiaceae; Clade: Rosids	তাল *Borassus flabellifer* L. Family: Arecaceae; Clade: Commelinids
পারুলসো *Gliricidiasepium*(Jacq.) Kunth Family: Fabaceae; Clade: Rosids	চন্দ্রকান্তা *Tecoma stans* (L.) Juss. ex Kunth Family: Bignoniaceae; Clade: Asterids	নাগলিঙ্গম *Couroupitaguianensis*Aubl. Family: Lecythidaceae; Clade: Asterids
বেল *Aegle marmelos* (L.) Correa Family: Rutaceae; Clade: Rosids	কাঠ-বাদাম *Terminalia catappa* L. Family: Combretaceae; Clade: Rosids	Ash *Morindacoreia*Buch.-Ham. Family: Rubiaceae; Clade: Asterids
Kurchi *Holarrhenapubescens*Wall. ex G.Don Family: Apocynaceae; Clade: Asterids		

Fig. 6 : Major plants in the campus area

11.5 Medicinal Plants in the Campus:

A number of plants with medicinal properties are growing in the campus, specially in the medicinal plant garden.

Sl. No.	Common Name	Scientific name	Uses
1	Basak	*Justicia adhatoda*	Couth, colds, asthma, bronchodilator
2	Apang	*Achyranthes aspera* Linn.	Anti inflammatory and uterine stimulant activity, rheumatism, Hydrophobie.
3	Kalmech	*Andrographis paniculata* (Burm.f.)	Fever, dysentery, dyspepsia, improves liver function, Leaves – in case of irregular stool, losss of appetite; roots – given to children to cure general debility.
4	Harjora	*Cissus quadrangularis* Linn. Syn. *Vitis quadrangularis*	Leaves – in bowel complaints; stem to cure scurvy, irregular menstruation, asthma, sap applied externally on forehead to cure one-sided headache.
5	Amlaki	*Emblica officeinalis* Gaertn	Fruits – treat vomiting, leprosy, piles, anaemia; leaves – in ophthalmia.
6	Ramtulsi	*Ocimum gratissimum* Linn.	Leaves – Decoction of the leaf applied to treat septic wounds, Seeds – soaked in water and taken very cooling and refreshing drink.
7	Jaba	*Hibiscus rosasinensis* Linn.	Flowers – in black colour of hair, female disease; leaves – soothing, used in growth of hair, Roots – in cold.
8	Telakucha	*Coccinia grandis* (Linn.) Voigt	Roots – in case of vomiting, burning sensation of hands and feet; Leaves – in cough and skin disease.
9	Arshagandha	*Wythania somnifera*	Roof, Leaf, Fruits and Seed
10	Akanda	*Calotropis agigantea*	Bark, Root, Leaf, Latex, Flower
11	Ayapan	*Eupatorium triplinerve*	Whole Plants
12	Tulsi	*Ocimum sanctum*	Leaf
13	Kari pata	*Murraya koenigii*	Root, Leaf, Fruit
14	Bisallakaroni	*Barleria lupulina*	Leaf
15	Kulephara	*Hygrophila schulli*	Whole plant
16	Gurmar	*Gymnema sylvestre*	Root, Leaf, Fruit
17	Grikumari	*Aloe vera*	Leaf
18	Thankuni	*Centella asiatica*	Leaf
19	Nayantara	*Catharanthus roseus*	Whole Plants
20	Neem	*Azadirachta indica*	Bark, Leaf, Yound Stem, Unripedfuit, Seed Oil
21	Basak	*Adhatoda vasika*	Leafd, Flower, Bark, Root
22	Bisllakarani	*Gendarussa Vulgaris*	Leaf
23	Bel	*Aegle marmelos*	Root, Young Leaf, Flower, Ripe and Unriped Fruit
24	Sarpagan Jha	*Raunolfia serpentina*	Leaf
25	Sughni	*Marsilea minuta*	Whole Plant
26	Karabi	*Nerium odorum*	Root, Leaf, Bardk, Stem
27	Black Tulsi	*Ocimum tenuiflorum*	Whole Plant, Leaf, Seed
28	Muthagrass	*Cyperus rotundus*	Root

1. *Heliotropium indicum*

MEDICINAL GARDEN

2. *Impatiens balsamina*

3. *Gymnema sylvestre*

4. *Pergularia daemia*

5. *Asystasia gangetica*

6. *Hygrophila spinosa*

7. *Anisomeles indica*

8. *Hyptis suaveolens*

9. *Leonotis nepetifolia*

10. *Leucas cephalotes*

11. *Martynia annua*

12. *Vitex negundo*

13. *Clerodendrum viscosum*

14. *Evolvulus alsinoides*

15. *Ipomoea pes-tigridis*

16. *Operculina turpethum*

17. *Euphorbia tirucalli*

18. *Ricinus communis*

Fig. 7 : Medicinal plants

11.6 Checklist of Reptiles:

Sl. No.	Common name	Scientific Name	Bengali Name
1	Checkered Keelback	*Xenochrophis piscator*	Joldhora
2	Buff Striped Keelback	*Amphiesma stolatum*	Hele
3	Rat Snake	*Zamenis longissimus*	Darash
4	Skink	*Lampropholis* sp.	Anjani
5	Oriental Garden Lizard	*Calotes versicolor*	Girgiti
6	Common House Gecko/Gekko	*Hemidactylus frenotus*	Tiktiki

Fig. 8 : Reptiles

11.7 Checklist of Birds:

A total of 63 types of bird species were found in the campus, which is quite a good number, in spite of the industrialized surrounding around it.

Total bird species encountered in the college campus.

Sl. No.	Common Name	Scientific Name
1	Indian cormorant	*Phalacrocorax fuscicollis*
2	Little cormorant	*Microcarbo niger*
3	Little Egret	*Egretta garzetta*
4	Cattle Egret	*Bubulcus ibis*
5	Black Kite	*Milvus migrans*
6	Black shouldered kite	*Elanus axillaris*
7	Common kestrel	*Falco tinnunculus*
8	Shikra	*Accipiter badius*
9	White breasted water hen	*Amaurornis phoenicurus*
10	Pond Heron	*Ardeola grayii*
11	Common sandpiper	*Actitis hypoleucos*
12	Yellow Footed Green pigeon	*Treron phoenicoptera*
13	Rock pigeon	*Columba livia*
14	Spotted dove	*Spilopelia chinesis*
15	Ring necked dove	*Streptopelia capicola*
16	Alexandrian parakeet	*Psittacula eupatria*
17	Common Cuckoo	*Cuculus canorus*
18	Spotted Owlet	*Athene brama*
19	White throated Kingfisher	*Halcyon smyrnensis*
20	Small blue Kingfisher	*Alcedo atthis*
21	Stork billed Kingfisher	*Pelargopsis capensis*
22	Pied Kingfisher	*Ceryle rudis*
23	Common Hoopoe	*Upupa epops*
24	Chestnut headed Bee-eater	*Merops leschenaulti*
25	Green Bee-eater	*Merops orientalis*
26	Black-rumped Flameback	*Dinopium benghalense*
27	Brown-capped Pygmy Woodpecker	*Yungipicus nanus*
28	Coppersmith Barbet	*Megalaima haemacephala*
29	Blue throated Barbet	*Megalaima asiatica*

Sl. No.	Common Name	Scientific Name
30	Lineated Barbet	*Megalaima lineata*
31	Brown-capped Woodpecker	*Dendrocopos nanus*
32	Brown Shrike	*Lanius cristatus*
33	Long tailed Shrike	*Lanius schach*
34	House Sparrow	*Passer domesticus*
35	Black hooded Oriole	*Oriolus xanthornus*
36	Golden Oriole	*Oriaus oriolus*
37	Black Drongo	*Dicrurus macrocercus*
38	Bronze winged Drongo	*Dicrurus aeneus*
39	Common Myna	*Acridotheres tristis*
40	Asian pied Starling	*Gracupica canta*
41	Chestnut tailed Starling	*Sturnia malabarica*
42	Jungle Myna	*Acridotheres fuscus*
43	Rufous Treepie	*Dendrocitta vagabunda*
44	Common Crow	*Corvus brachyrhynchos*
45	Red vented Bulbul	*Pycnonotus cafer*
46	Red whiskered Bulbul	*Pycnonotus jocosus*
47	Common Prinia	*Prinia inornata*
48	Ashy Prinia	*Prinia socialis*
49	Common Babbler	*Turdoides caudata*
50	Brown breasted Flycatcher	*Muscicapa muttui*
51	Taiga Flycatcher	*Ficedula albicilla*
52	Tailorbird	*Orthotomus sutorius*
53	Bluethroat	*Luscinia svecica*
54	Pied Bushchat	*Saxicola caprata*
55	Oriental Magpie robin	*Copsychus saularis*
56	Pale billed Flowerpecker	*Dicaeum erythrorhynchos*
57	White Wagtail	*Motacilla alba*
58	Pied Wagtail	*Motacilla alba*
59	Yellow Wagtail	*Motacilla flava*
60	Citrine Wagtail	*Motacilla citreola*
61	Purple rumped Sunbird	*Leptocoma zeylonica*
62	Silver billed Munia	*lonchura punctulata*
63	White throated Fantail	*Rhipidura albicollis.*

Fig. 9 : Local Birds

11.8 Checklist of Mammals:

Sl. No.	Common name	Scientific name	Bengali name
1	indian palm squirrel	*funumbulus* sp.	Kathberali
2	irugivorous bat	*suborder megachiroptera*	Badur
3	insectivorus bat	*suborder microchiroptera*	Charnchike
4	house mouse	*mus musculus*	Indur
5	rat	*rattus norvegicus*	Dhere indur

Fig. 10 : Mammals

11.09 Checklist of Ferns and Seasonal Flowers

Sl. No.	Local Name	Common Name	Scientific Name
1.	Bird-nest-Fern	Bird-nest Fern	*Asplenium* sp.
2.	Fern sp.		
3.	Fishtail Fern	Fishtail Fern	*Microsorum punctatum*
4.	Oakleaf Fern	Oakleat Fern	*Drynaria quercifolia*
5.	Dog flower, Snadragon	Dog flower, Snapdragon	*Antirrhinum majus*
6.	Garden stock, Common stock	Garden stock, Common stock	*Matthiola incana*
7.	Gazania	Gazania	*Gazania* sp.
8.	Gladiolus	Gladiolus	*Gladiolus* sp.
9.	Himsagar	Flaming katy, Florist kalanchoe	*Kalanchoe blossfelddiana*
10.	Maiden Pink	Maiden Pink	*Dianthus deltoids*
11.	Mike Ful	Amaryllis	*Hippeastrum* sp.
12.	Pansy, Garden Pansy	Pansy, Garden Pansy	*Viola tricolor var.*
13.	Petunia	Petunia	*Petunia hybrid*
14.	Verbena	Verbena	*Verbena* sp.

Fig. 11 : Flower of the college premises

CHAPTER - 12

GREEN INITIATIVES

Suri Vidyasagar College aims to protect and conserve its biodiversity, fresh and clean ambiance through the following green initiatives to protect and conserve nature.

12.1 *Plantation Programme*

Plantation programme of Suri Vidyasagar College promotes environment management and conservation in the college campus with the following objectives:

i) To motivate the students to keep their surroundings green and clean by undertaking plantation of trees.

ii) Promote ethos of conservation of water by minimizing the use of water.

iii) Motivate students to imbibe habits and life style for minimum waste generation, source separation of waste and disposing the waste to the nearest storage points.

iv) To create awareness amongst public and sanitary workers, so as to stop the indiscriminate burning of waste which causes respiratory diseases.

v) To minimize the use of plastic bags, not to throw the min public places as they choke drains and sewers, cause water logging and provide breeding ground for mosquitoes.

vi) Organize tree plantation programmes, awareness programmes such as Quiz, essay, painting competitions, rallys, nukkad natak etc. regarding various environmental issues and educate children about re-use of waste material & preparation of products out of waste

vii) Organize Nature Trail in Wild Life Sanctuaries/Parks/Forest are as to know about the Bio-diversity.

Tree plantation

Observation and examined by respected Principal sir and internal expert team

Viva-voce by respected Principal sir and internal expert faculty members

Planted trees in Medicinal Gardenof Suri Vidyasagar College

Fig. 12 : Plantation programme

12.2 *Green computing practice*

Being an academic institution, papers are used for various purposes like exam answer sheets, circulars, notices, office work, document printing, and Xeroxing. Since the trees are cut for paper manufacturing, the sequestration of carbon is reduced increasing carbon footprint. To cut down the carbon footprint, the university administration and various departments follow paperless methods of communication by using emails, online forms submission, etc: The paperless work was helpful in reducing tons of CO_2. The tons of biomass are saved by this green computing practice

CHAPTER – 13

CONSOLIDATION OF AUDIT FINDINGS

Green Audit will create a greater appreciation and under-standing of the impact of college activities on the environment. Suri Vidyasagar College has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercise has brainstormed and provided insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has increased knowledge about the need of maintaining sustainability of the college campus. It will create awareness around the use of the Earth's resources in your home, college, local community and beyond. Suri Vidyasagar Colleges hold adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good producing companies are rapidly developing in the area of energy efficiency.

13.1 Preparation of Action Plan

Management's policies referring to College and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the management of the college. The college should have a policy on green awareness raising or training programmes for students and staff, seminars on Environment Awareness are often organized by different departments of the institution, green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, college should have an action plan. The green auditing report will be a base line for the action plan to be evolved.

13.2 Follow up Action and Plans

Green Audit is an exercise which generates considerable quantities of valuable environment and resource management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and action plans and implementation programmes will be conducted on the basis of the audit findings.

13.3 Environmental Education

The following environmental education programmes may be implemented in the college before the next green auditing:-

Training programmes in solid waste management, liquid waste management setting up of biodiversity garden, tree management, medicinal plant nursery, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc.
- Conduct exhibition on throw away plastic danger, recyclable products etc.
- Display various slogans and pictures to protect environment.
- Implement chemical treatment system for waste water from the laboratories and incinerators.

CHAPTER - 14

CONCLUSION AND RECOMMENDATIONS

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can "add value" to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. The college is recent years consider the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its activities and become a more sustainable institution.

14.1 Suggestions

a) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.

b) Increase recycling education on campus.

c) Increase awareness of Environmentally Sustainable Development – Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

d) Collaborate for Interdisciplinary Approaches – Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula research initiatives, operations, and outreach activities that support an environmentally sustainable future.

e) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing strategy to reduce the environmental impact of its purchasing decisions.

f) Increase reduce, reuse, and recycle education on campus.

14.2 Recommendations:

a) *Declare the campus plastic free and implement it thoroughly.*

b) *Avoid plastic/thermocol plates and cups in the college level or department level functions.*

c) *Noise level monitoring shall be done as per the guideline of "Noise Pollution (Regulation and Control) Rules '2000'.*

d) *The Biodiversity is to be maintained whole considering the plantation in future.*

e) *Awarness among students and staff about green environment shall be done use tools like display boards.*

f) *The surroundings of the College should be keep clean.*

g) Exhaust Gas shall be monitored, analysed and check regularly

h) Medicinal Garden should be keep clean

i) Parking zone of college shall be neat & clean

j) Fire Extinguisher calibration should be done before the expiry date of calibration.

k) World Environment Day to be celebrated in college premises every year on 5th June and whole college students and staff shall get involved and take OATH for ENVIRONMENT CONSERVATION not only in college but also in every span of life.

l) Awareness among students and staff about green environment shall be done use tools like display boards.

m) Replace incandescent and CFL lamps with LED light

n) Replace LCD computer monitors with LED monitors

o) Installation of sensor-based electrification items like fans, lights, etc. can save electricity

p) Regular checkups and maintenance of pipes, overhead tanks, and plumbing systems should be done by the engineering section to reduce overflow, leakages, and corrosions.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

ACKNOWLEDGEMENT

We want to keep on record the excellent co-operation received from the entire team of faculty members, Principal, Co-Ordinator of IQAC and other teaching & non-teaching staff. Without their support, this Audit would not have been possible.

Our special word thanks are extended to:

1. Dr. Tapan Kumar Parichha – Principal
2. Dr. Soumya Ranjan Bhattacharyya – Associate Professor, Dept. of Physics, & Co-ordinator of IQAC
3. Dr. Anirban Paul – Assistant Professor of Botany & Convenor, Green Audit Team
4. Dr. Sujoy Das – Assistant Professor of Mathematics
5. Dr. Hemanta Saha - Assistant Professor of Botany & A.N.O.,NCC
6. Dr. Tannoy Mandal – Assistant Professor of Plant Protection & P.O.,NSS
7. Sri Pankaj Roy – Assistant Professor of Chemistry
8. Sri Shamim Alam – Assistant Professor of Botany
9. Sri Ranajit Ghosh – State Aided College Teacher of Geography
10. Sri Subhas Chandra Mondal - Accountant

For all the assistance provided to the audit team of Sonar Bharat Environment & Ecology Pvt. Ltd.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Director

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sonarbharat2017@gmail.com

Date : 25.09.2020

GREEN AUDIT CERTIFICATE

- Name of Work Project : **Green Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 27.08.2020 to 28.08.2020
- Period of Audit : 2019-2020
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Green Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

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Date : 18.09.2020

ENERGY AUDIT CERTIFICATE

- Name of Work Project : **Energy Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 12.08.2020 to 13.08.2020
- Period of Audit : 2019-2020

- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Energy Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.

- With the cooperation of faculty members and other staff audit has been successfully completed.

Suvra Majumdar

Suvra Majumdar
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Chartered Engineer (India) – Electrical Engineering Div.

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Date : 03.09.2020

ENVIRONMENTAL MONITORING CERTIFICATE

- Name of Work Project : **Environmental Monitoring of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 10.08.2020 to 11.08.2020
- Period of Audit : 2019-2020
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Environmental Monitoring in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

Subrata Desarkar
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Parimal Sarkar
(Director)

THE END

Green Audit Report
of
SURI VIDYASAGAR COLLEGE

2020-2021

INTERNAL QUALITY ASSURANCE CELL (IQAC)

SURI VIDYASAGAR COLLEGE

COLLEGE PARA, SURI, DIST. BIRBHUM, WEST BENGAL – 731 101.

CONTENT

EXECUTIVE SUMMARY

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the green campus for the institute which will lead for sustainable development. Suri Vidyasagar College is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher studies, the college has initiated 'The Green Campus' programme few years back that actively promote various projects for environment protection and sustainability.

Purpose of this audit is 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 etc. With this in mind, specific objectives of the audit is to evaluate adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on students' health and learning, college operational costs and the environment. The criteria methods and recommendations used in the audit were based on the identified risks.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

CHAPTER - 1

INTRODUCTION

1.1 Green Audit

Environmental or Green Audit is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices adopted to meet the environmental requirements (EPA, 2003). In other words, it is a management tool, comprising of systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with Institutional policies, which would include regulatory requirements and standards applicable.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modi has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned the "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. 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.

1.2 Why Green Audit

- To ensure that the performance of the institution with respect to environmental activities is in compliance with existing laws and regulations.
- To check the functionality and their operating success including water supply, energy related matters and other similar matters that are related to green operations in the campus
- To formulate or update the institution's environmental policy, if warranted.
- To measure the environmental impact of operational process related to green activities in the campus.
- To measure the performance of each green related operations and actions in the campus.
- To generate a data base of green activities for continuous monitoring to assess the success of each of them.
- To identify future potential liabilities.
- To align the institution's developmental and day to day activities with the stated vision, mission, strategies.
- To identify possible ways to reduce expenditure and running costs on equipments, appliances, etc. or try enhance revenue income.
- To improve process and materials efficiency, and in response to stakeholder requests for increased is closure.

1.3 *Goals of Green Audit*

College has conducted a green audit with specific goals as:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by university.
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issues.
- To motivate staff for optimized sustainable use of available resources.

1.3 *Objective of Green Audit*

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. The specific objectives are:

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

1.5 *About Critoria 7 of NAAC*

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, no vehicle day, Rainwater harvesting,etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

1.6 *Benefit of Green Audit to an Educational Institute*

There are many advantages of green audit to an Educational Institute.

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management.
- To create a green campus.

- To enable waste management through reduction of waste generation, solid and waste.
- To create plastic-free campus and evolve health consciousness among the Stakeholder.
- Recognize the cost-saving methods through waste minimizing and managing.
- Authenticate conformity with the implemented laws.
- Empower the organizations to frame a better environmental performance.
- Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental management approach and Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the Universityand its environment.
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the University.
- Finally, it will help to build a positive impression through green initiatives for theupcoming NAAC visit.

1.7 *Introduction of Auditing Firm*

Name of Firm	M/s. Sonar Bharat Environment & Ecology (P) Ltd.
Address	35, C. R. Avenue, 3rd floor, Kolkata - 700012
Contact Details	033-40031179/033-22113034

Details of team Member

Sr. No.	Name	Designation/ Technical	Technical Experience /Qualification
1	Shri Parimal Sarkar	Legal Expert	➢ M.Sc. in Disaster Management ➢ Post Graduate Diploma in Environmental Law from National Law School, Bangalore ➢ Lead Auditor in ISO 14000 (Environmental Management)
2	Shri Subrata De Sarkar	General Manager	➢ General Manager in Central Public Sector undertaking. ➢ 12 years experience in Environmental Auditing ➢ Lead Auditor in ISO 50001:2011
3	Shri Suman Chchattaraj	Environmental Specialist	➢ M.Tech in Environmental Science ➢ 20 years experience in Environmental Impact Studies and Auditing

Energy Audit Team

SN	Name	Designation/ Qualification	Experience
1	Shri Suvra Majumdar	➢ Post Graduate Diploma in Energy Management (MBA) ➢ B.Tech (Electrical Engineering)	➢ 15 years experience of Energy audit
2	Shri Gautam Ghosh	➢ Diploma in Mechanical & Electrical Engineering from Calcutta Technical School	➢ 27 Years experience of working in electrical engineering department in different industries. ➢ 12 years experience in independent electrical auditing

1.8 *List of Instruments*

Following are the instrument used at the time of the Energy Audit.

Sr.	Instrument	Make/Sr.No.
1	Digital LUX Meter	HTC/2222600
2	Digital Micro OHM Meter	Innova/I-259
3	Digital Multi Meter	Kusam Meco/162180630
4	Digital Clampmeter	Waco/1910149152
5	Meger	Waco/307421
6	Load analyser	Waco/2954563

1.9 List of Laboratory Instruments for Environmental Monitoring

Sl. No.	Name of Equipment	Make	Model
1	GAS CHROMATOGRAPH WITH FID, TSD.	VARIAN	CP3800
2	GAS CHROMATOGRAPH MASS SPECTROMETER WITH ECD	VARIAN	CP 3800 SATURN 2200
3	GAS CHROMA TOGRAPH WITH FID for Air	DANI	Master GC
4	ION CHROMATOGRAPH	Thermo Fisher Scientific	DIONEXICS 1100
5	H.P.L.C.	VARIAN	SERIES 200
6	FTIR	Thermo Fisher Scientific	Nicolet IS10
7	ATOMIC ABSORPTION SPECTRROPHOTOMETER	VARIAN	AA 2406TA 120
8	MERCURY ANALYSER	EC	MAS 5840
9	FLAME PHOTOMETER	LOWERENCE & MAYO	381
10	SPECTRO PHOTOMETER	VARIAN	CARY 50
11	BOD INCUBATOR	MULTISPAN	DIGITAL
12	ELECTRONIC MICRO BALANCE	Citizen	CMSF

1.10 List of Field Equipment Department

Sl. No.	Name of Equipment	Make	Model
1	Field Dust Sampler	Envirotech/Lata Envirotech	APM – 550, PM 2.5 & 10
2	Respirable Dust Sampler	Envirotech/Lata Envirotech	APM-460BL
3	Stack Kit Sampler	Envirotech/Lata Envirotech	APM-620, PM-602
4	Sound Level Meter (AUTOMEDTIC)	Envirotech	SLM-101
5	Sound Level Meter	Lutron	SLM-4001
6	Local Air Quality Sampler	Vayubodhan	APM-414
7	Auto Metric Whather Monitor	Spectrum Technology	WM-272
8	Depth Sampler	NA	NA

1.11 General steps involved in Green Audit

a) Systematic and exhaustive data collection.

b) Evidence based documentation of activities.

c) Regular monitoring.

d) Provide standards and methods for improvement by establishing cost effective green action plan.

CHAPTER – 2

SURI VIDYASAGAR COLLEGE

2.1 About the College

Suri Vidyasagar College, named after the famous social reformer, litterateur, and fight for women's empowerment, Pandit Iswar Chandra Vidyasagar, has enter edits 79th year of eventful glory, bearing all the storms and buffets since its inception in 1942 as a wing of Vidyasagar College, Kolkata. In 1948, it was elevated to the status of a Degree College and given the name 'Suri Vidyasagar College' under the auspices of Calcutta University. Since 1960, the institute has been associated with the University of Burdwan, and it is presently a constituent College. Former President of the Republic of India, Honourable Shri Pranab Kumar Mukhopadhyay, was an eminent alumnus of this college.

Suri Vidyasagar College has devoted itself since its inception to the goal of imparting higher education, ensuring quality education, and providing research and extra-curricular activities in the best possible manner in order to spread the benefit of higher education in a relatively backward but glorious location. The NSS and NCC wings are doing excellent work in social reform and personality development.

Suri Vidyasagar College is 9.18 acres in size and Buildup area covers approximately 1.183Acre (51,544 Sq. Feet), which is located between the latitudes Latitude of 23°53'47.25"N to23°53'56.70"N and the Longitude of 87°31'57.64"E to 87°32'9.56"E.The College is proud of its eco-friendly Green Campus, which houses 22 departments teaching traditional and modern subjects, digital class rooms, state-of-the-art laboratories, a well-equipped Gymnasium, Language laboratory, distance education and open university study centres, the playground, residential accommodation for both teaching and administrative staff, a Post Office, and a Bank, among other things.

