Vivekananda College, Madhyamgram

Green Audit Report

(2019-2020)

Prepared by

Progyan Foundation for Research and Innovation

(An ISO 14001:2015 Certified Organization)

Progyan
Foundation for Research & Innovation

Certificate

PROGYAN is an independent policy-science action research organization working as a subsidiary wing of the South Asian Forum for Environment (SAFE), which is a regional CSO and a major stakeholder in the UN Environment towards knowledge economy for all stakeholders to act in this climate milieu. PFRI, SAFE is accredited with ISO 14001:2015 certification and registered as a non-profit Section 8 company in India, committed to advancing scientific knowledge across socio-economies and socio-ecologies in developing adaptive guidelines and operational frameworks, sustainable solutions for resource optimization and climate change, in both rural and urban settings through innovation and research. The major scopes for PFRI include Strategic Environmental Impact Assessment and Institutional Green Audit along with field and analytical research.

This is to certify that the 'Progyan Foundation for Research and Innovation' (PFRI), Kolkata 700099 has conducted a brief and precise 'Green Audit' for the 'Vivekananda college' Madhyamgram, during the assessment year July 2019 to June 2020. The Green Audit was performed in accordance with the applicable standards prescribed by the Central Pollution Control Board and Ministry of Environment, Forests and Climate Change, Government of India, and following NAAC guidelines. The audit involves energy, water, waste, and biological inventories and gives recommendations that the institute can follow to improve the energy, water, waste, and environmental scenarios of the said institute. In an opinion and to the best of our information and according to the information given to us, and also in the midst of the Covid-19 pandemic scenarios, said Green Audit gives a true and fair view in conformity with environmental auditing principles accepted in India.

Malancha Dey

Dr. Malancha Dey
(Director & Senior Scientist, PFRI)
Date: 03.01.2023

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata
700099
www.progyan.in

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE
Estd.-1965
Aff. Under
W.B.S.U.
Madhyamgram, Kolkata

2426 Nayabad, Mukundapur, Kolkata - 700099
office@progyan.in | www.progyan.in

Table of Contents

SECTION 1
INTRODUCTION

1 Introduction

1.1. Basis of Green Audit

The term 'Green' means eco-friendly or not damaging the environment. Green Audit can be defined as the systematic identification, quantification, recording, reporting, and analysis of components of environmental diversity. In other words, Green Audit is an attempt to provide information on the environmental performance of the organization or the institution.

Educational institutions have broad impacts on the world around them, both negative and positive. The activities pursued by campus can create a variety of adverse environmental impacts. But they are also in a unique position as educational institutions to be leaders in pursuing environmentally sustainable solutions.

The green audit can be a useful tool for a college to determine how and where they are using the most energy, water, or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve the waste minimization plan. It can create health consciousness and promote environmental awareness, values, and ethics. It provides staff and students a better understanding of the green impact on campus.

1.2. Objectives of Green Audit

Green Audit regulates all such practices and checks whether our processes are consuming more than the required resources and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The Green Audit provides an approach to it. It also increases overall consciousness among the people working in institutions toward an environment. The various components of the Green Audit such as:

- ✓ To acknowledge the environmental initiative made by the organization.
- ✓ To identify and control the impact of activities of organizations on the environment.
- ✓ To suggest the best protocols for sustainable development organization and environment.
- ✓ To set the procedure for disposal of all types of harmful wastes
- ✓ To document the ambient environmental condition of air, water, and noise.