Under the University of Burdwan, the college provides 22 undergraduate courses and one postgraduate programme (Zoology).The college has 3870 students, 106 teaching faculty, and 27 non-teaching employees, and it is expected to grow rapidly.The college library is well- equipped with around 55,000 volumes, journals, reprographic machines, and so on, and it is rapidly progressing towards total digitization of its contents under the direction of two Librarians. At the end of 2016,our institute was re-accredited by NAAC with a rating of B++, the highest of any institute in the district of Birbhum.

2.2 Introduction

Environmental auditing, often known as green auditing, refers to assessments that enable us systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. Environmental compliance and management system short comings, as well as related corrective activities. Green auditing is an effective method for determining how and where the most energy or water resources are being utilised, the type and volume of waste generated, and considerations on how to implement adjustments and save money may then be made. It can raise health awareness while also promoting environmental awareness, morals, and ethics. Overall, it is critical in providing employees and students with a better awareness of the green impact on campus.

2.3 History of College

As far as the historical evidence goes, the first attempt to establish a college in Suri, the headquarters of Birbhum district, started in the year 1934. Under the tutelage of the then local landlord and educationist- Shri Amita Ranjan Mukhopadhyay, popular doctor Kaligati Banerjee, advocate Babu Harikinkar Samanta and other social activists, a working committee was formed, for this mission. The committee started collecting funds from local residents and it was decided that one of the members, Shri Tulsidas Chakraborty would buy them a large mansion by the name of 'Bose Saheber Kuthi', which would then form their base and also double up as the perfunctionary college building until a new one comes up. Funds were raised in the tune of twenty thousand rupees. But, with time the efforts waned and the funds dwindled. Fresh vigour was again observed in 1940. Under the leadership of Birbhum Zilla Board Chairman Shri Harikinkar Samanta, local dignitaries, including MLA Shri Debendranath Das, Shri Rampati Basu, Maulavi Nurul Absar, Md. Nake Moktar, Abdul Majid Choudhury along with the committee members submitted a deputation to the then Bengal 'Prime Minister' and Education Minister-in-Charge, Fajlul Haque, and petitioned for his assistance to bring up the college.

By then, the World War II had started and in India, Calcutta became the prime target of the Japanese. December of 1941 saw fierce bombing on Calcutta by the Japanese forces. This caused widespread panic and people started fleeing Calcutta for the neighbouring townships and villages. It was these circumstances that set the stage for the inception of Suri Vidyasagar College.

In his reminiscence, Jyoti Kishore Chowdhury, the then Principal of Vidyasagar College, Kolkata wrote: 'During those days, fear of bombing was so deep, the college had to be closed and a decision was taken to shift the college elsewhere'.

With the help of Prof. Tribhangamurari Mondal of Birbhum, plans were chalked out to setup the college at a school in Sainthia, a small township and business place near Suri. But, the efforts proved futile as this was disapproved by the then SDO of Suri, Shri Naren Chowdhury. Instead, he referred them to Dr. Kaligati Banerjee of Suri who grabbed the opportunity with both hands. A meeting was called in 1942, at the house of Dr. Kaligati Banerjee. Other than himself, the meeting was adorned by such esteemed luminaries as Shri. Nityanarayan Bandopadhyay, Shri. Umaprasanna Mukherjee (Olu Babu), the president of bar library-Shri Abinash Chandra Mitra, Shri P.C. Chandra, Shri

Bankim Mukhopadhyay, Maulavi Nurul Absar, Md. Nake Moktar and Principal J.K. Chowdhury. They then assembled at Shri. Amitaranjan's house for further assistance. In this regard, a proposal was placed before the Governing Body of Calcutta Vidyasagar College, which they approved along with an initial funding of Rs. 5000/-. Furnitures of the women section of I.Sc. Department were sent to Suri via train. Finally, under the guidance of Principal J.K. Chowdhury and with the newly appointed Vice-Principal (Suri campus) Tribhangamurari Mondal at the helm of affairs, Suri Vidyasagar College came into existence. On 9th March, 1942, under the chairmanship of former Calcutta Vidyasagar College student- Shri. Abinash Chandra Mitra, the college started its journey as a branch of "Vidyasagar College", Calcutta. Classes started in the house adjoining Shri. Amitaranjan's Kali Temple (Kali Bari), while the new building was being constructed south of the adjoining Banyan Tree of the selected place for the new college. Classes shifted to the new building in June 1942. Total number of students in the 1942-43 batch was 212 only. For them, students hostel were also set up in rented rooms at Kendua Village (known as Kendua Chhatrabas), in the out skirts of Suri. After 1948, it became an independent college with the name "Suri Vidyasagar College". The first Principal of the Suri Vidyasagar College was Prof. J. K. Chowdhury from 09.03.1942 to 28.02.50 and the first Vice-Principal was Prof. Tribhanga Murari Mondal

The College volunteered for institutional accreditation by NAAC, Bangalore, in November 2005. After analysis the executive committee of the NAAC awarded a grade of B+, on February, 2006. Now, in the second decade of the 21st century, the college stands tall, spreading the message of knowledge and wisdom to the society. Today, spread over an area of 25 Bigha, 5 Katha and 8 chatak, the college consists of 19 Academic Departments out of which 15 offer Honours & General courses, 4 General Courses and 1 P.G. Course in Zoology. In 1996, the total built up area of the college was 29,856 sq. ft. Another 14,755.31 sq. ft. was added between 2001 and 2004. Currently the total built area is around 70,000 sq. ft. which contains classrooms, laboratories, library, office, seminar halls, canteen, Gymnasium and students' hostels (separate for Boys and Girls).

The College in its second cycle accreditation by NAAC has improved its grade to B++ in 2016 which is a earmark to celebrate its Platinum Jubilee. The institute is now a RUSA 2.0 funded institute. One separate building with four Class rooms has been constructed and Girls Toilet has been renovated and extended with modern amenities. Additional Class rooms have been constructed with the grant from Higher Education Department, Govt. of West Bengal during last five years.

Location of the College

Location of the College is College Para, Suri, Dist. Birbhum, Pin Code – 731 101.

Communication and Transportation

The College is well connected from Bolpur & Burdwan station and by road. The College is located within 1 km from Suri station and 1km away from Suri (NBSTC) Bus stand. Distance from Suri College to Andal Airport is around 61.7 Kms.

2.4 Vision of the College:

- Our vision is to go ahead with confidence and courage to educate the students more and more with morality, nobility and magnanimity of soul removing all barriers to comprehensive education of good quality to serve society better. Our Vision: Wisdom, Sacrifice, Service

2.5 Mission of the College:

- The declared goals and objectives of Suri Vidyasagar College are: Wisdom, Self-Sacrifice and Social Service (Jnana, Tyaga, Seva) embedded in the Emblem of the college. The missions of the college are:
- Imparting Higher Education,
- Development of Personality and • Raising Socio-Cultural Awareness.

CHAPTER - 3

GREEN AUDIT METHODOLOGY

3.1 Utility of Green Auditing

Green audit is used to improve existing anthropogenic activities, with the object to reduce the adverse effects of these activities upon environment. An environmental auditor will study an organization's efforts to conserve the environment in a systematic and documented manner and will produce an environmental audit report.

3.2 Objectives of the Study

The basic objective of green audit is to promote environment management and conservation in the college campus. Purpose of the audit is to identify, quantify, describe and prioritize the framework of environmental sustainability in compliance with the applicable regulations, policies and standards. Major objectives of carrying out green audit are:

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

3.3 Methodology

In order to perform green audit, methodology included different techniques such as physical inspection of the campuses, observation and review of the documentation, interviewing key persons and data analysis, measurement of the present status of environment management in the campuses:

- Water quality assessment, consumption and management
- Air quality assessment and management
- Electricity consumption and management
- Sound pollution monitoring
- Waste management
- Bio diversity status of the campus
- Land use and land coverage
- Rain water Harvesting
- Use of alternate energy sources.

CHAPTER - 4

LAND USE ANALYSIS, SURI VIDYASAGAR COLLEGE, WEST BENGAL

4.1 General overview of the concept of land use:

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

4.2 Methodology adopted for land use mapping

Three types of data that are GPS points, field survey data and Google earth data for Geo-referencing have been used in this study. Land use map of the study area have been prepared using field survey

CLASSIFICATION SCHEME FOR LAND USE ANALYSIS OF BUILT UP AREA

Level-I	Level-II
1. Built- up land area	1.1 Dense 1.2 Moderate 1.3 Sparse

Therefore, attempt has been made in this study to map land use for Suri Vidyasagar College with a view to detect the land consumption in the built-up land area.

LAND USE DATA OF COLLEGE OF SURI VIDYASAGAR COLLEGE

CATEGORIES OF LAND USE	AREA IN SQ METRES
OPEN SPACE AND PLANTATION	31553.30
Ground Coverage	5615.80
TOTAL AREA	37169.10

Ground coverage of 15.11% (i.e 5615.80 sq metres) consists of the buildings.

FINDINGS:

Suri Vidyasagar College, which was established in the year 1948, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 84.89% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

CHAPTER – 5

WATER QUALITY ASSESSMENT CONSUMPTION & MANAGEMENT

Water quality analysis was conducted by Qualissure Laboratory Services

5.1 Water Quality Analysis Test Report

DOC NO : QLS/SAMP/08-D/00

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Location Sample Drawn On Date of Performance	: QLS/MR/W/21-22/C/402 : 23.09.2021 : QLS/MR/W/21-22/402 : Drinking Water :Aquaguard Near Principal Office : 26.08.2021 : 28.08.2021-13.09.2021

Analysis Result

(A) Microbiological Analysis

Sl. No.	Characteristic	Limit as per Drinking Water Standard : IS:10500, 2012Amd. 2	Test Method	Result
1.	Total Coliform Bacteria/100ml	Not Detectable	IS 15185-2016	Not Detected
2.	E.coli /100ml	Not Detectable	IS 15185: 2016	Not Detected

(B) Chemical Analysis

Sl. No.	Test Parameter	Test Method	As per Drinking Water Standard : IS:10500, 2012Amd. 1 & 2		Result
			Desireable Limit	Permissible Limit	
1.	pH Value at 25°C	IS 3025 (Part 11)- 1984 RA: 2012	6.5-8.5	No Relaxation	7.47
2.	Turbidity in NTU	IS 3025 (Part 10)- 1984 RA: 2012	1	5	<1.0
3.	Total Dissolved Solids (TDS) in mg/l	IS 3025(Part 16)- 1984 RA: 2012	500	2000	354
4.	Calcium(as Ca) in mg/l	IS 3025 (Part 11)- 1984 RA: 2012	75	200	59.6
5.	Chloride(as Cl) in mg/l	IS 3025 (Part 10)- 1984 RA: 2012	250	1000	94.6
6.	Iron (as Fe) in mg/l	IS 3025(Part 53)-1988 RA: 2014	1.0	No Relaxation	0.20
7.	Magnesium(as Mg) in mg/l	IS 3025 (Part 46)-1994 RA: 2014	30	100	33.4
8.	Nitrate (as NO_3) in mg/l	IS 3025 (Part 34)-1986 RA: 2014	45	No Relaxation	<0.5
9.	Free Residual Chlorine in mg/l	IS 3025 (Part 26): 1986(RA 2014)	0.2	1.0	<0.1
10.	Sulphate (as SO_4) in mg/l	IS 3025 (Part 24)-1986, RA: 2014	200	400	38.9
11	Alkalinity (as $CaCO_3$) in mg/l	IS 3025 (Part 23)- 1986, RA: 2014	200	600	190.0
12.	Total Arsenic(as As) in mg/l	IS 3025 (Part 37)-1988,RA 2014	0.01	No Relaxation	<0.03
13.	Total Hardness (as $CaCO_3$) in mg/l	IS 3025 (Part 21)-1983, RA: 2014	200	600	286.9

for **Qualissure Laboratory Services**
Reviewed & Authorized By

Qualissure Laboratory Service Kolkata

(Benimadhab Gorai)
Authorized Signatory

Drinking water facility at Suri Vidyasagar College

The water that is utilised for drinking is clean and well-maintained. Six RO water filters have been built on our college campus to provide safe drinking water, two of which include chilling facilities. A solar energy-powered water tank connection is available for emergency use at the Girls' Hostel and Quarter. Except for one or two instances, no water is lost during the survey as a result of leaks or overflow from overhead tanks. Moreover water is released from each water reservoir regularly and cleaned at regular interval to maintain the hygiene of the tank.

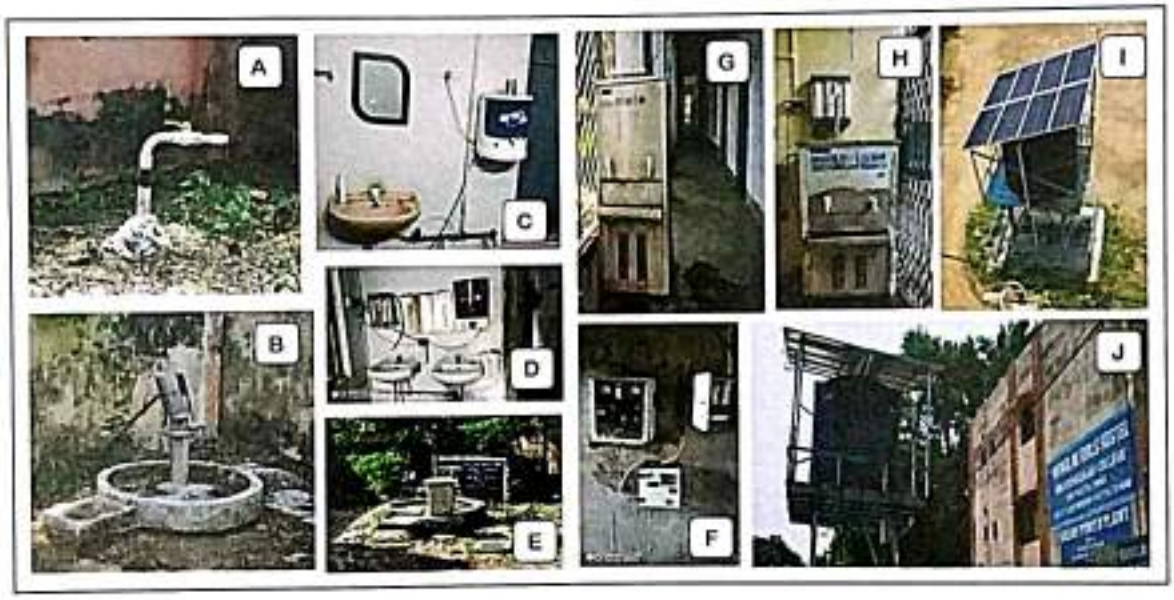

Fig. 1 : Drinking water facility of the College

(A) Water source for Gardening, **(B)** Tubewell, **(C-D)** Water filter with basin, **(E)** Small pump for drinking water, **(F)** Meters in Pump House, **(G-H)** Water Cooler with purifier, **(I-J)** Solar power-driven water pump with tank.

DOC NO : QLS/SAMP/08-D/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Location Sample Drawn On Date of Performance	: QLS/MR/W/21-22/C/403 : 23.09.2021 : QLS/MR/W/21-22/403 : Waste Water :Near Canteen Main Drain : 26.08.2021 : 28.08.2021-13.09.2021

Analysis Result

Sl. No.	Parameter	TEST METHOD	Result	Limit as per CPCB for discharge of effluents	
				Inland Surface Water	Public Sewers
1	pH at 25°C	APHA 23rd Edition-2017, 4500 H+	7.16	5.5 to 9.0	5.5 to 9.0
2	Total Suspended Solid in mg/l	APHA 23rd Edition-2017, 2540 D	13	100	600
3	Chemical Oxygen Demand (as COD) mg/l	APHA 23rd Edition-2017, 5220B	27	250	---
4	Biochemical Oxygen Demand (as BOD) mg/l	IS 3025 (Part 44)-1993, RA:2014	12	30	350
5	Oil & Grease in mg/l	APHA 23rd Edition-2017, 5520A	<1.9	10	20

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CHAPTER – 6

AMBIENT AIR QUALITY ASSESSMENT AND MANAGEMENT

6.1 Air Quality Test Report

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. : QLS/MR/A/21-22/C/571 Date :23.09.2021 Sample No. : QLS/MR/A/21-22/571 Sample Description : Ambient Air Sample Mark : Near Principal Room

Analysis Result

Location : Near Principal Room			Date of sampling : 26.08.2021-27.08.2021	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 29°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 62%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10μm) in $\mu g/m^3$	64	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5μm) in $\mu g/m^3$	29	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in $\mu g/m^3$	6.1	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in $\mu g/m^3$	23.2	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in $\mu g/m^3$	617	2000	IS: 5182 (Part-10):1999,RA-2014
NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.				

for **Qualissure Laboratory Services**
Reviewed & Authorized By

(Benimadhab Goral)
Authorized Signatory

AMBIENT AIR TEST REPORT

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Mark	: QLS/MR/A/21-22/C/572 :23.09.2021 : QLS/MR/A/21-22/572 : Ambient Air : Near Teacher's Room

Analysis Result

Location : Near Teacher's Room			Date of sampling : 26.08.2021-27.08.2021	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 29°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 62%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10μm) in μg/m³	81	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5μm) in μg/m³	38	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in μg/m³	6.7	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in μg/m³	24.6	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in μg/m³	655	2000	IS: 5182 (Part-10):1999,RA-2014

NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.

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CHAPTER – 7

NOISE MONITORING

7.1 *Ambient Noise Monitoring Status:*

DOC NO : QLS/SAMP/08-C/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description	: QLS/MR/A/21-22/C/684 : 23.09.2021 : QLS/MR/A/21-22/684 : Ambient Noise

Sampling Done By:B.Mondal

Sampling Guideline : As per IS: 9876: 1981 (RA-2001)

Sample No.	Date of Monitoring	Location	Leq dB (A) Day Time	Leq dB (A) Night Time
811	26 - 27.08.2021	Near Principal Room	55.5	44.6

Code/ Category	Leq dB (A)Day Time	Leq dB (A)Night Time	
A/Industrial	75	70	**NOTE:** *Day Time : 06.00 Hr. – 22.00 Hr.* *Night Time : 22.00 Hr. – 06.00 Hr.*
B/Commercial	65	55	
C/Residential	55	45	
D/Ecological Sensitive	50	40	

for **Qualissure Laboratory Services**
Reviewed & Authorized By

Qualissure Laboratory Service * Kolkata *

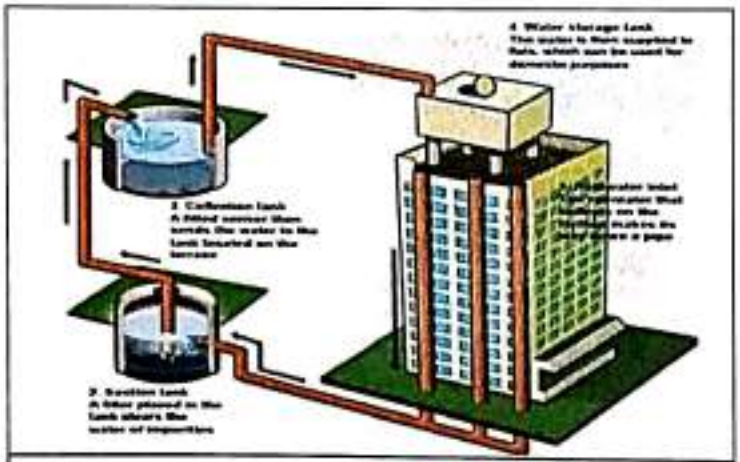
(Benimadhab Goral)
Authorized Signatory

CHAPTER - 8

RAIN WATER HARVESTING SYSTEM

The primary goal of rain water harvesting at Suri Vidyasagar College Campus is to raise ground water levels by collecting and storing rain water from roof top run-off. The College lies in a semi-arid and sub-humid zone. The campus'ss oil is lateritic in nature. The soil is exceptionally porous and has a high capacity for in filtration. In our campus rain water harvesting system has been installed at Aurobinda Bhavana. The roof runoff water is collected through network of pipe lines and store it within two large tanks situated at ground level in front of Aurobinda Bhavana. This stored rainwater is used for cleaning and gardening purpose.

Rainwater Harvesting Tank on roof top of Aurobinda Bhavana



Schematic diagram of Rain water harvesting system

Fig. 2 : Rain Water Harvesting System

CHAPTER - 9

ELECTRICITY CONSUMPTION (IN UNIT) AND MANAGEMENT

9.1 General Details:

Sl.No.	PARTICULARS	DETAILS	
1	Name & Address of College	Suri Vidyasagar College College Para, Suri, Birbhum West Bengal–731101	
	Web Site	https://surividyasagarcollege.org.in	
2	Name of Contact Officer	Dr. Tapan Kumar Parichha	
	Designation	Principal	
	Name of Alternative Officer	Dr. Soumya Ranjan Bhattacharyya	
	Designation	IQAC Coordinator	
3	Telephone No. Mobile No.	NA 9830829832	
	Fax No. e-mail ID	svctkp@gmail.com	
	No. of shift (Morning & Day)	7am to 5pm	
	No. of Employees (Approx)	105	
4	Electricity Consumption	Imported (Purchased) 2572	
5	Specific Energy Consumption	Fuel	Electricity
		2319/-	Rs. 20,791/- (Per (month)
6	LPD	3,340/-	
7	EPI	0.13	

9.2 Electrical Details

a) Transformers

	No. 1
Voltage Ratio	N/A
KVA	N/A
% Impendence	N/A

b) Electricity Consumption

	Particulars	Demand
A	Contract demand KVA	18.13
B	Maximum demand	18.12
C	Total Energy units consumed / year	30874
D	Avg. Power Factor(P.F.)	0.97
E	Avg. Energy bills(Rs/month)	Rs.20,791/-

c) Detailed list of Electric Motors operating in the college

S.NO.	NAME OF THE PLANT	RATING OF MOTOR (KW)	NO. OF MOTORS
1	Suri Vidyasagar College, Suri, Birbhum	3.34	4 nos.

d) **Connected Load**

	EQUIPMENT	TOTAL NUMBERS	LOAD IN KW (TOTAL)
A	Motors : Greater than 10kW	NIL	NIL
	: Less than 10 kW	4Nos.	3.34 KW
B	AC & Ventilation with TR capacity		
a)	Others (Package ACs/ Split ACs / Windows ACs) with TR	**Room AC of Split/Window type –** 50.99	
C	Total Process Load (in kW)	54.33 KW	
D	Total Lighting Load (in kW) & Luminaries details	**No's of lighting luminaries** (LED+T/L+ (including fan) Tube Light, Led Light, etc.= 27.06 KW Electric Fan - 46.38 KW	
	Total Load (in kW)	**127.77 KW**	

A. Lux Measurements :

Sl.no.	Room	LUX level	Remarks
1.	**Arabinda Bhavan**		
	Ground Floor	302,301,301,298,298	
	1st floor	303,305,302,305,304	
	2nd floor	300,303,306,312,305	
2	**Rabindra Bhavan**		
	Ground Floor	306,305,303,297,301	
	1st floor	305,302,299,304,308	
3	**Auditorium (New hall)**		
	Ground Floor	299,304,306,302,307	
4	**Gandhi Bhavan**		
	Ground Floor	305,306,305,298,299	
	1st floor	308,306,302,301,304	
5	**Vivekananda Bhavan**		
	Ground Floor	304,306,306,310,303	
	1st floor	299,300,304,307,305	
6	**Humanities Building**		
	Ground Floor	305,304,312,309,304	
	1st floor	303,300,307,309,303	
7	**Administrative Building**		
	Ground Floor	303,311,314,302,306	
	1st floor	311,308,314,302,309	
8	**Rabindra Chatravas**		
	Ground Floor	300,302,303,299,307	
	1st floor	302,305,304,300,307	
9	**Mrinalini Chatriniwas**		
	Ground Floor	301,303,308,304,307	
	1st floor	302,304,309,301,305	
10	**Micro Biology**		
	Ground Floor	309,308,304,303,304	
	1st floor	301,303,302,304,305	
11	**NSOU Building**		
	Ground Floor	312,308,309,303,304	
	1st floor	308,311,304,306,308	
12	**RUSA**		
	Ground Floor	303,302,304,309,307	
	1st floor	303,306,304,309,305	

Illumination Level Comparison

Area	Average Lighting Level (LUX)	NBC Recommended
[illegible]	303	500- 500
[illegible]	303	800
[illegible]	303	800
[illegible]	303	800
[illegible]	304	800
[illegible]	305	800
[illegible]	308	800
[illegible]	302	800
[illegible]	308	800
[illegible]	304	800
[illegible]	307	800
[illegible]	307	800

Remarks: Lights needs cleaning at an interval of one month and old lights to be replaced by new to get desired LUX value

9.3 Use of Alternate Energy

The institute has taken an important step for reduction in pollution level by installation of solar panel and photo voltaic cell for generating electricity.

For reducing carbon emission, and dependence on fossil fuel, the institution has resorted to using green energy by harnessing solar power.

Generated power is transferred to the grid.

This helps in reducing carbon emission.

Fig. 3 : Solar System

CHAPTER - 10

WASTE MANAGEMENT

The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October, 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. To implement this mission, collective mass effort is necessary. For proper segregation and management proper use of waste bins is the only solution for waste management purpose in the college campuses.

10.1 Solid Waste

Suri Vidyasagar College has set up separate bins to ensure proper segregation and collection of the biodegradable, non-biodegradable and hazarders waste products generated in the campus. The responsibility of recyclable waste is however still not taken up due to devoid of recycling device to carry on the procedure. However, several solid wastes such as glass, cans, which and brown papers, batteries, print cartridges, cardboard, furniture, damage pen, carbon papers etc are either sold to vendors for recycling or despatch via municipality disposal van in regular basis. The biodegradable waste such as humas, rest portion of vegetables etc. which are used in college canteen, Staff quarters and Boys' and Girls' hostels are used for preparing bio fertilizers.

Vermi compost units are observed near New Hall for fertilizers also. College has developed few good practices, such as single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc and campus is declared as Plastic Free zone. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are reused in the laboratories.

Fig. 4 : Solid Waste

(A) Dustbin for solid and liquid waste, **(B)** Large dustbin for solid non-biodegradable waste product; **(C)** Reservoir for Solid bio-degradable waste product; **(D)** Vermi compost units **(E)** Disposed of waste product storage bags carrying van from Suri municipality by NCC

10.2 Liquid Waste

The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from laboratory of different departments, toilets of college, hostel, kitchen and canteen. Those waters are used for gardening purpose.

10.3 E-Waste

Substantial qualtity of e waste is generated due to extensive use of computer.

All members particularly students have been advised not to throw used pendrive etc. any where, but to keep in designated bins.

E-Waste is accumulated in a separate room, stock of such waste as on date is quite substantial.

CHAPTER - 11

BIODIVERSITY STATUS OF THE COLLEGE CAMPUS

11.1 Introduction

Suri Vidyasagar College campus is very rich in the term of biodiversity. To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to have an understanding of the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

11.2 Objective

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

1. Documentation of the floral diversity of the area: its trees, herbs, shrubs, climbers and aquatic vegetations.

2. Documentation of the major faunal groups like mammals, reptiles, amphibians, birds and among the insects, butterflies and dragonflies.

3. Documentation of the specific interdependence of floral and faunal life.

Survey Area

The green area of Suri Vidyasagar College covers approximately 3.96 acres out of 9.18 acres, which is about 43.15 percent of the total area, and is strategically distributed across different sections of the campus. The green spaces include gardens, courtyards, an open field, and a play ground, providing ample opportunities for relaxation, outdoor activities, and study in a natural setting.

Location Map

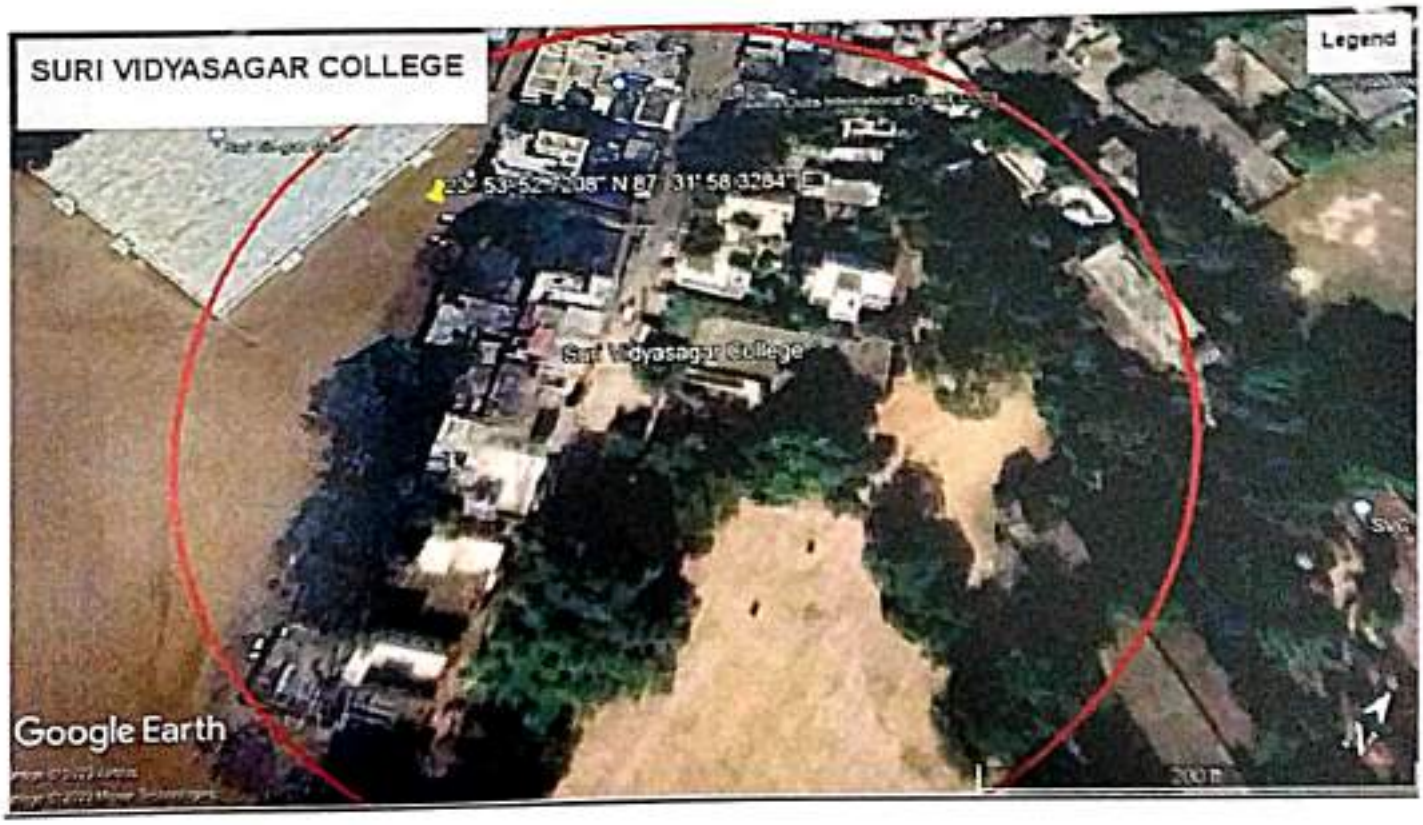


Fig. 5 : Location map

11.3 Method of Study

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

a) Sampling was done mostly is random manner.

b) Surveys were conducted for the maximum possible hours in day time.

c) Tree species were documented through physical verification on foot and photographed each species as much as possible.

d) The total area was surveyed by walking at day time.

e) 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.

f) Observing mammals depend critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however, are rare and difficult to detect. Small mammals like the field rats were found near their burrows, particularly during their entry or exit times in or out from their burrows respectively. In some cases, deposits and footprints were also observed that served as a potential clue for the presence and absence of the concerned species. These secondary evidences were all noted with time and space co-ordinates.

g) Birds are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. Sampling was done on the basis of direct sighting, call determination and from the nests of some bird species

h) Reptiles were found mostly by looking in potential shelter sites like crevices of building, logs, tree hollows and 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.

i) Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near pond, road beside wetland and in other possible areas. Diurnal search operations are also successful.

j) Active invertebrates like the insects require more active search. For larger winged insects like butterflies, dragonflies and damselflies, random samplings were carried and point sampling was also done.

k) The easiest way to observe many of the invertebrates is simply looking for them in the suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, in crevices in the walls and rocks and also in leaf litter, dung etc. slogs and snails are more conspicuous during wet weather and especially at night when they were found using torch.

11.4 Plant diversity in the College Campus

Suri Vidyasagar College premises having about 39.54 acres of land have unique plant diversities. These include flowering plants, leafy trees, medicinal herbs and innumerable wild bushes.

These plants are listed and depicted as following:

List of the Major Plants of the Garden

কৃষ্ণচূড়া *Delonix regia* (Bojer ex Hook.) Raf. Family: Fabaceae; Clade: Rosids	বান্দরলাঠি *Cassia fistula* L. Family: Fabaceae; Clade: Rosids	মিনজিরি *Senna siamea* (Lam.) H.S Irwin&Barneby Family: Fabaceae; Clade: Rosids
মেহগনি *Swietenia mahagoni*(L.) Jacq. Family: Meliaceae; Clade: Rosids	কনকচূড়া *Peltophorumpterocarpum*(DC.) Backer ex K.Heyne Family: Fabaceae; Clade: Rosids	বকুল *Mimusopselengi* L. Family: Sapotaceae; Clade: Astends
শিশু *Dalbergia sissoo*Roxb. ex DC. Family: Fabaceae; Clade: Rosids	শিরিষ *Albizia lebbeck*(L.) Benth. Family: Fabaceae; Clade: Rosids	দেবদারু *Monoonlongifolium* (Sonn.) B. Xue & R.M.K. Saunders Family: Annonaceae; Clade: Magnoliids
ঝাউ *Casuarina equisetifolia* L. Family: Casuarinaceae; Clade: Rosids	ছাতিম *Alstoniascholaris* (L.) R.Br. Family: Apocynaceae; Clade: Asterids	নিম *Azadirachta indica* A. Juss. Family: Meliaceae; Clade: Rosids
ইউকালিপটাস *Eucalyptus tereticornis* Sm. Family: Myrtaceae; Clade: Rosids	সেগুন *Tectona grandis*L. f. Family: Lamiaceae; Clade: Asterids	বট *Ficus benghalensis* L. Family: Moraceae; Clade: Rosids
পাকুড় *Ficus virens*Aiton Family: Moraceae; Clade: Rosids	আম *Mangifera indica* L. Family: Anacardiaceae; Clade: Rosids	তাল *Borassus flabellifer* L. Family: Arecaceae; Clade: Commelinids
শ্যোনাজা *Glirsidiasepium*(Jacq.) Kunth Family: Fabaceae; Clade: Rosids	চন্দ্রপ্রভা *Tecoma stans* (L.) Juss. ex Kunth Family: Bignoniaceae; Clade: Asterids	নাগলিঙ্গম *Couroupitaguianensis*Aubl. Family: Lecythidaceae; Clade: Asterids
বেল *Aegle marmelos* (L.) Correa Family: Rutaceae; Clade: Rosids	কাঠ-বাদাম *Terminalia catappa* L. Family: Combretaceae; Clade: Rosids	Ach *Morindacoreia*Buch.-Ham. Family: Rubiaceae; Clade: Asterids
Kurchi *Holarrhenapubescens*Wall. ex G.Don Family: Apocynaceae; Clade: Asterids		

Fig. 6 : Major plants in the campus area

11.5 Medicinal Plants in the Campus:

A number of plants with medicinal properties are growing in the campus, specially in the medicinal plant garden.

Sl. No.	Common Name	Scientific name	Uses
1	Basak	*Justicia adhatoda*	Couth, colds, asthma, bronchodilator
2	Apang	*Achyranthes aspera* Linn.	Anti inflammatory and uterine stimulant activity, rheumatism, Hydrophobie.
3	Kalmech	*Andrographis paniculata* (Burm.f.)	Fever, dysentery, dyspepsia, improves liver function, Leaves – in case of irregular stool, losss of appetite; roots – given to children to cure general debility.
4	Harjora	*Cissus quadrangularis* Linn. Syn. *Vitis quadrangularis*	Leaves – in bowel complaints; stem to cure scurvy, irregular menstruation, asthma, sap applied externally on forehead to cure one-sided headache.
5	Amlaki	*Emblica officeinalis* Gaertn	Fruits – treat vomiting, leprosy, piles, anaemia; leaves – in ophthalmia.
6	Ramtulsi	*Ocimum gratissimum* Linn.	Leaves – Decoction of the leaf applied to treat septic wounds, Seeds – soaked in water and taken very cooling and refreshing drink.
7	Jaba	*Hibiscus rosasinensis* Linn.	Flowers – in black colour of hair, female disease; leaves – soothing, used in growth of hair, Roots – in cold.
8	Telakucha	*Coccinia grandis* (Linn.) Voigt	Roots – in case of vomiting, burning sensation of hands and feet; Leaves – in cough and skin disease.
9	Arshagandha	*Wythania somnifera*	Root, Leaf, Fruits and Seed
10	Akanda	*Calotropis agigantea*	Bark, Root, Leaf, Latex, Flower
11	Ayapan	*Eupatorium triplinerve*	Whole Plants
12	Tulsi	*Ocimum sanctum*	Leaf
13	Kari pata	*Murraya koenigii*	Root, Leaf, Fruit
14	Bisallakaroni	*Barleria lupulina*	Leaf
15	Kulephara	*Hygrophila schulli*	Whole plant
16	Gurmar	*Gymnema sylvestre*	Root, Leaf, Fruit
17	Grikumari	*Aloe vera*	Leaf
18	Thankuni	*Centella asiatica*	Leaf
19	Nayantara	*Catharanthus roseus*	Whole Plants
20	Neem	*Azadirachta indica*	Bark, Leaf, Yound Stem, Unripedfuit, Seed Oil
21	Basak	*Adhatoda vasika*	Leafd, Flower, Bark, Root
22	Bisllakarani	*Gendarussa Vulgaris*	Leaf
23	Bel	*Aegle marmelos*	Root, Young Leaf, Flower, Ripe and Unriped Fruit
24	Sarpagan Jha	*Raunolfia serpentina*	Leaf
25	Sughni	*Marsilea minuta*	Whole Plant
26	Karabi	*Nerium odorum*	Root, Leaf, Bardk, Stem
27	Black Tulsi	*Ocimum tenuiflorum*	Whole Plant, Leaf, Seed
28	Muthagrass	*Cyperus rotundus*	Root

1. *Heliotropium indicum*

MEDICINAL GARDEN

2. *Impatiens balsamina*

3. *Gymnema sylvestre*

4. *Pergularia daemia*

5. *Asystasia gangetica*

6. *Hygrophila spinosa*

7. *Anisomeles indica*

8. *Hyptis suaveolens*

9. *Leonotis nepetifolia*

10. *Leucas cephalotes*

11. *Martynia annua*

12. *Vitex negundo*

13. *Clerodendrum viscosum*

14. *Evolvulus alsinoides*

15. *Ipomoea pes-tigridis*

16. *Operculina turpethum*

17. *Euphorbia tirucalli*

18. *Ricinus communis*

Fig. 7 : Medicinal plants

11.6 Checklist of Reptiles:

Sl. No.	Common name	Scientific Name	Bengali Name
1	Checkered Keelback	*Xenochrophis piscator*	Joldhora
2	Buff Striped Keelback	*Amphiesma stolatum*	Hele
3	Rat Snake	*Zamenis longissimus*	Darash
4	Skink	*Lampropholis* sp.	Anjani
5	Oriental Garden Lizard	*Colotes versicolor*	Girgiti
6	Common House Gecko/Gekko	*Hemidactylus frenotus*	Tiktiki

Fig. 8 : Reptiles

11.7 Checklist of Birds:

A total of 63 types of bird species were found in the campus, which is quite a good number, in spite of the industrialized surrounding around it.

Total bird species encountered in the college campus.

Sl. No.	Common Name	Scientific Name
1	Indian cormorant	*Phalacrocorax fuscicollis*
2	Little cormorant	*Microcarbo niger*
3	Little Egret	*Egretta garzetta*
4	Cattle Egret	*Bubulcus ibis*
5	Black Kite	*Milvus migrans*
6	Black shouldered kite	*Elanus axillaris*
7	Common kestrel	*Falco tinnunculus*
8	Shikra	*Accipiter badius*
9	White breasted water hen	*Amaurornis phoenicurus*
10	Pond Heron	*Ardeola grayii*
11	Common sandpiper	*Actitis hypoleucos*
12	Yellow Footed Green pigeon	*Treron phoenicoptera*
13	Rock pigeon	*Columba livia*
14	Spotted dove	*Spilopelia chinesis*
15	Ring necked dove	*Streptopelia capicola*
16	Alexandrian parakeet	*Psittacula eupatria*
17	Common Cuckoo	*Cuculus canorus*
18	Spotted Owlet	*Athene brama*
19	White throated Kingfisher	*Halcyon smyrnensis*
20	Small blue Kingfisher	*Alcedo atthis*
21	Stork billed Kingfisher	*Pelargopsis capensis*
22	Pied Kingfisher	*Ceryle rudis*
23	Common Hoopoe	*Upupa epops*
24	Chestnut headed Bee-eater	*Merops leschenaulti*
25	Green Bee-eater	*Merops orientalis*
26	Black-rumped Flameback	*Dinopium benghalense*
27	Brown-capped Pygmy Woodpecker	*Yungipicus nanus*
28	Coppersmith Barbet	*Megalaima haemacephala*
29	Blue throated Barbet	*Megalaima asiatica*

Sl. No.	Common Name	Scientific Name
30	Lineated Barbet	*Megalaima lineata*
31	Brown-capped Woodpecker	*Dendrocopos nanus*
32	Brown Shrike	*Lanius cristatus*
33	Long tailed Shrike	*Lanius schach*
34	House Sparrow	*Passer domesticus*
35	Black hooded Oriole	*Oriolus xanthornus*
36	Golden Oriole	*Orious oriolus*
37	Black Drongo	*Dicrurus macrocercus*
38	Bronze winged Drongo	*Dicrurus aeneus*
39	Common Myna	*Acridotheres tristis*
40	Asian pied Starling	*Gracupica conta*
41	Chestnut tailed Starling	*Sturnia malabarica*
42	Jungle Myna	*Acridotheres fuscus*
43	Rufous Treepie	*Dendrocitta vagabunda*
44	Common Crow	*Corvus brachyrhynchos*
45	Red vented Bulbul	*Pycnonotus cafer*
46	Red whiskered Bulbul	*Pycnonotus jocosus*
47	Common Prinia	*Prinia inornata*
48	Ashy Prinia	*Prinia socialis*
49	Common Babbler	*Turdoides caudata*
50	Brown breasted Flycatcher	*Muscicapa muttui*
51	Taiga Flycatcher	*Ficedula albicilla*
52	Tailorbird	*Orthotomus sutorius*
53	Bluethroat	*Luscinia svecica*
54	Pied Bushchat	*Saxicola caprata*
55	Oriental Magpie robin	*Copsychus saularis*
56	Pale billed Flowerpecker	*Dicaeum erythrorhynchos*
57	White Wagtail	*Motacilla alba*
58	Pied Wagtail	*Motacilla alba*
59	Yellow Wagtail	*Motacilla flava*
60	Citrine Wagtail	*Motacilla citreola*
61	Purple rumped Sunbird	*Leptocoma zeylonica*
62	Silver billed Munia	*lonchura punctulata*
63	White throated Fantail	*Rhipidura albicollis.*

Fig. 9 : Local Birds

11.8 Checklist of Mammals:

Sl. No.	Common name	Scientific name	Bengali name
1	Indian palm squirrel	*Funumbulus sp.*	Kathberali
2	Frugivorous bat	*Suborder megachiroptera*	Badur
3	Insectivorus bat	*Suborder microchiroptera*	Chamchike
4	House mouse	*Mus musculus*	Indur
5	Rat	*Rattus norvegicus*	Dhere indur

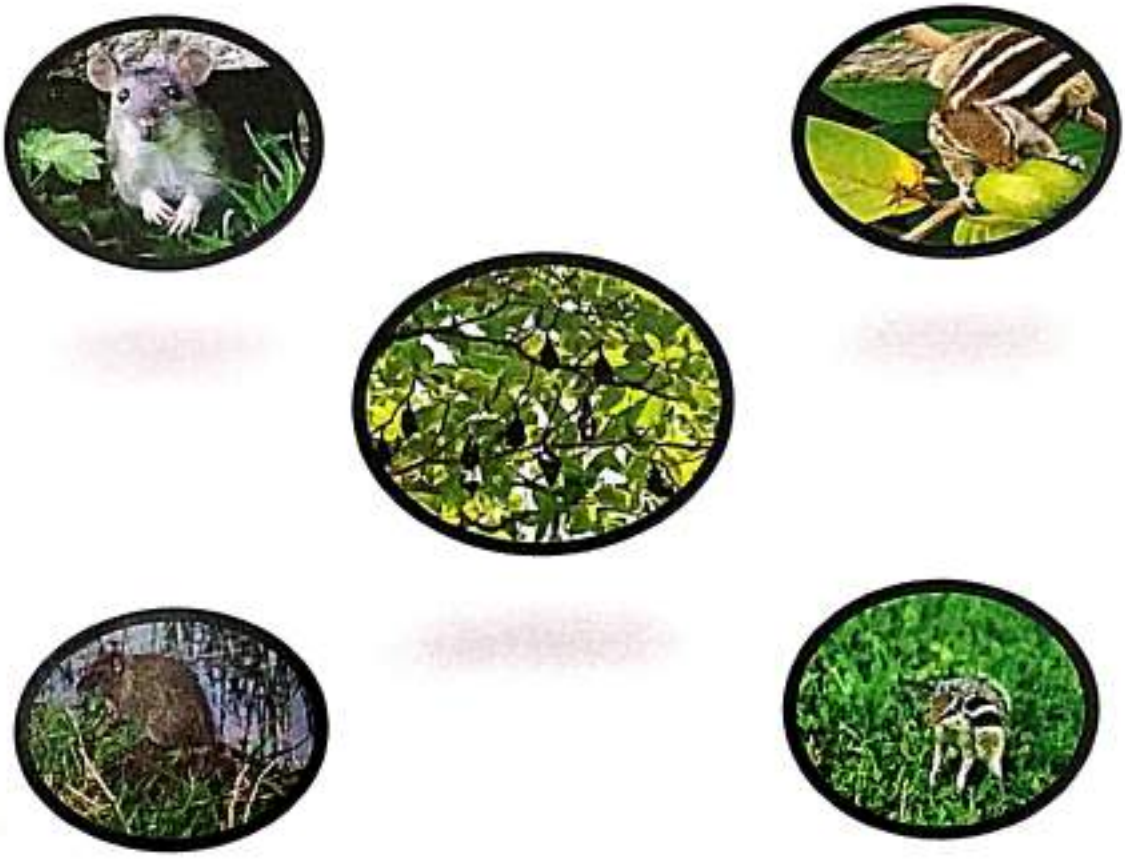


Fig. 10 : Mammals

11.09 Checklist of Ferns and Seasonal Flowers

Sl. No.	Local Name	Common Name	Scientific Name
1.	Bird-nest-Fern	Bird-nest Fern	*Asplenium* sp.
2.	Fern sp.		
3.	Fishtail Fern	Fishtail Fern	*Microsorum punctatum*
4.	Oakleaf Fern	Oakleat Fern	*Drynaria quercifolia*
5.	Dog flower, Snadragon	Dog flower, Snapdragon	*Antirrhinum majus*
6.	Garden stock, Common stock	Garden stock, Common stock	*Matthiola incana*
7.	Gazania	Gazania	*Gazania* sp.
8.	Gladiolus	Gladiolus	*Gladiolus* sp.
9.	Himsagar	Flaming katy, Florist kalanchoe	*Kalanchoe blossfelddiana*
10.	Maiden Pink	Maiden Pink	*Dianthus deltoids*
11.	Mike Ful	Amaryllis	*Hippeastrum* sp.
12.	Pansy, Garden Pansy	Pansy, Garden Pansy	*Viola tricolor var.*
13.	Petunia	Petunia	*Petunia hybrid*
14.	Verbena	Verbena	*Verbena* sp.

Fig. 11 : Flowers of the college premises

CHAPTER - 12

GREEN INITIATIVES

Suri Vidyasagar College aims to protect and conserve its biodiversity, fresh and clean ambiance through the following green initiatives to protect and conserve nature.

12.1 Plantation Programme

Plantation programme of Suri Vidyasagar College promotes environment management and conservation in the college campus with the following objectives:

i) To motivate the students to keep their surroundings green and clean by undertaking plantation of trees.

ii) Promote ethos of conservation of water by minimizing the use of water.

iii) Motivate students to imbibe habits and life style for minimum waste generation, source separation of waste and disposing the waste to the nearest storage points.

iv) To create awareness amongst public and sanitary workers, so as to stop the indiscriminate burning of waste which causes respiratory diseases.

v) To minimize the use of plastic bags, not to throw the min public places as they choke drains and sewers, cause water logging and provide breeding ground for mosquitoes.

vi) Organize tree plantation programmes, awareness programmes such as Quiz, essay, painting competitions, rallys, nukkad natak etc. regarding various environmental issues and educate children about re-use of waste material & preparation of products out of waste

vii) Organize Nature Trail in Wild Life Sanctuaries/Parks/Forest are as to know about the Bio-diversity.

Tree Plantation by NCC department of Suri Vidyasagar College

Fig. 12 : Plantation programme

12.2 *Green computing practice*

Being an academic institution, papers are used for various purposes like exam answer sheets, circulars, notices, office work, document printing, and Xeroxing. Since the trees are cut for paper manufacturing, the sequestration of carbon is reduced increasing carbon footprint. To cut down the carbon footprint, the university administration and various departments follow paperless methods of communication by using emails, online forms submission, etc. The paperless work was helpful in reducing tons of CO_2. The tons of biomass are saved by this green computing practice

CHAPTER – 13

CONSOLIDATION OF AUDIT FINDINGS

Green Audit will create a greater appreciation and under-standing of the impact of college activities on the environment. Suri Vidyasagar College has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercise has brainstormed and provided insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has increased knowledge about the need of maintaining sustainability of the college campus. It will create awareness around the use of the Earth's resources in your home, college, local community and beyond. Suri Vidyasagar Colleges hold adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good producing companies are rapidly developing in the area of energy efficiency.

13.1 Preparation of Action Plan

Management's policies referring to College and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the management of the college. The college should have a policy on green awareness raising or training programmes for students and staff, seminars on Environment Awareness are often organized by different departments of the institution, green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, college should have an action plan. The green auditing report will be a base line for the action plan to be evolved.

13.2 Follow up Action and Plans

Green Audit is an exercise which generates considerable quantities of valuable environment and resource management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and action plans and implementation programmes will be conducted on the basis of the audit findings.