- ✓ To map the geographical location of the college and its surroundings
- ✓ To record the meteorological parameter where the college is situated
- ✓ To document the floral and faunal diversity of the college
- ✓ Setup goal, vision, and mission for green practices on the campus
- ✓ To report the expenditure on green initiatives during the last five years
- ✓ Enhance the alertness for environmental guidelines and duties
- ✓ Developing an environmental ethic and value systems in youngsters

1.3.Benefits of Green Audit

There are many advantages of a Green Audit for an educational institute

- ✓ It would help to generate plastic free environment in and around the campus
- ✓ Recognize the cost-saving methods through waste minimization and management
- ✓ Point out the prevailing and fourth-coming impacts on the environment
- ✓ Improve social and environmental awareness for the institute and students
- ✓ Authorize the organization to frame a better environmental performance
- ✓ It portrays a good image of the institution through its clean and green campus
- ✓ Improvement of environmental ethics and values and stewardship towards responsible environment management
- ✓ It will help to build a positive impression through green initiatives during the upcoming NAAC visit

1.4. Methodology of the Green Audit

The audit process was carried out in three phases from July 2019 to June 2020. At first, all the secondary data required for the study was collected from various key information sources and concerned departments. A broad reference work and literature review were carried out to clear the idea of green auditing. Different case studies and methodologies were studied, and the following methodology was adopted for the present audit.

The methodology of the present study is based on onsite visits, personal observations, and questionnaire survey tools. Baseline data for Green Audit report preparation was collected by questionnaire survey method. Questionnaires prepared to conduct the Green Audit on the college campuses are based on the guidelines, rules, acts and, formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control

Board and, other statutory organizations. After the onsite visit and stakeholders' interview, the questionnaires were filled out. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

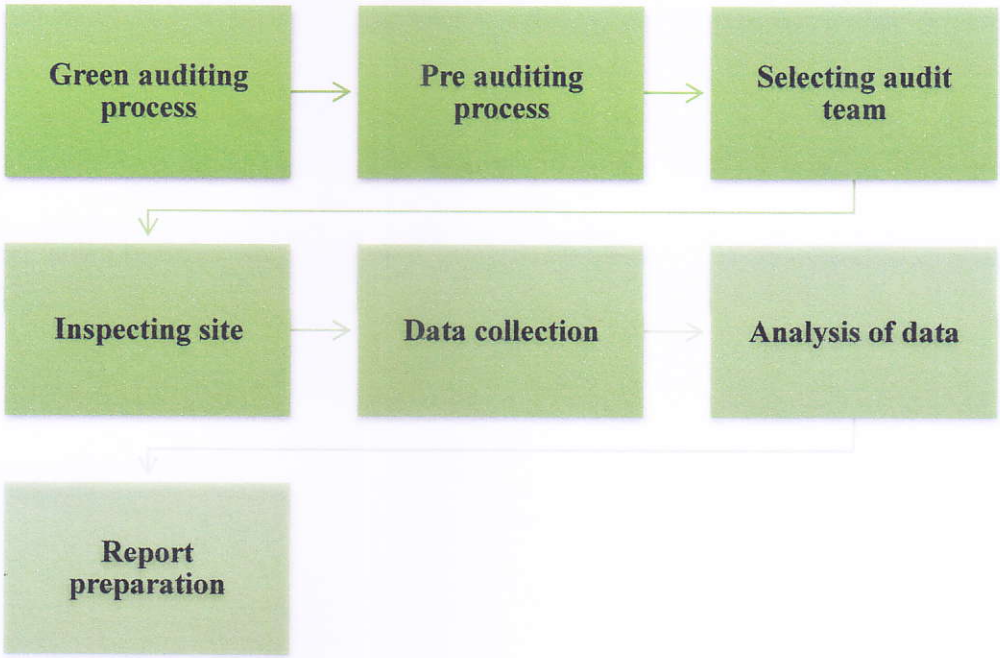

Fig. 1.1. Process of green auditing

1.5. About the College

Vivekananda College, Madhyamgram was established in 1986. It is named Vivekananda College to pay our homage to Swami Vivekananda, the great patriot and social reformer, and eternal embodiment of the soul of India and a great inspiring force behind the making of modern India. Our College is a co-educational general degree college affiliated with the West Bengal State University. Distance education is affiliated with Vidyasagar University and Rabindra Bharati University. It is situated in a calm and quiet atmosphere and is far from markets, stations, cinema halls, and other disturbing factors. At the same time, it is within the locality where all modern amenities are available. It stands on the eastern side of Jessore road, National Highway No-34, about 1km from either Madhyamgram or Hridaypur railway station on the Sealdah-Bongaon section. It is about 18 km away from Calcutta and is

connected with the city, the capital of West Bengal both by bus routes and train services. The college has now it's own building (two-storied) & women's hostel, and a canteen for students & staff surrounded by boundary walls. General courses in Arts and honors courses in English, Bengali, History, Geography, and Education are taught here.