13.3 Environmental Education

The following environmental education programmes may be implemented in the college before the next green auditing:-

Training programmes in solid waste management, liquid waste management setting up of biodiversity garden, tree management, medicinal plant nursery, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc.
- Conduct exhibition on throw away plastic danger, recyclable products etc.
- Display various slogans and pictures to protect environment.
- Implement chemical treatment system for waste water from the laboratories and incinerators.

CHAPTER - 14

CONCLUSION AND RECOMMENDATIONS

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can "add value" to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. The college is recent years consider the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its activities and become a more sustainable institution.

14.1 Suggestions

a) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.

b) Increase recycling education on campus.

c) Increase awareness of Environmentally Sustainable Development – Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

d) Collaborate for Interdisciplinary Approaches – Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula research initiatives, operations, and outreach activities that support an environmentally sustainable future.

e) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing strategy to reduce the environmental impact of its purchasing decisions.

f) Increase reduce, reuse, and recycle education on campus.

14.2 Recommendations:

a) *Declare the campus plastic free and implement it thoroughly.*

b) *Avoid plastic/thermocol plates and cups in the college level or department level functions.*

c) *Noise level monitoring shall be done as per the guideline of "Noise Pollution (Regulation and Control) Rules '2000'.*

d) *The Biodiversity is to be maintained whole considering the plantation in future.*

e) *Awarness among students and staff about green environment shall be done use tools like display boards.*

f) *The surroundings of the College should be keep clean.*

g) Exhaust Gas shall be monitored, analysed and check regularly

h) Parking zone of college shall be neat & clean

i) The institution should develop internal procedures to ensure its compliance with environmental legislation and responsibility should be fixed to carry out it in practice

j) A frequent visit should be conducted to ensure that the generated waste is measured, monitored, and recorded regularly and information should be made available to the administration.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

Fire Extinguisher

- *Calibration should be done before the expiry date of calibration.*

Medicinal Garden

- *Medicinal Garden should be keep clean.*
  Systematic plantation program should be drawn and implemented.

Energy Consumption

- *Replace incandescent and CFL lamps with LED Light*
- *Replace LCD computer monitors with LED monitors.*

Drinking Water

- *Drinking water, Noise, Ambient Air quality monitoring is to be conducted through approved vendor of the West Bengal Pollutin Control Board (WBPCB).*

Ponds

- *The ponds should be cleaned every year.*

Solid Waste

The solid waste should be reused or recycled at maximum possible places

Sonar Bharat Environment & Ecology Pvt. Ltd.
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ACKNOWLEDGEMENT

We want to keep on record the excellent co-operation received from the entire team of faculty members, Principal, Co-Ordinator of IQAC and other teaching & non-teaching staff. Without their support, this Audit would not have been possible.

Our special word thanks are extended to:

1. Dr. Tapan Kumar Parichha – Principal
2. Dr. Soumya Ranjan Bhattacharyya – Associate Professor, Dept. of Physics, & Coordinator of IQAC
3. Dr. Anirban Paul – Assistant Professor of Botany & Convenor, Green Audit Team
4. Dr. Sujoy Das – Assistant Professor of Mathematics
5. Dr. Hemanta Saha - Assistant Professor of Botany & A.N.O.,NCC
6. Dr. Tanmoy Mandal – Assistant Professor of Plant Protection & P.O.,NSS
7. Sri Pankaj Roy – Assistant Professor of Chemistry
8. Sri Shamim Alam – Assistant Professor of Botany
9. Sri Ranajit Ghosh – State Aided College Teacher of Geography
10. Sri Subhas Chandra Mondal - Accountant

For all the assistance provided to the audit team of Sonar Bharat Environment & Ecology Pvt. Ltd.

Sonar Bharat Environment & Ecology Pvt. Ltd.
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sonarbharat2017@gmail.com

Date : 29.09.2021

GREEN AUDIT CERTIFICATE

- Name of Work Project : **Green Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 19.08.2021 to 20.08.2021
- Period of Audit : 2020-2021
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Green Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

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(Auditor)

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Date : 23.09.2021

ENERGY AUDIT CERTIFICATE

- Name of Work Project : **Energy Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 11.08.2021 to 12.08.2021
- Period of Audit : 2020-2021
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Energy Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

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Date : 23.09.2021

ENVIRONMENTAL MONITORING CERTIFICATE

- Name of Work Project : **Environmental Monitoring of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 26.08.2021 to 27.08.2021
- Period of Audit : 2020-2021
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Environmental Monitoring in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

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Parimal Sarkar
Parimal Sarkar
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THE END

Green Audit Report
of
SURI VIDYASAGAR COLLEGE

2021-2022

INTERNAL QUALITY ASSURANCE CELL (IQAC)

SURI VIDYASAGAR COLLEGE

COLLEGE PARA, SURI, DIST. BIRBHUM, WEST BENGAL – 731 101.

CONTENT

EXECUTIVE SUMMARY

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the green campus for the institute which will lead for sustainable development. Suri Vidyasagar College is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher studies, the college has initiated 'The Green Campus' programme few years back that actively promote various projects for environment protection and sustainability.

Purpose of this audit is 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 etc. With this in mind, specific objectives of the audit is to evaluate adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on students' health and learning, college operational costs and the environment. The criteria methods and recommendations used in the audit were based on the identified risks.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

CHAPTER - 1

INTRODUCTION

1.1 *Green Audit*

Environmental or Green Audit is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices adopted to meet the environmental requirements (EPA, 2003). In other words, it is a management tool, comprising of systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with Institutional policies, which would include regulatory requirements and standards applicable.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modi has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned the "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. 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.

1.2 *Why Green Audit*

- To ensure that the performance of the institution with respect to environmental activities is in compliance with existing laws and regulations.

- To check the functionality and their operating success including water supply, energy related matters and other similar matters that are related to green operations in the campus

- To formulate or update the institution's environmental policy, if warranted.

- To measure the environmental impact of operational process related to green activities in the campus.

- To measure the performance of each green related operations and actions in the campus.

- To generate a data base of green activities for continuous monitoring to assess the success of each of them.

- To identify future potential liabilities.

- To align the institution's developmental and day to day activities with the stated vision, mission, strategies.

- To identify possible ways to reduce expenditure and running costs on equipments, appliances, etc. or try enhance revenue income.

- To improve process and materials efficiency, and in response to stakeholder requests for increased is closure.

1.3 *Goals of Green Audit*

College has conducted a green audit with specific goals as:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by university.
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.

- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issues.

- To motivate staff for optimized sustainable use of available resources.

1.3 *Objective of Green Audit*

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. The specific objectives are:

- To prepare a checklist of flora and fauna diversity in and around the college campus.

- To suggest measures to improve biodiversity within the college campus.

- To monitor the energy consumption pattern of the college.
- To assess the quantity of water usage within the college campus.

- To suggest sustainable energy usage and water conservation practices.

- To find out various sources of organic and solid waste generation and mitigation possibilities.

- To inculcate values of sustainable development practices through green audit mechanism.

1.5 *About Criteria 7 of NAAC*

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, no vehicle day, Rainwater harvesting, etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

1.6 *Benefit of Green Audit to an Educational Institute*

There are many advantages of green audit to an Educational Institute.

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energyconservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management.
- To create a green campus.

- To enable waste management through reduction of waste generation, solid and waste.
- To create plastic-free campus and evolve health consciousness among the Stakeholder.
- Recognize the cost-saving methods through waste minimizing and managing.
- Authenticate conformity with the implemented laws.
- Empower the organizations to frame a better environmental performance.
- Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental management approach and Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the University and its environment.
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the University.
- Finally, it will help to build a positive impression through green initiatives for the upcoming NAAC visit.

1.7 *Introduction of Auditing Firm*

Name of Firm	M/s. Sonar Bharat Environment & Ecology (P) Ltd.
Address	35, C. R. Avenue, 3rd floor, Kolkata - 700012
Contact Details	033-40031179/033-22113034

Details of team Member

Sr. No.	Name	Designation/ Technical	Technical Experience /Qualification
1	Shri Parimal Sarkar	Legal Expert	➢ M.Sc. in Disaster Management ➢ Post Graduate Diploma in Environmental Law from National Law School, Bangalore ➢ Lead Auditor in ISO 14000 (Environmental Management)
2	Shri Subrata De Sarkar	General Manager	➢ General Manager in Central Public Sector undertaking. ➢ 12 years experience in Environmental Auditing ➢ Lead Auditor in ISO 50001:2011
3	Shri Suman Chchattaraj	Environmental Specialist	➢ M.Tech in Environmental Science ➢ 20 years experience in Environmental Impact Studies and Auditing

Energy Audit Team

SN	Name	Designation/ Qualification	Experience
1	Shri Suvra Majumdar	➢ Post Graduate Diploma in Energy Management (MBA) ➢ B.Tech (Electrical Engineering)	➢ 15 years experience of Energy audit
2	Shri Gautam Ghosh	➢ Diploma in Mechanical & Electrical Engineering from Calcutta Technical School	➢ 27 Years experience of working in electrical engineering department in different industries. ➢ 12 years experience in independent electrical auditing

1.8 *List of Instruments*

Following are the instrument used at the time of the Energy Audit.

Sr.	Instrument	Make/Sr.No.
1	Digital LUX Meter	HTC/2222600
2	Digital Micro OHM Meter	Innova/I-259
3	Digital Multi Meter	Kusam Meco/162180630
4	Digital Clampmeter	Waco/1910149152
5	Meger	Waco/307421
6	Load analyser	Waco/2954563

1.11 General steps involved in Green Audit

a) Systematic and exhaustive data collection.

b) Evidence based documentation of activities.

c) Regular monitoring.

d) Provide standards and methods for improvement by establishing cost effective green action plan.

1.9 List of Laboratory Instruments for Environmental Monitoring

Sl. No.	Name of Equipment	Make	Model
1	GAS CHROMATOGRAPH WITH FID, TSD.	VARIAN	CP3800
2	GAS CHROMATOGRAPH MASS SPECTROMETER WITH ECD	VARIAN	CP 3800 SATURN 2200
3	GAS CHROMA TOGRAPH WITH FID for Air	DANI	Master GC
4	ION CHROMATOGRAPH	Thermo Fisher Scientific	DIONEXICS 1100
5	H.P L.C.	VARIAN	SERIES 200
6	FTIR	Thermo Fisher Scientific	Nicolet IS10
7	ATOMIC ABSORPTION SPECTRROPHOTOMETER	VARIAN	AA 2406TA 120
8	MERCURY ANALYSER	EC	MAS 5840
9	FLAME PHOTOMETER	LOWERENCE & MAYO	381
10	SPECTRO PHOTOMETER	VARIAN	CARY 50
11	BOD INCUBATOR	MULTISPAN	DIGITAL
12	ELECTRONIC MICRO BALANCE	Citizen	CMSF

1.10 List of Field Equipment Department

Sl. No.	Name of Equipment	Make	Model
1	Field Dust Sampler	Envirotech/Lata Envirotech	APM – 550, PM 2.5 & 10
2	Respirable Dust Sampler	Envirotech/Lata Envirotech	APM-460BL
3	Stack Kit Sampler	Envirotech/Lata Envirotech	APM-620, PM-602
4	Sound Level Meter (AUTOMEDTIC)	Envirotech	SLM-101
5	Sound Level Meter	Lutron	SLM-4001
6	Local Air Quality Sampler	Vayubodhan	APM-414
7	Auto Metric Whather Monitor	Spectrum Technology	WM-272
8	Depth Sampler	NA	NA

CHAPTER – 2

SURI VIDYASAGAR COLLEGE

2.1 About the College

Suri Vidyasagar College, named after the famous social reformer, litterateur, and fight for women's empowerment, Pandit Iswar Chandra Vidyasagar, has enter edits 80th year of eventful glory, bearing all the storms and buffets since its inception in 1942 as a wing of Vidyasagar College, Kolkata. In 1948, it was elevated to the status of a Degree College and given the name 'Suri Vidyasagar College' under the auspices of Calcutta University. Since 1960, the institute has been associated with the University of Burdwan, and it is presently a constituent College. Former President of the Republic of India, Honourable Shri Pranab Kumar Mukhopadhyay, was an eminent alumnus of this college.

Suri Vidyasagar College has devoted itself since its inception to the goal of imparting higher education, ensuring quality education, and providing research and extra-curricular activities in the best possible manner in order to spread the benefit of higher education in a relatively backward but glorious location. The NSS and NCC wings are doing excellent work in social reform and personality development.

Suri Vidyasagar College is 9.18 acres in size and Buildup area covers approximately 1.183Acre (51,544 Sq. Feet), which is located between the latitudes Latitude of 23°53'47.25"N to23°53'56.70"N and the Longitude of 87°31'57.64"E to 87°32'9.56"E.The College is proud of its eco-friendly Green Campus, which houses 22 departments teaching traditional and modern subjects, digital class rooms, state-of-the-art laboratories, a well-equipped Gymnasium, Language laboratory, distance education and open university study centres, the playground, residential accommodation for both teaching and administrative staff, a Post Office, and a Bank, among other things.

Under the University of Burdwan, the college provides 22 undergraduate courses and one postgraduate programme (Zoology).The college has 3870 students, 106 teaching faculty, and 27 non-teaching employees, and it is expected to grow rapidly. The college library is well- equipped with around 55,000 volumes, journals, reprographic machines, and so on, and it is rapidly progressing towards total digitization of its contents under the direction of two Librarians. At the end of 2016, our institute was re-accredited by NAAC with arating of B++, the highest of any institute in the district of Birbhum.

2.2 Introduction

Environmental auditing, often known as green auditing, refers to assessments that enable us systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. Environmental compliance and management system short comings, as well as related corrective activities. Green auditing is an effective method for determining how and where the most energy or water resources are being utilised, the type and volume of waste generated, and considerations on how to implement adjustments and save money may then be made. It can raise health awareness while also promoting environmental awareness, morals, and ethics. Overall, it is critical in providing employees and students with a better awareness of the green impact on campus.

2.3 History of College

As far as the historical evidence goes the first attempt to establish a college in Suri the headquarters of Birbhum district started in the year 1934. Under the tutelage of the then local landlord and educationist Shri Amita Ranjan Mukhopadhyay popular doctor Kaligati Banerjee advocate Babu Harikinkar Samanta and other social activists a working committee was formed for this mission. The committee started collecting funds from local residents and it was decided that one of the members Shri Tulsidas Chakraborty would buy them a large mansion by the name of Bose Saheber Kuthi which would then form their base and also double up as the perfunctionary college building until a new one comes up. Funds were raised in the tune of twenty thousand rupees. But with time the efforts waned and the funds dwindled. Fresh vigour was again observed in 1940. Under the leadership of Birbhum Zilla Board Chairman Shri Harikinkar Samanta local dignitaries including MLA Shri Debendranath Das Shri Rampati Basu Maulavi Nurul Absar Md Nake Moktar Abdul Majid Choudhury along with the committee members submitted a deputation to the then Bengal Prime Minister and Education Minister-in-Charge Fajlul Haque and petitioned for his assistance to bring up the college.

By then the World War II had started and in India Calcutta became the prime target of the Japanese. December of 1941 saw fierce bombing on Calcutta by the Japanese forces. This caused widespread panic and people started fleeing Calcutta for the neighbouring townships and villages. It was these circumstances that set the stage for the inception of Suri Vidyasagar College.

In his reminiscence Jyoti Kishore Chowdhury the then Principal of Vidyasagar College Kolkata wrote. During those days fear of bombing was so deep the college had to be closed and a decision was taken to shift the college elsewhere.

With the help of Prof. Tribhangamuran Mondal of Birbhum plans were chalked out to setup the college at a school in Santhia a small township and business place near Suri. But the efforts proved futile as this was disapproved by the then SDO of Suri Shri Naren Chowdhury. Instead he referred them to Dr. Kaligati Banerjee of Suri who grabbed the opportunity with both hands. A meeting was called in 1942 at the house of Dr. Kaligati Banerjee. Other than himself the meeting was adorned by such esteemed luminaries as Shri Nityanarayan Bandopadhyay Shri Umaprasanna Mukherjee (Olu Babu) the president of bar library Shri Abinash Chandra Mitra Shri P.C. Chandra Shri Bankim Mukhopadhyay Maulavi Nurul Absar Md. Nake Moktar and Principal

J K Chowdhury They then assembled at Shri Amitaranjan's house for further assistance In this regard, a proposal was placed before the Governing Body of Calcutta Vidyasagar College, which they approved along with an initial funding of Rs 5000/- Furnitures of the women section of I Sc Department were sent to Suri via train Finally, under the guidance of Principal J K Chowdhury and with the newly appointed Vice-Principal (Suri campus) Tribhangamuran Mondal at the helm of affairs, Suri Vidyasagar College came into existence On 9th March, 1942, under the chairmanship of former Calcutta Vidyasagar College student- Shri Abinash Chandra Mitra, the college started its journey as a branch of "Vidyasagar College", Calcutta Classes started in the house adjoining Shri Amitaranjan's Kali Temple (Kali Bari), while the new building was being constructed south of the adjoining Banyan Tree of the selected place for the new college Classes shifted to the new building in June 1942 Total number of students in the 1942-43 batch was 212 only For them, students hostel were also set up in rented rooms at Kendua Village (known as Kendua Chhatrabas), in the out skirts of Suri After 1948, it became an independent college with the name "Suri Vidyasagar College" The first Principal of the Suri Vidyasagar College was Prof J K Chowdhury from 09 03 1942 to 28 02 50 and the first Vice-Principal was Prof Tribhanga Muran Mondal

The College volunteered for institutional accreditation by NAAC, Bangalore, in November 2005 After analysis the executive committee of the NAAC awarded a grade of B+, on February, 2006 Now, in the second decade of the 21st century, the college stands tall, spreading the message of knowledge and wisdom to the society Today, spread over an area of 25 Bigha, 5 Katha and 8 chatak, the college consists of 19 Academic Departments out of which 15 offer Honours & General courses, 4 General Courses and 1 P G Course in Zoology In 1996, the total built up area of the college was 29,856 sq ft Another 14,755 31 sq ft was added between 2001 and 2004 Currently the total built area is around 70,000 sq ft which contains classrooms, laboratories, library, office, seminar halls, canteen, Gymnasium and students hostels (separate for Boys and Girls)

The College in its second cycle accreditation by NAAC has improved its grade to B++ in 2016 which is a earmark to celebrate its Platinum Jubilee The institute is now a RUSA 2 0 funded institute One separate building with four Class rooms has been constructed and Girls Toilet has been renovated and extended with modern amenities Additional Class rooms have been constructed with the grant from Higher Education Department, Govt of West Bengal during last five years

Location of the College

Location of the College is College Para, Suri, Dist. Birbhum, Pin Code – 731 101.

Communication and Transportation

The College is well connected from Bolpur & Burdwan station and by road. The College is located within 1 km from Suri station and 1km away from Suri (NBSTC) Bus stand. Distance from Suri College to Andal Airport is around 61.7 Kms.

2.4 Vision of the College:

- Our vision is to go ahead with confidence and courage to educate the students more and more with morality, nobility and magnanimity of soul removing all barriers to comprehensive education of good quality to serve society better. Our Vission: Wisdom, Sacrifice, Service

2.5 Mission of the College:

- The declared goals and objectives of Suri Vidyasagar College are: Wisdom, Self-Sacrifice and Social Service (Jnana, Tyaga, Seva) embedded in the Emblem of the college. The missions of the college are

- Imparting Higher Education.

- Development of Personality and • Raising Socio-Cultural Awareness.

CHAPTER - 3

GREEN AUDIT METHODOLOGY

3.1 Utility of Green Auditing

Green audit is used to improve existing anthropogenic activities, with the object to reduce the adverse effects of these activities upon environment. An environmental auditor will study an organization's efforts to conserve the environment in a systematic and documented manner and will produce an environmental audit report.

3.2 Objectives of the Study

The basic objective of green audit is to promote environment management and conservation in the college campus. Purpose of the audit is to identify, quantify, describe and prioritize the framework of environmental sustainability in compliance with the applicable regulations, policies and standards. Major objectives of carrying out green audit are:

- To introduce an awareness among the students regarding real concerns of environment and its sustainability.

- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.

- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.

- To bring out a present status report on environmental compliance.

3.3 Methodology

In order to perform green audit, methodology included different techniques such as physical inspection of the campuses, observation and review of the documentation, interviewing key persons and data analysis, measurement of the present status of environment management in the campuses:

- Water quality assessment, consumption and management
- Air quality assessment and management
- Electricity consumption and management
- Sound pollution monitoring
- Waste management
- Bio diversity status of the campus
- Land use and land coverage
- Rain water Harvesting
- Use of alternate energy sources.

CHAPTER - 4

LAND USE ANALYSIS, SURI VIDYASAGAR COLLEGE, WEST BENGAL

4.1 General overview of the concept of land use:

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

4.2 Methodology adopted for land use mapping

Three types of data that are GPS points, field survey data and Google earth data for Geo-referencing have been used in this study. Land use map of the study area have been prepared using field survey

CLASSIFICATION SCHEME FOR LAND USE ANALYSIS OF BUILT UP AREA

Level-I	Level-II
1. Built- up land area	1.1 Dense 1.2 Moderate 1.3 Sparse

Therefore, attempt has been made in this study to map land use for Suri Vidyasagar College with a view to detect the land consumption in the built-up land area.

LAND USE DATA OF COLLEGE OF SURI VIDYASAGAR COLLEGE

CATEGORIES OF LAND USE	AREA IN SQ METRES
OPEN SPACE AND PLANTATION	31553.30
Ground Coverage	5615.80
TOTAL AREA	37169.10

Ground coverage of 15.11% (i.e 5615.80 sq metres) consists of the buildings.

FINDINGS:

Suri Vidyasagar College, which was established in the year 1948, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 84.89% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

CHAPTER – 5

WATER QUALITY ASSESSMENT CONSUMPTION & MANAGEMENT

Water quality analysis was conducted by Qualissure Laboratory Services

5.1 Water Quality Analysis Test Report

DOC NO : QLS/SAMP/08-D/00

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101	Report No Date Sample No Sample Description Sample Location Sample Drawn On Date of Performance	QLS/MR/W/22-23/C/542 26.10.2022 QLS/MR/W/22-23/542 Drinking Water Aquaguard Near Principal Office 03.10.2022 05.10.2022-15.10.2022

Analysis Result

(A) Microbiological Analysis

Sl. No.	Characteristic	Limit as per Drinking Water Standard : IS:10500, 2012Amd. 2	Test Method	Result
1.	Total Coliform Bacteria/100ml	Not Detectable	IS 15185-2016	Not Detected
2.	E.coli /100ml	Not Detectable	IS 15185: 2016	Not Detected

(B) Chemical Analysis

Sl. No.	Test Parameter	Test Method	As per Drinking Water Standard : IS:10500, 2012Amd. 1 & 2		Result
			Desirable Limit	Permissible Limit	
1	pH Value at 25°C	IS 3025 (Part 11)- 1984 RA- 2012	6.5-8.5	No Relaxation	7.48
2	Turbidity in NTU	IS 3025 (Part 10)- 1984 RA. 2012	1	5	<1.0
3	Total Dissolved Solids (TDS) in mg/l	IS 3025(Part 16)- 1984 RA. 2012	500	2000	352
4	Calcium (as Ca) in mg/l	IS 3025 (Part 11)- 1984 RA. 2012	75	200	59.8
5	Chloride (as Cl) in mg/l	IS 3025 (Part 10)- 1984 RA. 2012	250	1000	94.8
6	Iron (as Fe) in mg/l	IS 3025(Part 53)-1988 RA. 2014	1.0	No Relaxation	0.23
7	Magnesium (as Mg) in mg/l	IS 3025 (Part 46)-1994 RA. 2014	30	100	33.1
8	Nitrate (as NO_3) in mg/l	IS 3025 (Part 34)-1986 RA. 2014	45	No Relaxation	<0.5
9	Free Residual Chlorine in mg/l	IS 3025 (Part 26)- 1986(RA 2014)	0.2	1.0	<0.1
10	Sulphate (as SO_4) in mg/l	IS 3025 (Part 24)- 1986. RA. 2014	200	400	38.7
11	Alkalinity (as $CaCO_3$) in mg/l	IS 3025 (Part 23)- 1986. RA. 2014	200	600	190.0
12	Total Arsenic (as As) in mg/l	IS 3025 (Part 37) 1988 RA 2014	0.01	No Relaxation	<0.03
13	Total Hardness (as $CaCO_3$) in mg/l	IS 3025 (Part 21)-1983. RA. 2014	200	600	286.6

for Qualissure Laboratory Services
Reviewed & Authorized By

(Benimadhab Gorai)
Authorized Signatory

Drinking water facility at Suri Vidyasagar College

The water that is utilised for drinking is clean and well-maintained. Six RO water filters have been built on our college campus to provide safe drinking water, two of which include chilling facilities. A solar energy-powered water tank connection is available for emergency use at the Girls' Hostel and Quarter. Except for one or two instances, no water is lost during the survey as a result of leaks or overflow from overhead tanks. Moreover water is released from each water reservoir regularly and cleaned at regular interval to maintain the hygiene of the tank.

Fig. 1 : Drinking water facility of the College Campus

(A) Water source for Gardening, **(B)** Tubewell, **(C-D)** Water filter with basin, **(E)** Small pump for drinking water, **(F)** Meters in Pump House, **(G-H)** Water Cooler with purifier, **(I-J)** Solar power-driven water pump with tank.

DOC NO : QLS/SAMP/08-D/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Location Sample Drawn On Date of Performance	: QLS/MR/W/22-23/C/471 : 26.10.2022 : QLS/MR/W/22-23/471 : Waste Water :Near Canteen Main Drain : 03.10.2022 : 05.10.2022-15.10.2022

Analysis Result

Sl. No.	Parameter	TEST METHOD	Result	Limit as per CPCB for discharge of effluents	
				Inland Surface Water	Public Sewers
1	pH at 25°C	APHA 23rd Edition-2017, 4500 H+	7.14	5.5 to 9.0	5.5 to 9.0
2	Total Suspended Solid in mg/l	APHA 23rd Edition-2017, 2540 D	11	100	600
3	Chemical Oxygen Demand (as COD) mg/l	APHA 23rd Edition-2017, 5220B	23	250	---
4	Biochemical Oxygen Demand (as BOD) mg/l	IS 3025 (Part 44)-1993, RA:2014	9	30	350
5	Oil & Grease in mg/l	APHA 23rd Edition-2017, 5520A	<1.6	10	20

for Qualissure Laboratory Services
Reviewed & Authorized By

Qualissure Laboratory Service * Kolkata *

(Benimadhab Gorai)
Authorized Signatory

CHAPTER – 6

AMBIENT AIR QUALITY ASSESSMENT AND MANAGEMENT

6.1 Air Quality Test Report

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. : QLS/MR/A/22-23/C/721 Date :26.10.2022 Sample No. : QLS/MR/A/22-23/721 Sample Description : Ambient Air Sample Mark : Near Principal Room

Analysis Result

Location : Near Principal Room			Date of sampling : 03.10.2022-04.10.2022	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 26°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 41%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10µm) in µg/m^3	62	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5µm) in µg/m^3	26	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in µg/m^3	5.9	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in µg/m^3	22.8	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in µg/m^3	612	2000	IS: 5182 (Part-10):1999,RA-2014
NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.				

for Qualissure Laboratory Services
Reviewed & Authorized By

(Benimadhab Gorai)
Authorized Signatory

AMBIENT AIR TEST REPORT

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. : QLS/MR/A/22-23/C/722 Date :26.10.2022 Sample No. : QLS/MR/A/22-23/722 Sample Description : Ambient Air Sample Mark : Near Teacher's Room

Analysis Result

Location : Near Teacher's Room			Date of sampling : 03.10.2022-04.10.2022	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 26°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 41%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10µm) in µg/m^3	79	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5µm) in µg/m^3	36	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in µg/m^3	6.3	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in µg/m^3	24.2	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in µg/m^3	651	2000	IS: 5182 (Part-10):1999,RA-2014
NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.				

for Qualissure Laboratory Services
Reviewed & Authorized By

(Benimadhab Gorai)
Authorized Signatory

CHAPTER – 7

NOISE MONITORING

7.1 *Ambient Noise Monitoring Status:*

DOC NO : QLS/SAMP/08-C/00

TEST REPORT

Name & Address Of the Customer :	Report No.	QLS/MR/A/22-23/C/811
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Date	26.10.2022
	Sample No.	QLS/MR/A/22-23/811
	Sample Description	Ambient Noise

Sampling Done By:B.Mondal

Sampling Guideline : As per IS: 9876: 1981 (RA-2001)

Sample No.	Date of Monitoring	Location	Leq dB (A) Day Time	Leq dB (A) Night Time
811	03 - 04.10.2022	Near Principal Room	55.1	44.2

Code/ Category	Leq dB (A)Day Time	Leq dB (A)Night Time	
A/Industrial	75	70	*NOTE:* *Day Time : 06.00 Hr. – 22.00 Hr.* *Night Time : 22.00 Hr. – 06.00 Hr.*
B/Commercial	65	55	
C/Residential	55	45	
D/Ecological Sensitive	50	40	

for Qualissure Laboratory Services
Reviewed & Authorized By

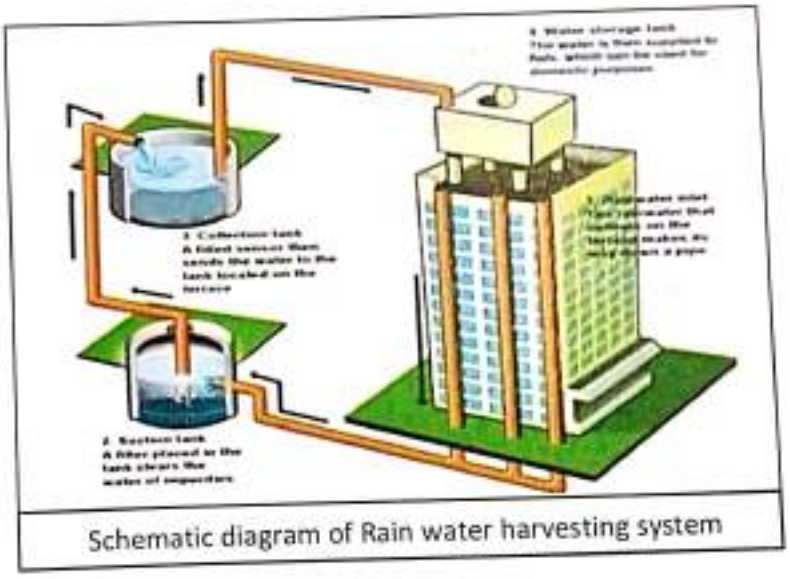
(Benimadhab Gorai)
Authorized Signatory

CHAPTER - 8

RAIN WATER HARVESTING SYSTEM

The primary goal of rain water harvesting at Suri Vidyasagar College Campus is to raise ground water levels by collecting and storing rain water from roof top run-off. The College lies in a semi-arid and sub-humid zone. The campus'ss oil is lateritic in nature. The soil is exceptionally porous and has a high capacity for in filtration. In our campus rain water harvesting system has been installed at Aurobinda Bhavana. The roof runoff water is collected through network of pipe lines and store it within two large tanks situated at ground level in front of Aurobinda Bhavana. This stored rainwater is used for cleaning and gardening purpose..

Rainwater Harvesting Tank on roof top of Aurobinda Bhavana



Schematic diagram of Rain water harvesting system

Fig. 2 : Rain Water Harvesting System

CHAPTER - 9

ELECTRICITY CONSUMPTION (IN UNIT) AND MANAGEMENT

9.1 General Details:

Sl.No.	PARTICULARS	DETAILS	
1	Name & Address of College	Suri Vidyasagar College College Para, Suri, Birbhum West Bengal -731101	
	Web Site	https://surividyasagarcollege.org.in	
2	Name of Contact Officer	Dr. Tapan Kumar Parichha	
	Designation	Principal	
	Name of Alternative Officer	Dr. Anirban Paul	
	Designation	IQAC Coordinator	
3	Telephone No. Mobile No.	NA 9932360261	
	Fax No. e-mail ID	svctkp@gmail.com	
	No. of shift (Morning & Day)	7am to 5pm	
	No. of Employees (Approx)	105	
4	Electricity Consumption	Imported (Purchased) 2879	
5	Specific Energy Consumption	Fuel	Electricity
		2319/-	Rs. 23,249/- (Per (month)
6	LPD	6,174/-	
7	EPI	0.14	

9.2 Electrical Details

a) Transformers

	No. 1
Voltage Ratio	N/A
KVA	N/A
% Impendence	N/A

b) Electricity Consumption

	Particulars	Demand
A	Contract demand KVA	20.10
B	Maximum demand	20.10
C	Total Energy units consumed / year	34554
D	Avg. Power Factor(P.F.)	0.97
E	Avg. Energy bills(Rs/month)	Rs.23,249/-

c) Detailed list of Electric Motors operating in the college

S.NO.	NAME OF THE PLANT	RATING OF MOTOR (KW)	NO. OF MOTORS
1	Suri Vidyasagar College, Suri, Birbhum	3.34	4 nos.

d) **Connected Load**

	EQUIPMENT	TOTAL NUMBERS	LOAD IN KW (TOTAL)
A	Motors : Greater than 10kW	NIL	NIL
	: Less than 10 kW	4Nos.	3.34 KW
B	AC & Ventilation with TR capacity		
a)	Others (Package ACs/ Split ACs / Windows ACs) with TR	**Room AC of Split/Window type –** 50.99	
C	Total Process Load (in kW)	54.33 KW	
D	Total Lighting Load (in kW) & Luminaries details	**No's of lighting luminaries** (LED+T/L+ (including fan) Tube Light, Led Light, etc.= 27.06 KW Electric Fan - 46.38 KW	
	Total Load (in kW)	**127.77 KW**	

A. Lux Measurements :

Sl.no.	Room	LUX level	Remarks
1.	**Arabinda Bhavan**		
	Ground Floor	300,299,301,295,296	
	1st floor	301,301,302,305,303	
	2nd floor	297,300,302,312,303	
2	**Rabindra Bhavan**		
	Ground Floor	305,304,303,294,299	
	1st floor	304,302,290,302,306	
3	**Auditorium (New hall)**		
	Ground Floor	295,303,304,300,304	
4	**Gandhi Bhavan**		
	Ground Floor	301,304,305,298,296	
	1st floor	306,304,300,299,306	
5	**Vivekananda Bhavan**		
	Ground Floor	303,304,306,310,299	
	1st floor	298,286,301,305,304	
6	**Humanities Building**		
	Ground Floor	302,304,312,309,300	
	1st floor	298,296,304,308,299	
7	**Administrative Building**		
	Ground Floor	301,310,314,298,296	
	1st floor	310,308,314,298,306	
8	**Rabindra Chatravas**		
	Ground Floor	298,296,300,297,301	
	1st floor	301,298,300,299,302	
9	**Mrinalini Chatriniwas**		
	Ground Floor	297,296,298,294,300	
	1st floor	302,301,299,297,300	
10	**Micro Biology**		
	Ground Floor	305,306,304,301,304	
	1st floor	298,303,302,300,298	
11	**NSOU Building**		
	Ground Floor	312,305,306,300,301	
	1st floor	305,308,304,306,308	
12	**RUSA**		
	Ground Floor	299,300,304,306,307	
	1st floor	300,302,304,309,303	

Illumination Level Comparison

Area	Average Lighting Level (LUX)	NBC Recommended
Arabinda Bhavan	301	300-500
Rabindra Bhavan	300	300
Auditorium (New hall)	301	300
Gandhi Bhavan	301	300
Vivekananda Bhavan	301	300
Humanities Building	303	300
Administrative Building	305	300
Rabindra Chatravas	299	300
Mrinalini Chatriniwas	298	300
Micro Biology	302	300
NSOU Building	305	300
RUSA	303	300

Remarks: Lights needs cleaning at an interval of one month and old light to be replaced by new to get desired LUX value

9.3 Use of Alternate Energy

The institute has taken an important step for reduction in pollution level by installation of solar panel and photo voltaic cell for generating electricity.

For reducing carbon emission, and dependence on fossil fuel, the institution has resorted to using green energy by harnessing solar power.

Generated power is transferred to the grid.

This helps in reducing carbon emission.

Fig. 3 : Solar System

CHAPTER - 10

WASTE MANAGEMENT

The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October, 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. To implement this mission, collective mass effort is necessary. For proper segregation and management proper use of waste bins is the only solution for waste management purpose in the college campuses.

10.1 Solid Waste

Suri Vidyasagar College has set up separate bins to ensure proper segregation and collection of the biodegradable, non-biodegradable and hazarders waste products generated in the campus. The responsibility of recyclable waste is however still not taken up due to devoid of recycling device to carry on the procedure. However, several solid wastes such as glass, cans, which and brown papers, batteries, print cartridges, cardboard, furniture, damage pen, carbon papers etc are either sold to vendors for recycling or despatch via municipality disposal van in regular basis. The biodegradable waste such as humas, rest portion of vegetables etc. which are used in college canteen, Staff quarters and Boys' and Girls' hostels are used for preparing bio fertilizers.

Vermi compost units are observed near New Hall for fertilizers also. College has developed few good practices, such as single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc and campus is declared as Plastic Free zone. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are reused in the laboratories.

Fig. 4 : Solid Waste

(A) Dustbin for solid and liquid waste, **(B)** Large dustbin for solid non-biodegradable waste product; **(C)** Reservoir for Solid bio-degradable waste product; **(D)** Vermi compost units **(E)** Disposed of waste product storage bags carrying van from Suri municipality by NCC

10.2 Liquid Waste

The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from laboratory of different departments, toilets of college, hostel, kitchen and canteen. Those waters are used for gardening purpose.

10.3 E-Waste

Substantial qualtity of e waste is generated due to extensive use of computer.

All members particularly students have been advised not to throw used pendrive etc. any where, but to keep in designated bins.

E-Waste is accumulated in a separate room, stock of such waste as on date is quite substantial.

CHAPTER - 11

BIODIVERSITY STATUS OF THE COLLEGE CAMPUS

11.1 Introduction

Suri Vidyasagar College campus is very rich in the term of biodiversity. To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to have an understanding of the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

11.2 Objective

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

1. Documentation of the floral diversity of the area: its trees, herbs, shrubs, climbers and aquatic vegetations.

2. Documentation of the major faunal groups like mammals, reptiles, amphibians, birds and among the insects, butterflies and dragonflies.

3. Documentation of the specific interdependence of floral and faunal life.

Survey Area

The green area of Suri Vidyasagar College covers approximately 3.96 acres out of 9.18 acres, which is about 43.15 percent of the total area, and is strategically distributed across different sections of the campus. The green spaces include gardens, courtyards, an open field, and a play ground, providing ample opportunities for relaxation, outdoor activities, and study in gina natural setting.

Location Map

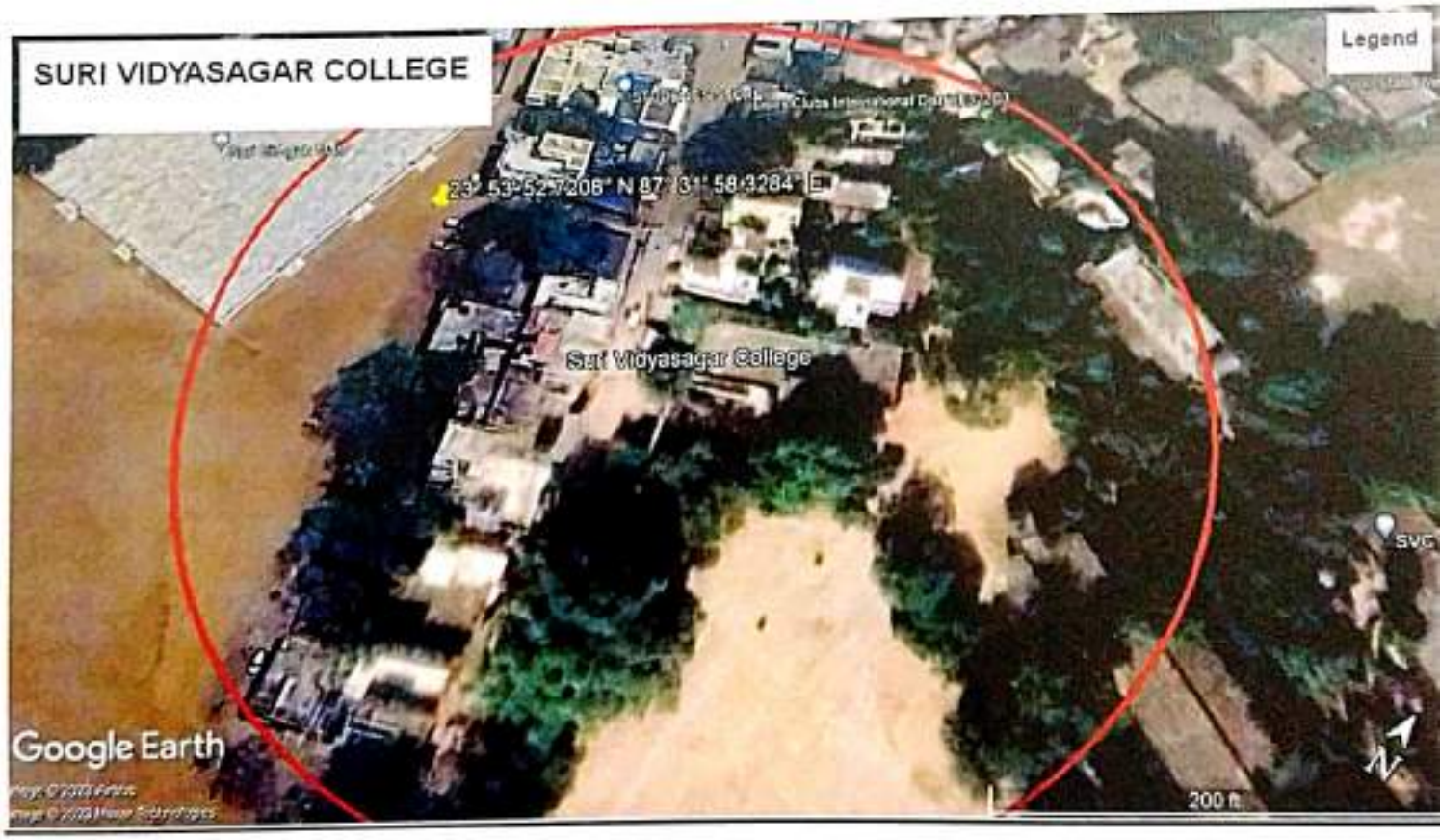


Fig. 5 : Location map

11.3 Method of Study

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

a) Sampling was done mostly is random manner.

b) Surveys were conducted for the maximum possible hours in day time.

c) Tree species were documented through physical verification on foot and photographed each species as much as possible.

d) The total area was surveyed by walking at day time.

e) 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.

f) Observing mammals depend critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however, are rare and difficult to detect. Small mammals like the field rats were found near their burrows, particularly during their entry or exit times in or out from their burrows respectively. In some cases, deposits and footprints were also observed that served as a potential clue for the presence and absence of the concerned species. These secondary evidences were all noted with time and space co-ordinates.

g) Birds are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. Sampling was done on the basis of direct sighting, call determination and from the nests of some bird species

h) Reptiles were found mostly by looking in potential shelter sites like crevices of building, logs, tree hollows and 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.

i) Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near pond, road beside wetland and in other possible areas. Diurnal search operations are also successful.

j) Active invertebrates like the insects require more active search. For larger winged insects like butterflies, dragonflies and damselflies, random samplings were carried and point sampling was also done.

k) The easiest way to observe many of the invertebrates is simply looking for them in the suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, in crevices in the walls and rocks and also in leaf litter, dung etc. slogs and snails are more conspicuous during wet weather and especially at night when they were found using torch.

11.4 Plant diversity in the College Campus

Suri Vidyasagar College premises having about 39.54 acres of land have unique plant diversities. These include flowering plants, leafy trees, medicinal herbs and innumerable wild bushes.

These plants are listed and depicted as following:

List of the Major Plants of the Garden

কৃষ্ণচূড়া *Delonix regia* (Bojer ex Hook.) Raf. Family: Fabaceae, Clade: Rosids	বান্দরলাঠি *Cassia fistula* L. Family: Fabaceae, Clade: Rosids	নিমডিরি *Senna siamea* (Lam.) H.S.Irwin&Barneby Family: Fabaceae, Clade: Rosids
মেহগনি *Swietenia mahagoni* (L.) Jacq. Family: Meliaceae, Clade: Rosids	কনকচূড়া *Peltophorumpterocarpum*(DC.) Backer ex K.Heyne Family: Fabaceae, Clade: Rosids	বকুল *Mimusopselengi* L. Family: Sapotaceae, Clade: Asterids
শিশু *Dalbergia sissoo*Roxb. ex DC. Family: Fabaceae, Clade: Rosids	শিরিষ *Albizia lebbeck*(L.) Benth. Family: Fabaceae, Clade: Rosids	দেবদারু *Monoonlongifolium* (Sonn.) B. Xue & R.M.K. Saunders Family: Annonaceae, Clade: Magnoliids
ঝাউ *Casuarina equisetifolia* L. Family: Casuarinaceae, Clade: Rosids	দাতিম *Alstoniascholaris* (L.) R.Br. Family: Apocynaceae, Clade: Asterids	নিম *Azadirachta indica* A. Juss. Family: Meliaceae, Clade: Rosids
ইউক্যালিপটাস *Eucalyptus tereticornis* Sm. Family: Myrtaceae, Clade: Rosids	সেগুন *Tectona grandis* L. f. Family: Lamiaceae, Clade: Asterids	বট *Ficus benghalensis* L. Family: Moraceae, Clade: Rosids
পাকুড় *Ficus virens*Aiton Family: Moraceae, Clade: Rosids	আম *Mangifera indica* L. Family: Anacardiaceae, Clade: Rosids	তাল *Borassus flabellifer* L. Family: Arecaceae, Clade: Commelinids
শারোঙ্গা *Gliricidiasepium* (Jacq.) Kunth Family: Fabaceae, Clade: Rosids	চন্দ্রপ্রভা *Tecoma stans* (L.) Juss. ex Kunth Family: Bignoniaceae, Clade: Asterids	নাগলিঙ্গম *Couroupitaguianensis*Aubl. Family: Lecythidaceae, Clade: Asterids
বেল *Aegle marmelos* (L.) Correa Family: Rutaceae, Clade: Rosids	কাঠ-বাদাম *Terminalia catappa* L. Family: Combretaceae, Clade: Rosids	Ach *Morindacoreia*Buch.-Ham. Family: Rubiaceae, Clade: Asterids
Kurchi *Holarrhenapubescens*Wall. ex G.Don Family: Apocynaceae, Clade: Asterids		

Fig. 6 : Major plants in the campus area

1. *Heliotropium indicum*

MEDICINAL GARDEN

2. *Impatiens balsamina*

3. *Gymnema sylvestre*

4. *Pergularia daemia*

5. *Asystasia gangetica*

6. *Hygrophila spinosa*

7. *Anisomeles indica*

8. *Hyptis suaveolens*

9. *Leonotis nepetifolia*

11.5 Medicinal Plants in the Campus:

A number of plants with medicinal properties are growing in the campus, specially in the medicinal plant garden.

Sl. No.	Common Name	Scientific name	Uses
1	Basak	*Justicia adhatoda*	Couth, colds, asthma, bronchodilator
2	Apang	*Achyranthes aspera* Linn	Anti inflammatory and uterine stimulant activity rheumatism, Hydrophobie
3	Kalmech	*Andrographis paniculata* (Burm f.)	Fever, dysentery, dyspepsia, improves liver function, Leaves – in case of irregular stool losss of appetite, roots – given to children to cure general debility
4	Harjora	*Cissus quadrangularis* Linn Syn. *Vitis quadrangularis*	Leaves – in bowel complaints, stem to cure scurvy, irregular menstruation, asthma, sap applied externally on forehead to cure one-sided headache
5	Amlaki	*Emblica officeinalis* Gaertn	Fruits – treat vomiting, leprosy, piles, anaemia leaves – in ophthalmia
6	Ramtulsi	*Ocimum gratissimum* Linn	Leaves – Decoction of the leaf applied to treat septic wounds, Seeds – soaked in water and taken very cooling and refreshing drink
7	Jaba	*Hibiscus rosasinensis* Linn	Flowers – in black colour of hair, female disease, leaves – soothing, used in growth of hair, Roots – in cold
8	Telakucha	*Coccinia grandis* (Linn.) Voigt	Roots – in case of vomiting, burning sensation of hands and feet, Leaves – in cough and skin disease
9	Arshagandha	*Wythania somnifera*	Root, Leaf, Fruits and Seed
10	Akanda	*Calotropis aggantea*	Bark, Root, Leaf, Latex, Flower
11	Ayapan	*Eupatorium triplinerve*	Whole Plants
12	Tulsi	*Ocimum sanctum*	Leaf
13	Kari pata	*Murraya koenigii*	Root, Leaf, Fruit
14	Bisallakaroni	*Barleria lupulina*	Leaf
15	Kulephara	*Hygrophila schulli*	Whole plant
16	Gurmar	*Gymnema sylvestre*	Root, Leaf, Fruit
17	Grikumari	*Aloe vera*	Leaf
18	Thankuni	*Cantella asiatica*	Leaf
19	Nayantara	*Catharanthus roseus*	Whole Plants
20	Neem	*Azadirachta indica*	Bark, Leaf, Yound Stem, Unripedfuit, Seed Oil
21	Basak	*Adhatoda vasika*	Leafd, Flower, Bark, Root
22	Bisilakarani	*Gendarussa Vulgaris*	Leaf
23	Bel	*Aegle marmelos*	Root, Young Leaf, Flower, Ripe and Unriped Fruit
24	Sarpagan Jha	*Raunolfia serpentina*	Leaf
25	Sughni	*Marsilea minuta*	Whole Plant
26	Karabi	*Nerium odorum*	Root, Leaf, Bardk, Stem
27	Black Tulsi	*Ocimum tenuiflorum*	Whole Plant, Leaf, Seed
28	Muthagrass	*Cyperus rotundus*	Root

10. *Leucas cephalotes*

11. *Martynia annua*

12. *Vitex negundo*

13. *Clerodendrum viscosum*

14. *Evolvulus alsinoides*

15. *Ipomoea pes-tigridis*

16. *Operculina turpethum*

17. *Euphorbia tirucalli*

18. *Ricinus communis*

Fig. 7 : Medicinal plants

11.6 Checklist of Reptiles:

Sl. No.	Common name	Scientific Name	Bengali Name
1	Checkered Keelback	*Xenochrophis piscator*	Joldhora
2	Buff Striped Keelback	*Amphiesma stolatum*	Hele
3	Rat Snake	*Zamenis longissimus*	Darash
4	Skink	*Lampropholis* sp.	Anjani
5	Oriental Garden Lizard	*Colotes versicolor*	Girgiti
6	Common House Gecko/Gekko	*Hemidactylus frenotus*	Tiktiki

Fig. 8 : Reptiles

11.7 Checklist of Birds:

A total of 63 types of bird species were found in the campus, which is quite a good number, in spite of the industrialized surrounding around it.