1.6. Brief about the College

Name of the college	**Vivekananda college, Madhyamgram**
Address	East Udayrajpur, Vivekananda Nagar, Madhyamgram, West Bengal, 700129, India
Principal	Dr. Chandan Kumar Chakraborty
Contact details	033 2538 7392
No of department	UG -14; PG - 3
No of students(UG+ PG)	2209
No of distance education students (DDE RBU+VU)	69
No of permanent teacher	28
No of SACT (State aided college teacher) teacher	19
No of visiting teachers for PG	15
No of visiting teachers for UG	5
No of permanent NTS staff	13
No of casual/ supportive NTS staff	8
No of security staff	2
No of canteen staff	3
Total campus area	1.81 acres
College building spread area:	18563.895 sq. ft.

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE Estd.-1999 Aff. Under W.B.S.U. Madhyamgram, Kolkata-129

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION Kolkata 700099 www.progyan.in

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

Fig 1.2. Campus area of Vivekananda college, Madhyamgram

1.7. Vision and Mission Statement of the College

It was primarily due to his active participation in the formulation of Government policy in matters of higher education and the wholehearted support extended by ministers like Sri Sambhu Ghosh and Sri Nirmal Bose that the college was finally established in 1986. Behind the achievement of the college, there is a history - a history of struggle a history of dedication and sacrifice of some good souls of our locality. The college is committed to the highest ideals of collegiate education. It aims at the development of each student and focuses on a comprehensive and balanced education. It is hoped that under the able leadership of Sri Ghosh the college will achieve holistic progress by dint of his administrative acumen and erudite promptness in the execution of all academic activities. The institution aspires to provide a learning environment that integrates body, mind, and spirit by adopting a need-based approach, synthesis of academics and ethics, innovation in learning methods, and a diversified curriculum.