Total bird species encountered in the college campus.

Sl. No.	Common Name	Scientific Name
1	Indian cormorant	*Phalacrocorax fuscicollis*
2	Little cormorant	*Microcarbo niger*
3	Little Egret	*Egretta garzetta*
4	Cattle Egret	*Bubulcus ibis*
5	Black Kite	*Milvus migrans*
6	Black shouldered kite	*Elanus axillaris*
7	Common kestrel	*Falco tinnunculus*
8	Shikra	*Accipiter badius*
9	White breasted water hen	*Amaurornis phoenicurus*
10	Pond Heron	*Ardeola grayii*
11	Common sandpiper	*Actitis hypoleucos*
12	Yellow Footed Green pigeon	*Treron phoenicoptera*
13	Rock pigeon	*Columba livia*
14	Spotted dove	*Spilopelia chinesis*
15	Ring necked dove	*Streptopelia capicola*
16	Alexandrian parakeet	*Psittacula eupatria*
17	Common Cuckoo	*Cuculus canorus*
18	Spotted Owlet	*Athene brama*
19	White throated Kingfisher	*Halcyon smyrnensis*
20	Small blue Kingfisher	*Alcedo atthis*
21	Stork billed Kingfisher	*Pelargopsis capensis*
22	Pied Kingfisher	*Ceryle rudis*
23	Common Hoopoe	*Upupa epops*
24	Chestnut headed Bee-eater	*Merops leschenaulti*
25	Green Bee-eater	*Merops orientalis*
26	Black-rumped Flameback	*Dinopium benghalense*
27	Brown-capped Pygmy Woodpecker	*Yungipicus nanus*
28	Coppersmith Barbet	*Megalaima haemacephala*
29	Blue throated Barbet	*Megalaima asiatica*

Sl. No.	Common Name	Scientific Name
30	Lineated Barbet	*Megalaima lineata*
31	Brown-capped Woodpecker	*Dendrocopos nanus*
32	Brown Shrike	*Lanius cristatus*
33	Long tailed Shrike	*Lanius schach*
34	House Sparrow	*Passer domesticus*
35	Black hooded Oriole	*Oriolus xanthornus*
36	Golden Oriole	*Orious oriolus*
37	Black Drongo	*Dicrurus macrocercus*
38	Bronze winged Drongo	*Dicrurus aeneus*
39	Common Myna	*Acridotheres tristis*
40	Asian pied Starling	*Gracupica conta*
41	Chestnut tailed Starling	*Sturnia malabarica*
42	Jungle Myna	*Acridotheres fuscus*
43	Rufous Treepie	*Dendrocitta vagabunda*
44	Common Crow	*Corvus brachyrhynchos*
45	Red vented Bulbul	*Pycnonotus cafer*
46	Red whiskered Bulbul	*Pycnonotus jocosus*
47	Common Prinia	*Prinia inornata*
48	Ashy Prinia	*Prinia socialis*
49	Common Babbler	*Turdoides caudata*
50	Brown breasted Flycatcher	*Muscicapa muttui*
51	Taiga Flycatcher	*Ficedula albicilla*
52	Tailorbird	*Orthotomus sutorius*
53	Bluethroat	*Luscinia svecica*
54	Pied Bushchat	*Saxicola caprata*
55	Oriental Magpie robin	*Copsychus saularis*
56	Pale billed Flowerpecker	*Dicaeum erythrorhynchos*
57	White Wagtail	*Motacilla alba*
58	Pied Wagtail	*Motacilla alba*
59	Yellow Wagtail	*Motacilla flava*
60	Citrine Wagtail	*Motacilla citreola*
61	Purple rumped Sunbird	*Leptocoma zeylonica*
62	Silver billed Munia	*Ionchura punctulata*
63	White throated Fantail	*Rhipidura albicollis.*

Fig. 9 : Local Birds

11.8 Checklist of Mammals:

Sl. No.	Common name	Scientific name	Bengali name
1	Indian palm squirrel	*Funumbulus sp.*	Kathberali
2	Frugivorous bat	*Suborder megachiroptera*	Badur
3	Insectivorus bat	*Suborder microchiroptera*	Chamchike
4	House mouse	*Mus musculus*	Indur
5	Rat	*Rattus norvegicus*	Dhere indur

Fig. 10 : Mammals

11.09 Checklist of Ferns and Seasonal Flowers

Sl. No.	Local Name	Common Name	Scientific Name
1.	Bird-nest-Fern	Bird-nest Fern	*Asplenium* sp.
2.	Fern sp.		
3.	Fishtail Fern	Fishtail Fern	*Microsorum punctatum*
4.	Oakleaf Fern	Oakleat Fern	*Drynaria quercifolia*
5.	Dog flower, Snadragon	Dog flower, Snapdragon	*Antirrhinum majus*
6.	Garden stock, Common stock	Garden stock, Common stock	*Matthiola incana*
7.	Gazania	Gazania	*Gazania* sp.
8.	Gladiolus	Gladiolus	*Gladiolus* sp.
9.	Himsagar	Flaming katy, Florist kalanchoe	*Kalanchoe blossfelddiana*
10.	Maiden Pink	Maiden Pink	*Dianthus deltoids*
11.	Mike Ful	Amaryllis	*Hippeastrum* sp.
12.	Pansy, Garden Pansy	Pansy, Garden Pansy	*Viola tricolor* var.
13.	Petunia	Petunia	*Petunia hybrid*
14.	Verbena	Verbena	*Verbena* sp.

Fig. 11 : Flowers of the college premises

Tree Plantation by respected Principal Sir, Dr. Tapan Kumar Parichha with students of Suri Vidyasagar College on the celebration of 22th Srabon, organized by Department of Philosophy, Suri Vidyasagar College.

Tree Plantation by respected Principal sir and faculty member and respected guest on the occasion of Chess day celebration at Suri Vidyasagar College, organized by Department of Physical Education, Suri Vidyasagar College

Fig. 12 : Plantation programme

CHAPTER - 12

GREEN INITIATIVES

Suri Vidyasagar College aims to protect and conserve its biodiversity, fresh and clean ambiance through the following green initiatives to protect and conserve nature.

12.1 Plantation Programme

Plantation programme of Suri Vidyasagar College promotes environment management and conservation in the college campus with the following objectives:

i) To motivate the students to keep their surroundings green and clean by undertaking plantation of trees.

ii) Promote ethos of conservation of water by minimizing the use of water.

iii) Motivate students to imbibe habits and life style for minimum waste generation, source separation of waste and disposing the waste to the nearest storage points.

iv) To create awareness amongst public and sanitary workers, so as to stop the indiscriminate burning of waste which causes respiratory diseases.

v) To minimize the use of plastic bags, not to throw the min public places as they choke drains and sewers, cause water logging and provide breeding ground for mosquitoes.

vi) Organize tree plantation programmes, awareness programmes such as Quiz, essay, painting competitions, rallys, nukkad natak etc. regarding various environmental issues and educate children about re-use of waste material & preparation of products out of waste

vii) Organize Nature Trail in Wild Life Sanctuaries/Parks/Forest are as to know about the Bio-diversity.

12.2 *Green computing practice*

Being an academic institution, papers are used for various purposes like exam answer sheets, circulars, notices, office work, document printing, and Xeroxing. Since the trees are cut for paper manufacturing, the sequestration of carbon is reduced increasing carbon footprint. To cut down the carbon footprint, the university administration and various departments follow paperless methods of communication by using emails, online forms submission, etc. The paperless work was helpful in reducing tons of CO_2. The tons of biomass are saved by this green computing practice

CHAPTER – 13

CONSOLIDATION OF AUDIT FINDINGS

Green Audit will create a greater appreciation and under-standing of the impact of college activities on the environment. Suri Vidyasagar College has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercise has brainstormed and provided insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has increased knowledge about the need of maintaining sustainability of the college campus. It will create awareness around the use of the Earth's resources in your home, college, local community and beyond. Suri Vidyasagar Colleges hold adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good producing companies are rapidly developing in the area of energy efficiency.

13.1 Preparation of Action Plan

Management's policies referring to College and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the management of the college. The college should have a policy on green awareness raising or training programmes for students and staff, seminars on Environment Awareness are often organized by different departments of the institution, green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, college should have an action plan. The green auditing report will be a base line for the action plan to be evolved.

13.2 Follow up Action and Plans

Green Audit is an exercise which generates considerable quantities of valuable environment and resource management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and action plans and implementation programmes will be conducted on the basis of the audit findings.

13.3 Environmental Education

The following environmental education programmes may be implemented in the college before the next green auditing:-

Training programmes in solid waste management, liquid waste management setting up of biodiversity garden, tree management, medicinal plant nursery, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc.
- Conduct exhibition on throw away plastic danger, recyclable products etc.
- Display various slogans and pictures to protect environment.
- Implement chemical treatment system for waste water from the laboratories and incinerators.

CHAPTER - 14

CONCLUSION AND RECOMMENDATIONS

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can "add value" to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. The college is recent years consider the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its activities and become a more sustainable institution.

14.1 Suggestions

a) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.

b) Increase recycling education on campus.

c) Increase awareness of Environmentally Sustainable Development – Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

d) Collaborate for Interdisciplinary Approaches – Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula research initiatives, operations, and outreach activities that support an environmentally sustainable future.

e) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing strategy to reduce the environmental impact of its purchasing decisions.

f) Increase reduce, reuse, and recycle education on campus.

14.2 Recommendations:

a) An environmental policy document has to be prepared with all the recommendations and current practices carried by the Institution

b) Regular checkups and maintenance of pipes, overhead tanks, and plumbing systems should be done by the engineering section to reduce overflow leakages, and corrosions

c) Avoid plastic/thermocol plates and cups in the college level or department level functions

d) Noise level monitoring shall be done as per the guideline of "Noise Pollution (Regulation and Control) Rules '2000'

e) Awarness among students and staff about green environment shall be done use tools like display boards

f) The surroundings of the College should be keep clean
g) Declare the campus plastic free and implement it thoroughly
h) The Biodiversity is to be maintained whole considering the plantation in future

Fire Extinguisher

- Calibration should be done before the expiry date of calibration

Medicinal Garden

- Medicinal Garden should be keep clean
  Systematic plantation program should be drawn and implemented

Energy Consumption

- Replace incandescent and CFL lamps with LED Light
- Replace LCD computer monitors with LED monitors
- Cleaning of tube lights/bulbs should be do neon a regular basis to remove dust

Sonar Dhara Environment & Ecology Pvt. Ltd.
Parimal Sawant
Director

Drinking Water

- *Adequate number of taps for safe drinking water should be placed at strategic locations.*
- *Drinking water, Waste water quality monitoring is to be conducted through approved vendor of the West Bengal Pollutin Control Board (WBPCB).*

Ponds

- *The ponds should be cleaned every year.*

Solid Waste

- *Vermy compost is available near by Girls hostel, it should be use regularly.*

Liquid Waste

- A waste water treatment plant should be installed to recycle and reuse the waste water generated from domestic use.
- College committee should be care that no contaminated water or chemical get into the soil.

E-Waste

- *A separate enclosure needs to be made for storage of scrap and E-waste materials.*
- *As per the guidelines of Pollution Control Board, (P.C.B.) E-Waste is to be disposed of through approved vendors of the P.C.B.*
- *The College should take steps for disposal through the approved vendors.*

Rain Water Harvesting System

- Plan to install rain water harvesting system on rooftop of every building of this college campus and recharging more amount of ground water level.
- Overflow must be monitored and controlled, and supervision exercises should be scheduled on a regular basis.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

ACKNOWLEDGEMENT

We want to keep on record the excellent co-operation received from the entire team of faculty members, Principal, Co-Ordinator of IQAC and other teaching & non-teaching staff. Without their support, this Audit would not have been possible.

Our special word thanks are extended to:

1. Dr. Tapan Kumar Parichha – Principal
2. Dr. Sujoy Das – Assistant Professor of Mathematics & Co-ordinator of IQAC
3. Dr. Anirban Paul – Assistant Professor of Botany & Convenor Green Audit Team
4. Dr. Soumya Ranjan Bhattacharyya, Associate Professor, Dept. of Physics.
5. Dr. Hemanta Saha - Assistant Professor of Botany & A.N.O.,NCC
6. Dr. Tanmoy Mandal – Assistant Professor of Plant Protection & P.O.,NSS
7. Sri Pankaj Roy – Assistant Professor of Chemistry
8. Sri Shamim Alam – Assistant Professor of Botany
9. Sri Ranajit Ghosh – State Aided College Teacher of Geography
10. Sri Subhas Chandra Mondal - Accountant

For all the assistance provided to the audit team of Sonar Bharat Environment & Ecology Pvt. Ltd.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

Certificate of Compliance

INTEGRATED QUALITY CERTIFICATION PRIVATE LIMITED

hereby certifies that the Quality Management Systems of

Sonar Bharat Environment & Ecology Pvt. Ltd.

35, Chittaranjan Avenue, 3rd Floor,
Kolkata - 700 012.

has been assessed and conforms to the
Quality Management Systems
ISO 9001:2015

Scope: Consultancy Services on Safety Related Study, Audit Services for Energy, Green, Electrical & Safety and Providing Services Related to Obtaining Statutory Approvals

Division	: 70	Current issue date	: 14.10.2022
Class	: 70 22	Current expiry date	: 13.10.2025
Process(es) not applicable	: 8.3	1st Surveillance due	: 13.10.2023
Certificate number	: IND/QMS/NAB-C3313/3200	2nd Surveillance due	: 13.10.2024
Attachment(s)	: None		

H. Narasimhaiah
Director

Certificate of compliance has an expiry period of 3 years from the current certification cycle start date but shall be considered as expired if the surveillance audit programme indicated in this certificate of compliance is not implemented to maintain confidence that the certified management system continues to fulfil requirements unless otherwise supported by a letter of continued compliance issued by the registered office of Integrated Quality Certification Pvt. Ltd. Certificate of compliance shall be updated in website/registry as suspended and/or withdrawn if the surveillance programme prior to the due date indicated above is not coordinated and implemented. Written information on any significant organizational changes with impact on the certificate of compliance shall be communicated to Integrated Quality Certification Pvt. Ltd prior to the planned audit schedule.

SONAR BHARAT ENVIRONMENT & ECOLOGY (P) LIMITED
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Registered Office: Flat No. 1A N368, Baishnabghata Patuli,
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E-mail : sonarbharat2010@gmail.com
sonarbharat2017@gmail.com

Date : 03.11.2022

GREEN AUDIT CERTIFICATE

- Name of Work Project : **Green Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 28.09.2022 to 29.09.2022
- Period of Audit : 2021-2022
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Green Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101..
- With the cooperation of faculty members and other staff audit has been successfully completed.

Subrata Desarkar
(Auditor)

Sonar Bharat Environment & Ecology Pvt. Ltd. Kolkata Pin - 700012

Parimal Sarkar
(Director)

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E-mail : sonarbharat2010@gmail.com
sonarbharat2017@gmail.com

Date : 28.10.2022

ENERGY AUDIT CERTIFICATE

- Name of Work Project : **Energy Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 04.10.2022 to 05.10.2022
- Period of Audit : 2021-2022

- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Energy Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal - 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

Suvra Majumda

Suvra Majumda,
BEE-EA-5723, AEA-221
Chartered Engineer (India) – Electrical Engineering Div.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

Parimal Sarkar
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Date : 26.10.2022

ENVIRONMENTAL MONITORING CERTIFICATE

- Name of Work Project : **Environmental Monitoring of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 03.10.2022 to 04.10.2022
- Period of Audit : 2021-2022
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Environmental Monitoring in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

Subrata Desarkar
(Auditor)

Sonar Bharat Environment & Ecology Pvt. Ltd. Kolkata Pin - 700012

Parimal Sarkar
(Director)

THE END

Green Audit Report
of
SURI VIDYASAGAR COLLEGE

2022-2023

INTERNAL QUALITY ASSURANCE CELL (IQAC)

SURI VIDYASAGAR COLLEGE

COLLEGE PARA, SURI, DIST. BIRBHUM, WEST BENGAL – 731 101.

CONTENT

EXECUTIVE SUMMARY

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the green campus for the institute which will lead for sustainable development. Suri Vidyasagar College is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher studies, the college has initiated 'The Green Campus' programme few years back that actively promote various projects for environment protection and sustainability.

Purpose of this audit is 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 etc. With this in mind, specific objectives of the audit is to evaluate adequacy of the management control framework of environment sustainability as well as the degree to which the departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on students' health and learning, college operational costs and the environment. The criteria methods and recommendations used in the audit were based on the identified risks.

Sonar Bharat Environment & Ecology Pvt. Ltd
Parimal Sarkar
Director

CHAPTER - 1

INTRODUCTION

1.1 Green Audit

Environmental or Green Audit is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices adopted to meet the environmental requirements (EPA, 2003). In other words, it is a management tool, comprising of systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with Institutional policies, which would include regulatory requirements and standards applicable.

Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit. Organizations of all kinds now recognize the importance of environmental matters and accept that their environmental performance will be scrutinized by a wide range of interested parties.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modi has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned the "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. 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.

1.2 Why Green Audit

- To ensure that the performance of the institution with respect to environmental activities is in compliance with existing laws and regulations.
- To check the functionality and their operating success including water supply, energy related matters and other similar matters that are related to green operations in the campus
- To formulate or update the institution's environmental policy, if warranted.
- To measure the environmental impact of operational process related to green activities in the campus.
- To measure the performance of each green related operations and actions in the campus.
- To generate a data base of green activities for continuous monitoring to assess the success of each of them.
- To identify future potential liabilities.
- To align the institution's developmental and day to day activities with the stated vision, mission, strategies.
- To identify possible ways to reduce expenditure and running costs on equipments, appliances, etc. or try enhance revenue income.
- To improve process and materials efficiency, and in response to stakeholder requests for increased is closure.

1.3 Goals of Green Audit

College has conducted a green audit with specific goals as:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by university.
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issues.
- To motivate staff for optimized sustainable use of available resources.

1.3 Objective of Green Audit

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. The specific objectives are:

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

1.5 About Criteria 7 of NAAC

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, no vehicle day, Rainwater harvesting, etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

1.6 Benefit of Green Audit to an Educational Institute

There are many advantages of green audit to an Educational Institute.

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management.

- To create a green campus.
- To enable waste management through reduction of waste generation, solid and waste.
- To create plastic-free campus and evolve health consciousness among the Stakeholder.
- Recognize the cost-saving methods through waste minimizing and managing.
- Authenticate conformity with the implemented laws.
- Empower the organizations to frame a better environmental performance.
- Enhance the alertness for environmental guidelines and duties.
- Impart environmental education through systematic environmental management approach and Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Financial savings through a reduction in resource use.
- Development of ownership, personal and social responsibility for the University and its environment.
- Developing an environmental ethic and value systems in youngsters.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the University.
- Finally, it will help to build a positive impression through green initiatives for the upcoming NAAC visit.

1.7 *Introduction of Auditing Firm*

Name of Firm	M/s. Sonar Bharat Environment & Ecology (P) Ltd.
Address	35, C. R. Avenue, 3rd floor, Kolkata - 700012
Contact Details	033-40031179/033-22113034

Details of team Member

Sr. No.	Name	Designation/ Technical	Technical Experience /Qualification
1	Shri Parimal Sarkar	Legal Expert	➢ M.Sc. in Disaster Management ➢ Post Graduate Diploma in Environmental Law from National Law School, Bangalore ➢ Lead Auditor in ISO 14000 (Environmental Management)
2	Shri Subrata De Sarkar	General Manager	➢ General Manager in Central Public Sector undertaking. ➢ 12 years experience in Environmental Auditing ➢ Lead Auditor in ISO 50001:2011
3	Shri Suman Chchattaraj	Environmental Specialist	➢ M.Tech in Environmental Science ➢ 20 years experience in Environmental Impact Studies and Auditing

Energy Audit Team

S N	Name	Designation/ Qualification	Experience
1	Shri Suvra Majumdar	➢ Post Graduate Diploma in Energy Management (MBA) ➢ B.Tech (Electrical Engineering)	➢ 15 years experience of Energy audit
2	Shri Gautam Ghosh	➢ Diploma in Mechanical & Electrical Engineering from Calcutta Technical School	➢ 27 Years experience of working in electrical engineering department in different industries. ➢ 12 years experience in independent electrical auditing

1.8 List of Instruments

Following are the instrument used at the time of the Energy Audit.

Sr.	Instrument	Make/Sr.No.
1	Digital LUX Meter	HTC/2222600
2	Digital Micro OHM Meter	Innova/I-259
3	Digital Multi Meter	Kusam Meco/162180630
4	Digital Clampmeter	Waco/1910149152
5	Meger	Waco/307421
6	Load analyser	Waco/2954563

1.9 List of Laboratory Instruments for Environmental Monitoring

Sl. No.	Name of Equipment	Make	Model
1	GAS CHROMATOGRAPH WITH FID, TSD.	VARIAN	CP3800
2	GAS CHROMATOGRAPH MASS SPECTROMETER WITH ECD	VARIAN	CP 3800 SATURN 2200
3	GAS CHROMA TOGRAPH WITH FID for Air	DANI	Master GC
4	ION CHROMATOGRAPH	Thermo Fisher Scientific	DIONEXICS 1100
5	H.P.L.C.	VARIAN	SERIES 200
6	FTIR	Thermo Fisher Scientific	Nicolet IS10
7	ATOMIC ABSORPTION SPECTRROPHOTOMETER	VARIAN	AA 2406TA 120
8	MERCURY ANALYSER	EC	MAS 5840
9	FLAME PHOTOMETER	LOWERENCE & MAYO	381
10	SPECTRO PHOTOMETER	VARIAN	CARY 50
11	BOD INCUBATOR	MULTISPAN	DIGITAL
12	ELECTRONIC MICRO BALANCE	Citizen	CMSF

1.10 List of Field Equipment Department

Sl. No.	Name of Equipment	Make	Model
1	Field Dust Sampler	Envirotech/Lata Envirotech	APM – 550, PM 2.5 & 10
2	Respirable Dust Sampler	Envirotech/Lata Envirotech	APM-460BL
3	Stack Kit Sampler	Envirotech/Lata Envirotech	APM-620, PM-602
4	Sound Level Meter (AUTOMEDTIC)	Envirotech	SLM-101
5	Sound Level Meter	Lutron	SLM-4001
6	Local Air Quality Sampler	Vayubodhan	APM-414
7	Auto Metric Whather Monitor	Spectrum Technology	WM-272
8	Depth Sampler	NA	NA

1.11 General steps involved in Green Audit

a) Systematic and exhaustive data collection.

b) Evidence based documentation of activities.

c) Regular monitoring.

d) Provide standards and methods for improvement by establishing cost effective green action plan.

CHAPTER – 2

SURI VIDYASAGAR COLLEGE

2.1 About the College

Suri Vidyasagar College, named after the famous social reformer, litterateur, and fight for women's empowerment, Pandit Iswar Chandra Vidyasagar, has enter edits 81th year of eventful glory, bearing all the storms and buffets since its inception in 1942 as a wing of Vidyasagar College, Kolkata. In 1948, it was elevated to the status of a Degree College and given the name 'Suri Vidyasagar College' under the auspices of Calcutta University. Since 1960, the institute has been associated with the University of Burdwan, and it is presently a constituent College. Former President of the Republic of India, Honourable Shri Pranab Kumar Mukhopadhyay, was an eminent alumnus of this college.

Suri Vidyasagar College has devoted itself since its inception to the goal of imparting higher education, ensuring quality education, and providing research and extra-curricular activities in the best possible manner in order to spread the benefit of higher education in a relatively backward but glorious location. The NSS and NCC wings are doing excellent work in social reform and personality development.

Suri Vidyasagar College is 9.18 acres in size and Buildup area covers approximately 1.183Acre (51,544 Sq. Feet), which is located between the latitudes Latitude of 23°53'47.25"N to23°53'56.70"N and the Longitude of 87°31'57.64"E to 87°32'9.56"E.The College is proud of its eco-friendly Green Campus, which houses 22 departments teaching traditional and modern subjects, digital class rooms, state-of-the-art laboratories, a well-equipped Gymnasium, Language laboratory, distance education and open university study centres, the playground, residential accommodation for both teaching and administrative staff, a Post Office, and a Bank, among other things.

Under the University of Burdwan, the college provides 22 undergraduate courses and one postgraduate programme (Zoology).The college has 3870 students, 106 teaching faculty, and 27 non-teaching employees, and it is expected to grow rapidly.The college library is well- equipped with around 55,000 volumes, journals, reprographic machines, and so on, and it is rapidly progressing towards total digitization of its contents under the direction of two Librarians. At the end of 2016,our institute was re-accredited by NAAC with a rating of B++, the highest of any institute in the district of Birbhum.

2.2 Introduction

Environmental auditing, often known as green auditing, refers to assessments that enable us systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. Environmental compliance and management system short comings, as well as related corrective activities. Green auditing is an effective method for determining how and where the most energy or water resources are being utilised, the type and volume of waste generated, and considerations on how to implement adjustments and save money may then be made. It can raise health awareness while also promoting environmental awareness, morals, and ethics. Overall, it is critical in providing employees and students with a better awareness of the green impact on campus.

2.3 History of College

As far as the historical evidence goes, the first attempt to establish a college in Suri, the headquarters of Birbhum district, started in the year 1934. Under the tutelage of the then local landlord and educationist- Shri Amita Ranjan Mukhopadhyay, popular doctor Kaligati Banerjee, advocate Babu Harikinkar Samanta and other social activists, a working committee was formed, for this mission. The committee started collecting funds from local residents and it was decided that one of the members, Shri Tulsidas Chakraborty would buy them a large mansion by the name of 'Bose Saheber Kuthi', which would then form their base and also double up as the perfunctionary college building until a new one comes up. Funds were raised in the tune of twenty thousand rupees. But, with time the efforts waned and the funds dwindled. Fresh vigour was again observed in 1940. Under the leadership of Birbhum Zilla Board Chairman Shri Harikinkar Samanta, local dignitaries, including MLA Shri Debendranath Das, Shri Rampati Basu, Maulavi Nurul Absar, Md. Nake Moktar, Abdul Majid Choudhury along with the committee members submitted a deputation to the then Bengal 'Prime Minister' and Education Minister-in-Charge, Fajlul Haque, and petitioned for his assistance to bring up the college.

By then, the World War II had started and in India, Calcutta became the prime target of the Japanese. December of 1941 saw fierce bombing on Calcutta by the Japanese forces. This caused widespread panic and people started fleeing Calcutta for the neighbouring townships and villages. It was these circumstances that set the stage for the inception of Suri Vidyasagar College.

In his reminiscence, Jyoti Kishore Chowdhury, the then Principal of Vidyasagar College, Kolkata wrote: 'During those days, fear of bombing was so deep, the college had to be closed and a decision was taken to shift the college elsewhere'.

With the help of Prof. Tribhangamurari Mondal of Birbhum, plans were chalked out to setup the college at a school in Sainthia, a small township and business place near Suri. But, the efforts proved futile as this was disapproved by the then SDO of Suri, Shri Naren Chowdhury. Instead, he referred them to Dr. Kaligati Banerjee of Suri who grabbed the opportunity with both hands. A meeting was called in 1942, at the house of Dr. Kaligati Banerjee. Other than himself, the meeting was adorned by such esteemed luminaries as Shri. Nityanarayan Bandopadhyay, Shri. Umaprasanna Mukherjee (Olu Babu), the president of bar library-Shri Abinash Chandra Mitra, Shri P.C. Chandra, Shri

Bankim Mukhopadhyay, Maulavi Nurul Absar, Md. Nake Moktar and Principal J.K. Chowdhury. They then assembled at Shri. Amitaranjan's house for further assistance. In this regard, a proposal was placed before the Governing Body of Calcutta Vidyasagar College, which they approved along with an initial funding of Rs. 5000/-. Furnitures of the women section of I.Sc. Department were sent to Suri via train. Finally, under the guidance of Principal J.K. Chowdhury and with the newly appointed Vice-Principal (Suri campus) Tribhangamurari Mondal at the helm of affairs, Suri Vidyasagar College came into existence. On 9th March, 1942, under the chairmanship of former Calcutta Vidyasagar College student- Shri. Abinash Chandra Mitra, the college started its journey as a branch of "Vidyasagar College", Calcutta. Classes started in the house adjoining Shri. Amitaranjan's Kali Temple (Kali Bari), while the new building was being constructed south of the adjoining Banyan Tree of the selected place for the new college. Classes shifted to the new building in June 1942. Total number of students in the 1942-43 batch was 212 only. For them, students hostel were also set up in rented rooms at Kendua Village (known as Kendua Chhatrabas), in the out skirts of Suri. After 1948, it became an independent college with the name "Suri Vidyasagar College". The first Principal of the Suri Vidyasagar College was Prof. J. K. Chowdhury from 09.03.1942 to 28.02.50 and the first Vice-Principal was Prof. Tribhanga Murari Mondal.

The College volunteered for institutional accreditation by NAAC, Bangalore, in November 2005. After analysis the executive committee of the NAAC awarded a grade of B+, on February, 2006. Now, in the second decade of the 21st century, the college stands tall, spreading the message of knowledge and wisdom to the society. Today, spread over an area of 25 Bigha, 5 Katha and 8 chatak, the college consists of 19 Academic Departments out of which 15 offer Honours & General courses, 4 General Courses and 1 P.G. Course in Zoology. In 1996, the total built up area of the college was 29,856 sq. ft. Another 14,755.31 sq. ft. was added between 2001 and 2004. Currently the total built area is around 70,000 sq. ft. which contains classrooms, laboratories, library, office, seminar halls, canteen, Gymnasium and students' hostels (separate for Boys and Girls).

The College in its second cycle accreditation by NAAC has improved its grade to B++ in 2016 which is a earmark to celebrate its Platinum Jubilee. The institute is now a RUSA 2.0 funded institute. One separate building with four Class rooms has been constructed and Girls Toilet has been renovated and extended with modern amenities. Additional Class rooms have been constructed with the grant from Higher Education Department, Govt. of West Bengal during last five years.

Location of the College

Location of the College is College Para, Suri, Dist. Birbhum, Pin Code – 731 101.

Communication and Transportation

The College is well connected from Bolpur & Burdwan station and by road. The College is located within 1 km from Suri station and 1km away from Suri (NBSTC) Bus stand. Distance from Suri College to Andal Airport is around 61.7 Kms.

2.4 Vision of the College:

- Our vision is to go ahead with confidence and courage to educate the students more and more with morality, nobility and magnanimity of soul removing all barriers to comprehensive education of good quality to serve society better. Our Vission: Wisdom, Sacrifice, Service

2.5 Mission of the College:

- The declared goals and objectives of Suri Vidyasagar College are: Wisdom, Self-Sacrifice and Social Service (Jnana, Tyaga, Seva) embedded in the Emblem of the college. The missions of the college are:
- Imparting Higher Education,
- Development of Personality and • Raising Socio-Cultural Awareness.

CHAPTER - 3

GREEN AUDIT METHODOLOGY

3.1 Utility of Green Auditing

Green audit is used to improve existing anthropogenic activities, with the object to reduce the adverse effects of these activities upon environment. An environmental auditor will study an organization's efforts to conserve the environment in a systematic and documented manner and will produce an environmental audit report.

3.2 Objectives of the Study

The basic objective of green audit is to promote environment management and conservation in the college campus. Purpose of the audit is to identify, quantify, describe and prioritize the framework of environmental sustainability in compliance with the applicable regulations, policies and standards. Major objectives of carrying out green audit are:

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

3.3 Methodology

In order to perform green audit, methodology included different techniques such as physical inspection of the campuses, observation and review of the documentation, interviewing key persons and data analysis, measurement of the present status of environment management in the campuses:

- Water quality assessment, consumption and management
- Air quality assessment and management
- Electricity consumption and management
- Sound pollution monitoring
- Waste management
- Bio diversity status of the campus
- Land use and land coverage
- Rain water Harvesting
- Use of alternate energy sources.

CHAPTER - 4

LAND USE ANALYSIS, SURI VIDYASAGAR COLLEGE, WEST BENGAL

4.1 General overview of the concept of land use:

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

4.2 Methodology adopted for land use mapping

Three types of data that are GPS points, field survey data and Google earth data for Geo-referencing have been used in this study. Land use map of the study area have been prepared using field survey

CLASSIFICATION SCHEME FOR LAND USE ANALYSIS OF BUILT UP AREA

Level-I	Level-II
1. Built- up land area	1.1 Dense 1.2 Moderate 1.3 Sparse

Therefore, attempt has been made in this study to map land use for Suri Vidyasagar College with a view to detect the land consumption in the built-up land area.

LAND USE DATA OF COLLEGE OF SURI VIDYASAGAR COLLEGE

CATEGORIES OF LAND USE	AREA IN SQ METRES
OPEN SPACE AND PLANTATION	31553.30
Ground Coverage	5615.80
TOTAL AREA	37169.10

Ground coverage of 15.11% (i.e 5615.80 sq metres) consists of the buildings.

FINDINGS:

Suri Vidyasagar College, which was established in the year 1948, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 84.89% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

CHAPTER – 5

WATER QUALITY ASSESSMENT CONSUMPTION & MANAGEMENT

Water quality analysis was conducted by Qualissure Laboratory Services

5.1 Water Quality Analysis Test Report

DOC NO : QLS/SAMP/08-D/00

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Location Sample Drawn On Date of Performance	: QLS/MR/W/23-24/C/349 : 19.07.2023 : QLS/MR/W/23-24/349 : Drinking Water :Aquaguard Near Principal Office : 13.07.2023 : 14.07.2023-19.07.2023

Analysis Result

(A) Microbiological Analysis

Sl. No.	Characteristic	Limit as per Drinking Water Standard : IS:10500, 2012Amd. 2	Test Method	Result
1.	Total Coliform Bacteria/100ml	Not Detectable	IS 15185-2016	Not Detected
2.	E.coli /100ml	Not Detectable	IS 15185: 2016	Not Detected

(B) Chemical Analysis

Sl. No.	Test Parameter	Test Method	As per Drinking Water Standard : IS:10500, 2012Amd. 1 & 2		Result
			Desirable Limit	Permissible Limit	
1.	pH Value at 25°C	IS 3025 (Part 11)- 1984 RA: 2012	6.5-8.5	No Relaxation	7.47
2.	Turbidity in NTU	IS 3025 (Part 10)- 1984 RA: 2012	1	5	<1.0
3.	Total Dissolved Solids (TDS) in mg/l	IS 3025(Part 16)- 1984 RA: 2012	500	2000	354
4.	Calcium(as Ca) in mg/l	IS 3025 (Part 11)- 1984 RA: 2012	75	200	59.6
5.	Chloride(as Cl) in mg/l	IS 3025 (Part 10)- 1984 RA: 2012	250	1000	94.2
6.	Iron (as Fe) in mg/l	IS 3025(Part 53)-1988 RA: 2014	1.0	No Relaxation	0.22
7.	Magnesium(as Mg) in mg/l	IS 3025 (Part 46)-1994 RA: 2014	30	100	32.9
8.	Nitrate (as NO_3) in mg/l	IS 3025 (Part 34)-1988 RA: 2014	45	No Relaxation	<0.5
9.	Free Residual Chlorine in mg/l	IS 3025 (Part 26): 1986)RA 2014)	0.2	1.0	<0.1
10.	Sulphate (as SO_4) in mg/l	IS 3025 (Part 24)-1986, RA: 2014	200	400	38.4
11	Alkalinity (as $CaCO_3$) in mg/l	IS 3025 (Part 23)- 1986, RA: 2014	200	600	190.0
12.	Total Arsenic(as As) in mg/l	IS 3025 (Part 37):1988 RA 2014	0.01	No Relaxation	<0.01
13.	Total Hardness (as $CaCO_3$) in mg/l	IS 3025 (Part 21)-1983, RA: 2014	200	600	286.1

for **Qualissure Laboratory Services**
Reviewed & Authorized By

Qualissure Laboratory Service Kolkata

(Benimadhab Gorai)
Authorized Signatory

Fig. 1 : Drinking water sample collect

Drinking water facility at Suri Vidyasagar College

The water that is utilised for drinking is clean and well-maintained.Six RO water filters have been built on our college campus to provide safe drinking water, two of which include chilling facilities. A solar energy-powered water tank connection is available for emergency use at the Girls' Hostel and Quarter. Except for one or two instances, no water is lost during the survey as a result of leaks or overflow from overhead tanks. Moreover water is released from each water reservoir regularly and cleaned at regular interval to maintain the hygiene of the tank.

Fig. 2 : Drinking water facility of the College Campus

(A) Water source for Gardening, **(B)** Tubewell, **(C-D)** Water filter with basin, **(E)** Small pump for drinking water, **(F)** Meters in Pump House, **(G-H)** Water Cooler with purifier, **(I-J)** Solar power-driven water pump with tank.

TEST REPORT

DOC NO : QLS/SAMP/08-D/00

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Location Sample Drawn On Date of Performance	: QLS/MR/W/23-24/C/350 : 19.07.2023 : QLS/MR/W/23-24/350 : Waste Water :Near Canteen Main Drain : 13.07.2023 : 14.07.2023-19.07.2023

Analysis Result

Sl. No.	Parameter	TEST METHOD	Result	Limit as per CPCB for discharge of effluents	
				Inland Surface Water	Public Sewers
1	pH at 25°C	APHA 23rd Edition-2017, 4500 H+	7.11	5.5 to 9.0	5.5 to 9.0
2	Total Suspended Solid in mg/l	APHA 23rd Edition-2017, 2540 D	8	100	600
3	Chemical Oxygen Demand (as COD) mg/l	APHA 23rd Edition-2017, 5220B	19	250	---
4	Biochemical Oxygen Demand (as BOD) mg/l	IS 3025 (Part 44)-1993, RA:2014	5	30	350
5	Oil & Grease in mg/l	APHA 23rd Edition-2017, 5520A	<1.4	10	20

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(Benimadhab Gorai)
Authorized Signatory

Fig. 3 : Waste water sample collect

CHAPTER – 6

AMBIENT AIR QUALITY ASSESSMENT AND MANAGEMENT

6.1 Air Quality Test Report

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer : M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. : QLS/MR/A/23-24/C/619 Date :22.07.2023 Sample No. : QLS/MR/A/23-24/619 Sample Description : Ambient Air Sample Mark : Near Principal Room

Analysis Result

Location : Near Principal Room			Date of sampling : 13.07.2023-14.07.2023	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 28°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 78%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10μm) in μg/m³	58	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5μm) in μg/m³	19	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in μg/m³	5.0	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in μg/m³	22.3	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in μg/m³	595	2000	IS: 5182 (Part-10):1999,RA-2014

NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.

for **Qualissure Laboratory Services**
Reviewed & Authorized By

Laboratory Service ★ Qualissure ★ Kolkata

(Benimadhab Gorai)
Authorized Signatory

Fig. 4 : Ambient Air sample collect

AMBIENT AIR TEST REPORT

DOC NO : QLS/SAMP/08-A/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description Sample Mark	: QLS/MR/A/23-24/C/620 :22.07.2023 : QLS/MR/A/23-24/620 : Ambient Air : Near Teacher's Room

Analysis Result

Location : Near Teacher's Room			Date of sampling : 13.07.2023-14.07.2023	
Sampling Done by: B.Mondal			Sampling done as per : CPCB Guidelines (Volume-1)	
Environmental Condition: Cloudy			Average Temperature : 38°C	
Barometric Pressure : 752 mm of Hg			Average Humidity : 78%	
Sl. No.	**Pollutants**	**Result**	**Limit as per CPCB**	**Method of Test Reference**
1	Particulate matter (<10µm) in µg/m³	83	100	IS: 5182 (Part-23), RA-2017
2	Particulate matter (<2.5µm) in µg/m³	21	60	USEPA CFR-40,Part-50, Appendix-L
3	Sulphur dioxide (SO_2) in µg/m³	5.2	80	IS: 5182 (Part-2)-2001, RA-2017
4	Nitrogen dioxide (NO_2) in µg/m³	22.8	80	IS: 5182 (Part- 6)-2006, RA-2017
5	Carbon Monoxide (CO) in µg/m³	629	2000	IS: 5182 (Part-10):1999,RA-2014

NOTE: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.

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Fig. 5 : Ambient Air sample collect

CHAPTER – 7

NOISE MONITORING

7.1 *Ambient Noise Monitoring Status:*

DOC NO : QLS/SAMP/08-C/00

TEST REPORT

Name & Address Of the Customer :		
M/s. Suri Vidyasagar College College Para, Suri, Birbhum – 731 101.	Report No. Date Sample No. Sample Description	: QLS/MR/A/23-24/C/621 : 22.07.2023 : QLS/MR/A/23-24/621 : Ambient Noise

Sampling Done By:B.Mondal

Sampling Guideline : As per IS: 9876: 1981 (RA-2001)

Sample No.	Date of Monitoring	Location	Leq dB (A) Day Time	Leq dB (A) Night Time
621	13 - 14.07.2023	Near Principal Room	54.5	41.1

Code/ Category	Leq dB (A)Day Time	Leq dB (A)Night Time	
A/Industrial	75	70	**NOTE:** *Day Time : 06.00 Hr. – 22.00 Hr.* *Night Time : 22.00 Hr. – 06.00 Hr.*
B/Commercial	65	55	
C/Residential	55	45	
D/Ecological Sensitive	50	40	

for **Qualissure Laboratory Services**
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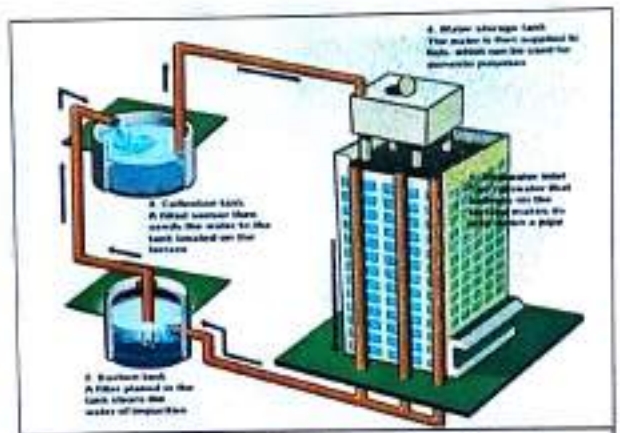
Fig. 6 : Noise level monitoring

CHAPTER - 8

RAIN WATER HARVESTING SYSTEM

The primary goal of rain water harvesting at Suri Vidyasagar College Campus is to raise ground water levels by collecting and storing rain water from roof top run-off. The College lies in a semi-arid and sub-humid zone. The campus'ss oil is lateritic in nature. The soil is exceptionally porous and has a high capacity for in filtration. In our campus rain water harvesting system has been installed at Aurobinda Bhavana. The roof runoff water is collected through network of pipe lines and store it within two large tanks situated at ground level in front of Aurobinda Bhavana. This stored rainwater is used for cleaning and gardening purpose.

Rainwater Harvesting Tank on roof top of Aurobinda Bhavana



Schematic diagram of Rain water harvesting system

Fig. 7 : Rain Water Harvesting System

CHAPTER - 9

ELECTRICITY CONSUMPTION (IN UNIT) AND MANAGEMENT

9.1 General Details:

Sl.No.	PARTICULARS	DETAILS	
1	Name & Address of College	Suri Vidyasagar College College Para, Suri, Birbhum West Bengal 731101	
	Web Site	https://surividyasagarcollege.org.in	
2	Name of Contact Officer	Dr. Tapan Kumar Parichha	
	Designation	Principal	
	Name of Alternative Officer	Dr. Sujoy Das	
	Designation	IQAC Coordinator	
3	Telephone No. Mobile No.	NA 9434946924	
	Fax No. e-mail ID	svctkp@gmail.com	
	No. of shift (Morning & Day)	7am. TO 5pm	
	No. of Employees (Approx)	105	
4	Electricity Consumption	Imported (Purchased) 4839	
5	Specific Energy Consumption	Fuel	Electricity
		3762/-	Rs. 41,297/- (Per (month)
6	LPD	9,900/-	
7	EPI	0.24	

9.2 Electrical Details

a) Transformers

	No. 1
Voltage Ratio	N/A
KVA	N/A
% Impendence	N/A

b) Electricity Consumption

	Particulars	Demand
A	Contract demand KVA	16.57
B	Maximum demand	16.57
C	Total Energy units consumed / year	58077
D	Avg. Power Factor(P.F.)	0.97
E	Avg. Energy bills(Rs/month)	Rs.41,297/-

c) Detailed list of Electric Motors operating in the college

S.NO.	NAME OF THE PLANT	RATING OF MOTOR (KW)	NO. OF MOTORS
1	Suri Vidyasagar College, Suri, Birbhum	3.34	4 nos.

d) **Connected Load**

	EQUIPMENT	TOTAL NUMBERS	LOAD IN KW (TOTAL)
A	Motors : Greater than 10kW	NIL	NIL
	: Less than 10 kW	4Nos.	3.34 KW
B	AC & Ventilation with TR capacity		
a)	Others (Package ACs/ Split ACs / Windows ACs) with TR	**Room AC of Split/Window type –** 50.99	
C	Total Process Load (in kW)	54.33 KW	
D	Total Lighting Load (in kW) & Luminaries details	**No's of lighting luminaries** (LED+T/L+ (including fan) Tube Light, Led Light, etc.= 27.06 KW Electric Fan - 46.38 KW	
	Total Load (in kW)	**127.77 KW**	

A. Lux Measurements :

Sl.no.	Room	LUX level	Remarks
1.	**Arabinda Bhavan**		
	Ground Floor	300,299,301,295,296	
	1st floor	301,301,302,305,303	
	2nd floor	297,300,302,312,303	
2	**Rabindra Bhavan**		
	Ground Floor	305,304,303,294,299	
	1st floor	304,302,290,302,306	
3	**Auditorium (New hall)**		
	Ground Floor	295,303,304,300,304	
4	**Gandhi Bhavan**		
	Ground Floor	301,304,305,298,296	
	1st floor	306,304,300,299,306	
5	**Vivekananda Bhavan**		
	Ground Floor	303,304,306,310,299	
	1st floor	298,286,301,305,304	
6	**Humanities Building**		
	Ground Floor	302,304,312,309,300	
	1st floor	298,296,304,308,299	
7	**Administrative Building**		
	Ground Floor	301,310,314,298,296	
	1st floor	310,308,314,298,306	
8	**Rabindra Chatravas**		
	Ground Floor	298,296,300,297,301	
	1st floor	301,298,300,299,302	
9	**Mrinalini Chatriniwas**		
	Ground Floor	297,296,298,294,300	
	1st floor	302,301,299,297,300	
10	**Micro Biology**		
	Ground Floor	305,306,304,301,304	
	1st floor	298,303,302,300,298	
11	**NSOU Building**		
	Ground Floor	312,305,306,300,301	
	1st floor	305,308,304,306,308	
12	**RUSA**		
	Ground Floor	299,300,304,306,307	
	1st floor	300,302,304,309,303	

Illumination Level Comparison

Area	Average Lighting Level (LUX)	NBC Recommended
Arabinda Bhavan	301	300-500
Rabindra Bhavan	300	300
Auditorium (New hall)	301	300
Gandhi Bhavan	301	300
Vivekananda Bhavan	301	300
Humanities Building	303	300
Administrative Building	305	300
Rabindra Chatravas	299	300
Mrinalini Chatriniwas	298	300
Micro Biology	302	300
NSOU Building	305	300
RUSA	303	300

Remarks: Lights needs cleaning at an interval of one month and old light to be replaced by new to get desired LUX value

9.3 Use of Alternate Energy

The institute has taken an important step for reduction in pollution level by installation of solar panel and photo voltaic cell for generating electricity.

For reducing carbon emission, and dependence on fossil fuel, the institution has resorted to using green energy by harnessing solar power. In order to increase generation of solar energy, installation of solar panels in the open space around the building may be considered.

Generated power is transferred to the grid.

This helps in reducing carbon emission.

Fig. 8 : Solar System

CHAPTER - 10

WASTE MANAGEMENT

The present Prime Minister of India Sri Narendra Modi launched 'Swachh Bharat Abhiyan' (Clean India Mission) on 2nd October, 2014. In this mission, the proper use of dust/waste bins is one of the major priorities. To implement this mission, collective mass effort is necessary. For proper segregation and management proper use of waste bins is the only solution for waste management purpose in the college campuses.

10.1 Solid Waste

Suri Vidyasagar College has set up separate bins to ensure proper segregation and collection of the biodegradable, non-biodegradable and hazarders waste products generated in the campus. The responsibility of recyclable waste is however still not taken up due to devoid of recycling device to carry on the procedure. However, several solid wastes such as glass, cans, which and brown papers, batteries, print cartridges, cardboard, furniture, damage pen, carbon papers etc are either sold to vendors for recycling or despatch via municipality disposal van in regular basis. The biodegradable waste such as humas, rest portion of vegetables etc. which are used in college canteen, Staff quarters and Boys' and Girls' hostels are used for preparing bio fertilizers.

Vermi compost units are observed near New Hall for fertilizers also. College has developed few good practices, such as single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc and campus is declared as Plastic Free zone. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are reused in the laboratories.

Fig. 9 : Waste Management in college campus

(A) Dustbin for solid and liquid waste, **(B)** Large dustbin for solid non-biodegradable waste product; **(C)** Reservoir for Solid bio-degradable waste product; **(D)** Vermi compost units **(E)** Disposed of waste product storage bags carrying van from Suri municipality by NCC.

10.2 Liquid Waste

The source of wastewater is Domestic Waste Water i.e., Sewage water. The Sewage water mainly comes from laboratory of different departments, toilets of college, hostel, kitchen and canteen. Those waters are used for gardening purpose.

10.3 E-Waste

Substantial qualtity of e waste is generated due to extensive use of computer.

All members particularly students have been advised not to throw used pendrive etc. any where, but to keep in designated bins.

E-Waste is accumulated in a separate room, stock of such waste as on date is quite substantial.

As per the guidelines of Pollution Control board (P.C.B.) e-waste is to be disposed off through approved vendors of the P.C.B.

The College should take steps for disposal through the approved vendors.

CHAPTER - 11

BIODIVERSITY STATUS OF THE COLLEGE CAMPUS

11.1 Introduction

Suri Vidyasagar College campus is very rich in the term of biodiversity. To conserve this biodiversity, our first need is to learn about the existing diversity of the place. Unless we know whom to conserve, we will not be able to plan proper conservation initiatives. Also, it is important to have an understanding of the biodiversity of an area so that the local people can be aware of the richness of biodiversity of the place they are living in and their responsibility to maintain that richness.

11.2 Objective

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

1. Documentation of the floral diversity of the area: its trees, herbs, shrubs, climbers and aquatic vegetations.

2. Documentation of the major faunal groups like mammals, reptiles, amphibians, birds and among the insects, butterflies and dragonflies.

3. Documentation of the specific interdependence of floral and faunal life.

Survey Area

The green area of Suri Vidyasagar College covers approximately 3.96 acres out of 9.18 acres, which is about 43.15 percent of the total area, and is strategically distributed across different sections of the campus. The green spaces include gardens, courtyards, an open field, and a play ground, providing ample opportunities for relaxation, outdoor activities, and study in gina natural setting.

Location Map

Fig. 10 : Location map

11.3 Method of Study

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

a) Sampling was done mostly is random manner.

b) Surveys were conducted for the maximum possible hours in day time.

c) Tree species were documented through physical verification on foot and photographed each species as much as possible.

d) The total area was surveyed by walking at day time.

e) 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.

f) Observing mammals depend critically on the size of the species and its natural history. Diurnal species are common and highly visible. Nocturnal species, however, are rare and difficult to detect. Small mammals like the field rats were found near their burrows, particularly during their entry or exit times in or out from their burrows respectively. In some cases, deposits and footprints were also observed that served as a potential clue for the presence and absence of the concerned species. These secondary evidences were all noted with time and space co-ordinates.

g) Birds are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. Sampling was done on the basis of direct sighting, call determination and from the nests of some bird species

h) Reptiles were found mostly by looking in potential shelter sites like crevices of building, logs, tree hollows and 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.

i) Amphibians act as potential ecological indicators. However, most of them are highly secretive in their habits and may spend the greater part of their lives underground or otherwise inaccessible to biologists. These animals do venture out but typically only at night. They were searched near pond, road beside wetland and in other possible areas. Diurnal search operations are also successful.

j) Active invertebrates like the insects require more active search. For larger winged insects like butterflies, dragonflies and damselflies, random samplings were carried and point sampling was also done.

k) The easiest way to observe many of the invertebrates is simply looking for them in the suitable habitat or microhabitat. Searching was carried out under stones, logs, bark, in crevices in the walls and rocks and also in leaf litter, dung etc. slogs and snails are more conspicuous during wet weather and especially at night when they were found using torch.

11.4 Plant diversity in the College Campus

Suri Vidyasagar College premises having about 39.54 acres of land have unique plant diversities. These include flowering plants, leafy trees, medicinal herbs and innumerable wild bushes.

These plants are listed and depicted as following:

List of the Major Plants of the Garden

কৃষ্ণচূড়া *Delonix regia* (Bojer ex Hook.) Raf. Family: Fabaceae; Clade: Rosids	বান্দরলাঠি *Cassia fistula* L. Family: Fabaceae; Clade: Rosids	সিনকিরি *Senna siamea* (Lam.) H.S.Irwin&Barneby Family: Fabaceae; Clade: Rosids
মেহগনি *Swietenia mahagoni*(L.) Jacq. Family: Meliaceae; Clade: Rosids	কনকচূড়া *Peltophorumpterocarpum*(DC.) Backer ex K.Heyne Family: Fabaceae; Clade: Rosids	বকুল *Mimusopselengi* L. Family: Sapotaceae; Clade: Asterids
শিশু *Dalbergia sissoo*Roxb. ex DC. Family: Fabaceae; Clade: Rosids	শিরিষ *Albizia lebbeck*(L.) Benth. Family: Fabaceae; Clade: Rosids	দেবদারু *Mansonialongifolium* (Sonn.) H. Xue & R.M.K. Saunders Family: Asteraceae; Clade: Magnolids
ঝাউ *Casuarina equisetifolia* L. Family: Casuarinaceae; Clade: Rosids	ছাতিম *Alstoniascholaris* (L.) R.Br. Family: Apocynaceae; Clade: Asterids	নিম *Azadirachta indica* A. Juss. Family: Meliaceae; Clade: Rosids
ইউক্যালিপটাস *Eucalyptus tereticornis* Sm. Family: Myrtaceae; Clade: Rosids	সেগুন *Tectona grandis*L.f. Family: Lamiaceae; Clade: Asterids	বট *Ficus benghalensis* L. Family: Moraceae; Clade: Rosids
পাকুড় *Ficus virens*Aiton Family: Moraceae; Clade: Rosids	আম *Mangifera indica* L. Family: Anacardiaceae; Clade: Rosids	তাল *Borassus flabellifer* L. Family: Arecaceae; Clade: Commelinids
শারেঙ্গা *Gliricidiasepium*(Jacq.) Kunth Family: Fabaceae; Clade: Rosids	চন্দ্রবতী *Tecoma stans* (L.) Juss. ex Kunth Family: Bignoniaceae; Clade: Asterids	নাগলিঙ্গম *Couroupitaguianensis*Aubl. Family: Lecythidaceae; Clade: Asterids
বেল *Aegle marmelos* (L.) Correa Family: Rutaceae; Clade: Rosids	কাঠ-বাদাম *Terminalia catappa* L. Family: Combretaceae; Clade: Rosids	Ach *Haldinacordifolia*Ruch.-Ham. Family: Rubiaceae; Clade: Asterids
Kurchi *Holarrhenapubescens*Wall. ex G.Don Family: Apocynaceae; Clade: Asterids		

Fig. 11 : Major plants in the campus area

11.5 Medicinal Plants in the Campus:

A number of plants with medicinal properties are growing in the campus, specially in the medicinal plant garden.

Sl. No.	Common Name	Scientific name	Uses
1	Basak	*Justicia adhatoda*	Couth, colds, asthma, bronchodilator
2	Apang	*Achyranthes aspera* Linn.	Anti inflammatory and uterine stimulant activity, rheumatism, Hydrophobie.
3	Kalmech	*Andrographis paniculata* (Burm.f.)	Fever, dysentery, dyspepsia, improves liver function, Leaves – in case of irregular stool, losss of appetite; roots – given to children to cure general debility.
4	Harjora	*Cissus quadrangularis* Linn. Syn. *Vitis quadrangularis*	Leaves – in bowel complaints; stem to cure scurvy, irregular menstruation, asthma, sap applied externally on forehead to cure one-sided headache.
5	Amlaki	*Emblica officeinalis* Gaertn	Fruits – treat vomiting, leprosy, piles, anaemia; leaves – in ophthalmia.
6	Ramtulsi	*Ocimum gratissimum* Linn.	Leaves – Decoction of the leaf applied to treat septic wounds, Seeds – soaked in water and taken very cooling and refreshing drink.
7	Jaba	*Hibiscus rosasinensis* Linn.	Flowers – in black colour of hair, female disease; leaves – soothing, used in growth of hair, Roots – in cold.
8	Telakucha	*Coccinia grandis* (Linn.) Voigt	Roots – in case of vomiting, burning sensation of hands and feet; Leaves – in cough and skin disease.
9	Arshagandha	*Wythania somnifera*	Root, Leaf, Fruits and Seed
10	Akanda	*Calotropis agigantea*	Bark, Root, Leaf, Latex, Flower
11	Ayapan	*Eupatorium triplinerve*	Whole Plants
12	Tulsi	*Ocimum sanctum*	Leaf
13	Kari pata	*Murraya koenigii*	Root, Leaf, Fruit
14	Bisallakaroni	*Barleria lupulina*	Leaf
15	Kulephara	*Hygrophila schulli*	Whole plant
16	Gurmar	*Gymnema sylvestre*	Root, Leaf, Fruit
17	Grikumari	*Aloe vera*	Leaf
18	Thankuni	*Centella asiatica*	Leaf
19	Nayantara	*Catharanthus roseus*	Whole Plants
20	Neem	*Azadirachta indica*	Bark, Leaf, Yound Stem, Unripedfuit, Seed Oil
21	Basak	*Adhatoda vasika*	Leafd, Flower, Bark, Root
22	Bisllakarani	*Gendarussa Vulgaris*	Leaf
23	Bel	*Aegle marmelos*	Root, Young Leaf, Flower, Ripe and Unriped Fruit
24	Sarpagan Jha	*Raunolfia serpentina*	Leaf
25	Sughni	*Marsilea minuta*	Whole Plant
26	Karabi	*Nerium odorum*	Root, Leaf, Bardk, Stem
27	Black Tulsi	*Ocimum tenuiflorum*	Whole Plant, Leaf, Seed
28	Muthagrass	*Cyperus rotundus*	Root

1. *Heliotropium indicum*

MEDICINAL GARDEN

2. *Impatiens balsamina*

3. *Gymnema sylvestre*

4. *Pergularia daemia*

5. *Asystasia gangetica*

6. *Hygrophila spinosa*

7. *Anisomeles indica*

8. *Hyptis suaveolens*

9. *Leonotis nepetifolia*

10. *Leucas cephalotes*

11. *Martynia annua*

12. *Vitex negundo*

13. *Clerodendrum viscosum*

14. *Evolvulus alsinoides*

15. *Ipomoea pes-tigridis*

16. *Operculina turpethum*

17. *Euphorbia tirucalli*

18. *Ricinus communis*

Fig. 12 : Medicinal plants

11.6 Checklist of Reptiles:

Sl. No.	Common Name	*Scientific Name*	Bengali Name
1	Checkered Keelback	*Xenochrophis piscator*	Joldhora
2	Buff Striped Keelback	*Amphiesma stolatum*	Hele
3	Rat Snake	*Zamenis longissimus*	Darash
4	Skink	Lampropholis sp.	Anjani
5	Oriental Garden Lizard	*Calotes versicolor*	Girgiti
6	Common House Gecko/Gekko	*Hemidactylus frenotus*	Tiktiki

Fig. 13 : Reptiles

11.7 Checklist of Birds:

A total of 63 types of bird species were found in the campus, which is quite a good number, in spite of the industrialized surrounding around it.

Total bird species encountered in the college campus.

Sl. No.	Common Name	*Scientific Name*
1	Indian cormorant	*Phalacrocorax fuscicollis*
2	Little cormorant	*Microcarbo niger*
3	Little Egret	*Egretta garzetta*
4	Cattle Egret	*Bubulcus ibis*
5	Black Kite	*Milvus migrans*
6	Black shouldered kite	*Elanus axillaris*
7	Common kestrel	*Falco tinnunculus*
8	Shikra	*Accipiter badius*
9	White breasted water hen	*Amaurornis phoenicurus*
10	Pond Heron	*Ardeola grayii*
11	Common sandpiper	*Actitis hypoleucos*
12	Yellow Footed Green pigeon	*Treron phoenicoptera*
13	Rock pigeon	*Columba livia*
14	Spotted dove	*Spilopelia chinesis*
15	Ring necked dove	*Streptopelia capicola*
16	Alexandrian parakeet	*Psittacula eupatria*
17	Common Cuckoo	*Cuculus canorus*
18	Spotted Owlet	*Athene brama*
19	White throated Kingfisher	*Halcyon smyrnensis*
20	Small blue Kingfisher	*Alcedo atthis*
21	Stork billed Kingfisher	*Pelargopsis capensis*
22	Pied Kingfisher	*Ceryle rudis*
23	Common Hoopoe	*Upupa epops*
24	Chestnut headed Bee-eater	*Merops leschenaulti*
25	Green Bee-eater	*Merops orientalis*
26	Black-rumped Flameback	*Dinopium benghalense*
27	Brown-capped Pygmy Woodpecker	*Yungipicus nanus*
28	Coppersmith Barbet	*Megalaima haemacephala*
29	Blue throated Barbet	*Megalaima asiatica*

Sl. No.	Common Name	Scientific Name
30	Lineated Barbet	*Megalaima lineata*
31	Brown-capped Woodpecker	*Dendrocopos nanus*
32	Brown Shrike	*Lanius cristatus*
33	Long tailed Shrike	*Lanius schach*
34	House Sparrow	*Passer domesticus*
35	Black hooded Oriole	*Oriolus xanthornus*
36	Golden Oriole	*Orious oriolus*
37	Black Drongo	*Dicrurus macrocercus*
38	Bronze winged Drongo	*Dicrurus aeneus*
39	Common Myna	*Acridotheres tristis*
40	Asian pied Starling	*Gracupica contа*
41	Chestnut tailed Starling	*Sturnia malabarica*
42	Jungle Myna	*Acridotheres fuscus*
43	Rufous Treepie	*Dendrocitta vagabunda*
44	Common Crow	*Corvus brachyrhynchos*
45	Red vented Bulbul	*Pycnonotus cafer*
46	Red whiskered Bulbul	*Pycnonotus jocosus*
47	Common Prinia	*Prinia inornata*
48	Ashy Prinia	*Prinia socialis*
49	Common Babbler	*Turdoides caudata*
50	Brown breasted Flycatcher	*Muscicapa muttui*
51	Taiga Flycatcher	*Ficedula albicilla*
52	Tailorbird	*Orthotomus sutorius*
53	Bluethroat	*Luscinia svecica*
54	Pied Bushchat	*Saxicola caprata*
55	Oriental Magpie robin	*Copsychus saularis*
56	Pale billed Flowerpecker	*Dicaeum erythrorhynchos*
57	White Wagtail	*Motacilla alba*
58	Pied Wagtail	*Motacilla alba*
59	Yellow Wagtail	*Motacilla flava*
60	Citrine Wagtail	*Motacilla citreola*
61	Purple rumped Sunbird	*Leptocoma zeylonica*
62	Silver billed Munia	*Ionchura punctulata*
63	White throated Fantail	*Rhipidura albicollis.*

Fig. 14 : Local Birds

11.8 Checklist of mammals:

Sl. No.	Common name	*Scientific name*	Bengali name
1	Indian palm squirrel	*Funumbulus sp.*	Kathberali
2	Frugivorous bat	*Suborder megachiroptera*	Badur
3	Insectivorus bat	*Suborder microchiroptera*	Chamchike
4	House mouse	*Mus musculus*	Indur
5	Rat	*Rattus norvegicus*	Dhere indur

Fig. 15 : Mammals

11.09 Checklist of Ferns and Seasonal Flowers

Sl. No.	Local Name	Common Name	*Scientific Name*
1.	Bird-nest-Fern	Bird-nest Fern	*Asplenium* sp.
2.	Fern sp.		
3.	Fishtail Fern	Fishtail Fern	*Microsorum punctatum*
4.	Oakleaf Fern	Oakleat Fern	*Drynaria quercifolia*
5.	Dog flower, Snadragon	Dog flower, Snapdragon	*Antirrhinum majus*
6.	Garden stock, Common stock	Garden stock, Common stock	*Matthiola incana*
7.	Gazania	Gazania	*Gazania* sp.
8.	Gladiolus	Gladiolus	*Gladiolus* sp.
9.	Himsagar	Flaming katy, Florist kalanchoe	*Kalanchoe blossfelddiana*
10.	Maiden Pink	Maiden Pink	*Dianthus deltoids*
11.	Mike Ful	Amaryllis	*Hippeastrum* sp.
12.	Pansy, Garden Pansy	Pansy, Garden Pansy	*Viola tricolor* var.
13.	Petunia	Petunia	*Petunia hybrid*
14.	Verbena	Verbena	*Verbena* sp.

Fig. 16 : Flowers of the college premises

CHAPTER - 12

GREEN INITIATIVES

Suri Vidyasagar College aims to protect and conserve its biodiversity, fresh and clean ambiance through the following green initiatives to protect and conserve nature.

12.1 *Plantation Programme*

Plantation programme of Suri Vidyasagar College promotes environment management and conservation in the college campus with the following objectives:

i) To motivate the students to keep their surroundings green and clean by undertaking plantation of trees.

ii) Promote ethos of conservation of water by minimizing the use of water.

iii) Motivate students to imbibe habits and life style for minimum waste generation, source separation of waste and disposing the waste to the nearest storage points.

iv) To create awareness amongst public and sanitary workers, so as to stop the indiscriminate burning of waste which causes respiratory diseases.

v) To minimize the use of plastic bags, not to throw the min public places as they choke drains and sewers, cause water logging and provide breeding ground for mosquitoes.

vi) Organize tree plantation programmes, awareness programmes such as Quiz, essay, painting competitions, rallys, nukkad natak etc. regarding various environmental issues and educate children about re-use of waste material & preparation of products out of waste

vii) Organize Nature Trail in Wild Life Sanctuaries/Parks/Forest are as to know about the Bio-diversity.

Tree Plantation by respected Principal sir Dr. Tapan Kumar Parichha and Army Officer on the occasion of World Environment Day celebration, organized by Department of NCC, Suri Vidyasagar College

Fig. 17 : Plantation programme

12.2 *Green computing practice*

Being an academic institution, papers are used for various purposes like exam answer sheets, circulars, notices, office work, document printing, and Xeroxing. Since the trees are cut for paper manufacturing, the sequestration of carbon is reduced increasing carbon footprint. To cut down the carbon footprint, the university administration and various departments follow paperless methods of communication by using emails, online forms submission, etc. The paperless work was helpful in reducing tons of CO_2. The tons of biomass are saved by this green computing practice

CHAPTER – 13

CONSOLIDATION OF AUDIT FINDINGS

Green Audit will create a greater appreciation and under-standing of the impact of college activities on the environment. Suri Vidyasagar College has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercise has brainstormed and provided insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has increased knowledge about the need of maintaining sustainability of the college campus. It will create awareness around the use of the Earth's resources in your home, college, local community and beyond. Suri Vidyasagar Colleges hold adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions. White good producing companies are rapidly developing in the area of energy efficiency.

13.1 Preparation of Action Plan

Management's policies referring to College and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the management of the college. The college should have a policy on green awareness raising or training programmes for students and staff, seminars on Environment Awareness are often organized by different departments of the institution, green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, college should have an action plan. The green auditing report will be a base line for the action plan to be evolved.

13.2 Follow up Action and Plans

Green Audit is an exercise which generates considerable quantities of valuable environment and resource management information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and action plans and implementation programmes will be conducted on the basis of the audit findings.

13.3 Environmental Education

The following environmental education programmes may be implemented in the college before the next green auditing:-

Training programmes in solid waste management, liquid waste management setting up of biodiversity garden, tree management, medicinal plant nursery, vegetable cultivation, water management, energy management, landscape management, pollution mitigation methods, and water filtration methods.

- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc.
- Conduct exhibition on throw away plastic danger, recyclable products etc.
- Display various slogans and pictures to protect environment.
- Implement chemical treatment system for waste water from the laboratories and incinerators.

CHAPTER - 14

CONCLUSION AND RECOMMENDATIONS

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can "add value" to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. The college is recent years consider the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its activities and become a more sustainable institution.

14.1 Suggestions

a) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.

b) Increase recycling education on campus.

c) Increase awareness of Environmentally Sustainable Development – Use every opportunity to raise public, government, industry, foundation, and college awareness by openly addressing the urgent need to move toward an environmentally sustainable future.

d) Collaborate for Interdisciplinary Approaches – Convene college faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula research initiatives, operations, and outreach activities that support an environmentally sustainable future.

e) Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing strategy to reduce the environmental impact of its purchasing decisions.

f) Increase reduce, reuse, and recycle education on campus.

14.2 Recommendations:

a) *Declare the campus plastic free and implement it thoroughly.*

b) *Avoid plastic/thermocol plates and cups in the college level or department level functions.*

c) *Noise level monitoring shall be done as per the guideline of "Noise Pollution (Regulation and Control) Rules '2000'.*

d) *The Biodiversity is to be maintained whole considering the plantation in future.*

e) *Awarness among students and staff about green environment shall be done use tools like display boards.*

f) *The surroundings of the College should be keep clean.*

g) No such processes or activities were observed at Suri Vidyasagar College which can deteriorate the environmental quality.

Fire Extinguisher

- *Fire extinguisher are required to be kept within the College campus area.*
- *At least two 10 kg capacity extinguisher is to be placed on each end of the floor. Regular refilling should be ensured and date of refilling should be clearly marked.*

Medicinal Garden

- *Medicinal Garden should be keep clean. Systematic plantation program should be drawn and implemented.*

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

Energy Consumption

- *Installation of solar panels in the open space around the building may be considered.*

- *Sensor light may be fixed in the toilets for conservation of energy.*
- *Replace incandescent and CFL lamps with LED Light*
- *Replace LCD computer monitors with LED monitors.*
- Cleaning of tube lights/bulbs should be do neon a regular basis to remove dust.

Drinking Water

- *Adequate number of taps for safe drinking water should be placed at strategic locations. Taps near the some room was found to non functional, should be replaced.*

- *Drinking water, Noise, Ambient Air quality monitoring is to be conducted through approved vendor of the West Bengal Pollutin Control Board (WBPCB).*

Ponds

- *Concrete barrier should be arranged around the pond.*
- *The ponds should be cleaned every year.*

Solid Waste

- *Vermy compost is available near by Girls hostel, it can be thought of at a separate place.*

- *More dustbin should be arrange on every floor of the College*

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Parimal Sarkar
Director

Liquid Waste

- A waste water treatment plant should be installed to recycle and reuse the waste water generated from domestic use.
- Use re usable resources and containers and avoid un necessary packaging wherever possible.
- College committee should be care that no contaminated water or chemical get into the soil.

E-Waste

- *A separate enclosure needs to be made for storage of scrap and E-waste materials.*
- *As per the guidelines of Pollution Control Board, (P.C.B.) E-Waste is to be disposed of through approved vendors of the P.C.B.*
- *The College should take steps for disposal through the approved vendors.*

Rain Water Harvesting System

- Plan to install rain water harvesting system on rooftop of every building of this college campus and recharging more amount of ground water level.
- Overflow must be monitored and controlled, and supervision exercises should be scheduled on a regular basis.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarvar
Director

ACKNOWLEDGEMENT

We want to keep on record the excellent co-operation received from the entire team of faculty members, Principal, Coordinator of IQAC and other teaching & non-teaching staff. Without their support, this Audit would not have been possible.

Our special word thanks are extended to:

1. Dr. Tapan Kumar Parichha – Principal
2. Dr. Sujoy Das – Assistant Professor of Mathematics & Coordinator, IQAC
3. Dr. Anirban Paul – Assistant Professor of Botany, Convenor, Green Audit Team
4. Dr. Soumya Ranjan Bhattacharyya, Associate Professor, Dept. of Physics.
5. Dr. Hemanta Saha - Assistant Professor of Botany & A.N.O.,NCC
6. Dr. Tanmoy Mandal – Assistant Professor of Plant Protection & P.O.,NSS
7. Sri Pankaj Roy – Assistant Professor of Chemistry
8. Sri Shamim Alam – Assistant Professor of Botany
9. Sri Ranajit Ghosh – State Aided College Teacher of Geography
10. Sri Subhas Chandra Mondal - Accountant

For all the assistance provided to the audit team of Sonar Bharat Environment & Ecology Pvt. Ltd.

Sonar Bharat Environment & Ecology Pvt. Ltd.
Parimal Sarkar
Director

Certificate of Compliance

INTEGRATED QUALITY CERTIFICATION PRIVATE LIMITED

hereby certifies that the Quality Management Systems of

Sonar Bharat Environment & Ecology Pvt. Ltd.

35, Chittaranjan Avenue, 3rd Floor,
Kolkata - 700 012.

has been assessed and conforms to the
Quality Management Systems

ISO 9001:2015

Scope: Consultancy Services on Safety Related Study, Audit Services for Energy, Green, Electrical & Safety and Providing Services Related to Obtaining Statutory Approvals

Division	: 70	Current issue date	: 14.10.2022
Class	: 70.22	Current expiry date	: 13.10.2025
Process(es) not applicable	: 8.3	1st Surveillance due	: 13.10.2023
Certificate number	: IND/QMS/NAB-C3313/3200	2nd Surveillance due	: 13.10.2024
Attachment(s)	: None		

H. Narasimhaiah
Director

Certificate of compliance has an expiry period of 3 years from the current certification cycle start date but shall be considered as expired if the surveillance audit programme indicated in this certificate of compliance is not implemented to maintain confidence that the certified management system continues to fulfil requirements unless otherwise supported by a letter of continued compliance issued by the registered office of Integrated Quality Certification Pvt. Ltd. Certificate of compliance shall be updated in website/registry as suspended and/or withdrawn if the surveillance programme prior to the due date indicated above is not coordinated and implemented. Written information on any significant organizational changes with impact on the certificate of compliance shall be communicated to Integrated Quality Certification Pvt. Ltd prior to the planned audit schedule.

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Date : 07.08.2023

GREEN AUDIT CERTIFICATE

- Name of Work Project : **Green Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 13.07.2023 to 14.07.2023
- Period of Audit : 2022-2023
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Green Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101..
- With the cooperation of faculty members and other staff audit has been successfully completed.

Subrata Desarkar
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Parimal Sarkar
(Director)

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Date : 04.08.2023

ENERGY AUDIT CERTIFICATE

- Name of Work Project : **Energy Audit of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 17.07.2023 to 18.07.2023
- Period of Audit : 2022-2023

- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Energy Audit in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal - 731 101.

- With the cooperation of faculty members and other staff audit has been successfully completed.

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Parimal Sarkar
(Director)

SONAR BHARAT ENVIRONMENT & ECOLOGY (P) LIMITED
(ISO 9001:2015 CERTIFIED COMPANY)
ISO Certificate No. IND/QMS/NAB-C3313/3200
Registered Office: Flat No. 1A N368, Baishnabghata Patuli,
Kolkata -700 094
Head Office: 35, Chittaranjan Avenue, 3rd Floor Kolkata – 700012
Phone : (91-33) 2211 –3034/0397, 033 4003 1179,
E-mail : sonarbharat2010@gmail.com
sonarbharat2017@gmail.com

Date : 22.07.2023

ENVIRONMENTAL MONITORING CERTIFICATE

- Name of Work Project : **Environmental Monitoring of Suri Vidyasagar College**
  College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- Duration of Audit : 13.07.2023 to 14.07.2023
- Period of Audit : 2022-2023
- Sonar Bharat Environment & Ecology Pvt. Ltd. has conducted Environmental Monitoring in the campus of Suri Vidyasagar College, College Para, Suri, Dist. Birbhum, West Bengal – 731 101.
- With the cooperation of faculty members and other staff audit has been successfully completed.

Subrata Desarkar
(Auditor)

Sonar Bharat Environment & Ecology Pvt. Ltd. Kolkata Pin - 700012

Parimal Sarkar
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THE END