1.8. Category of the Green Audit

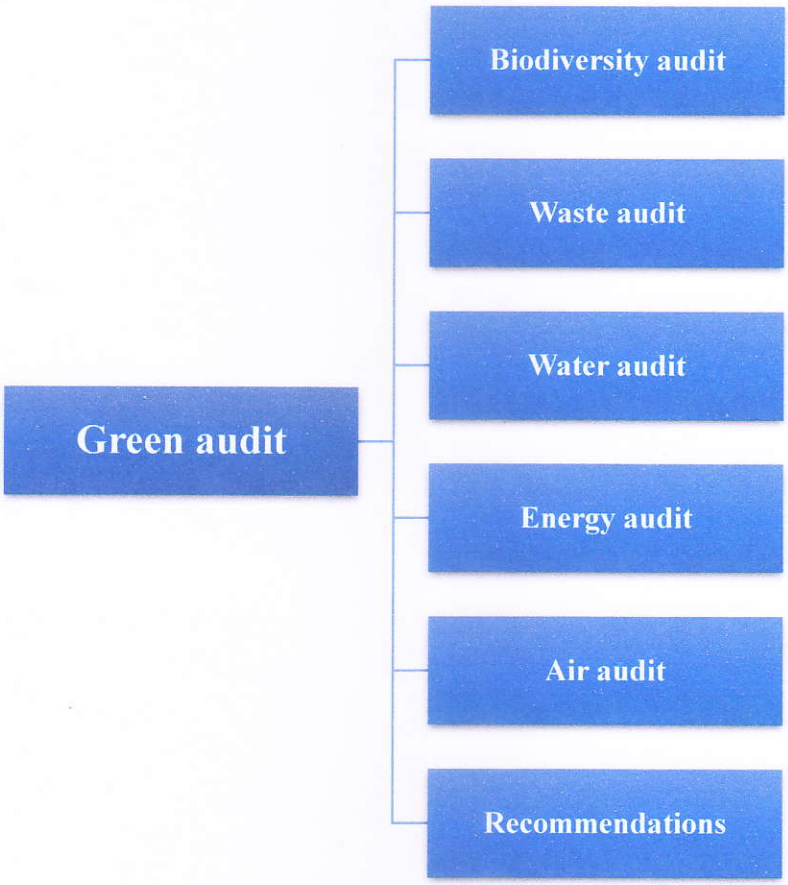

Figure 1.3. Scope of the green audit for 2019-2020

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE Estd.-1986 Aff. Under W.B.S.U. Madhyamgram, Kolkata-700129

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION Kolkata 700099 www.progyan.in

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

SECTION 2

WATER AND WASTEWATER AUDIT

2 Water and Wastewater Audit

2.1. Introduction

Water is life for all animated animals which live on the earth. As we know the rapid growth of industrialization, there is scarce water on the earth. So it needs to be conserving water for the future. And also need to measure the quantity of water that is present on the surface of the earth, this is known as a water audit. The water audit displays how the quantity of water flows into and out of the distribution system and to the customer. Water auditing is a systematic and scientific examination of water accounts of projects. It provides a rational, scientific framework that categorizes. The dominant ideology of fresh water as an abundant and unlimited resource continues to persist despite the common global knowledge that only less than one percent of the Earth's freshwater source is readily available for human use. This institute has hostels, canteens, departments, laboratories, urinals, etc. to use the water, but most of the time due to leakage or the mindset of humans most water is wasted. So it is needed to save water for future use of water.

A water audit is a systematic process of objectively obtaining a water balance by measuring the flow of water from the site of water withdrawal or treatment, through the distribution system, and into areas where it is used and finally discharged. Water auditing is a cost-effective method for reducing losses, optimizing multiple applications, and enabling significant water saving in the irrigation, home, power, and industrial sectors.

Therefore, an effort is required to reduce water consumption and increase the reuse and recycling of treated wastewater.

2.2. Importance of Water Audit

i. When problems are identified, it is easier to work on solutions
ii. The process is more systematic
iii. It is possible to implement a tracking system

The amount of water needed is assumed to depend on a variety of factors, including physiology, degree, type of development, Climate, culture, diet habits, employment and working conditions, degree and type of development, and physiology are all thought to play a role in determining the amount of water required. According to the Southeast Asia Regional

Office of the World Health Organization's (WHO) standards Administration requires 50 l per person per day (staff accommodation not included), Staff housing needs 30 l per person per day, and sanitation is dependent on technology, schools require 2 l per student; 10-15 l per student if water-flushed toilets are used.

2.3. Water Consumption in the College

Considering the COVID pandemic, the college officials started their internal activities from November 2019 onwards but with limited number of staff. From 10th November 2019, the college again re-opened with **2278** daily students along with the **93** college staff.

Among them, toilet purposes require approximately 82% water consumption followed by drinking purposes (6%), canteen cooking (5%), washing hands and faces (5%), and other purposes (1%). Figure 2.1 and Table 2.1. demonstrated different categories of water usage and their prevalence per annum, whereas Figure 2.2 shows the percentage of wastewater generated per annum. Table 2.2. depicts storage facilities of wastewater, Table 2.3. shows the categories of the water reservoir and its water holding capacity whereas Table 2.4. Amount of wastewater based on various activities.

During the evaluation year, 582183.4 kl of water was used for drinking annually. In that year, of 305015 kl water was utilized for hand and face washing and 178000 kl of water for cleaning purposes of the college buildings. Simultaneously, 530000 kl of water has been required for cooking and washing dishes. The biodiversity garden is watered with 122000 kl annually, of groundwater that year for 3 days per week.

Table 2.5 provided some important water quality parameters based on following standard measurement protocol. All the water quality parameters from different water sources are found to be the below accepted limit as per the Indian standards but the levels of Iron (Fe) are slightly higher in raw water sources.

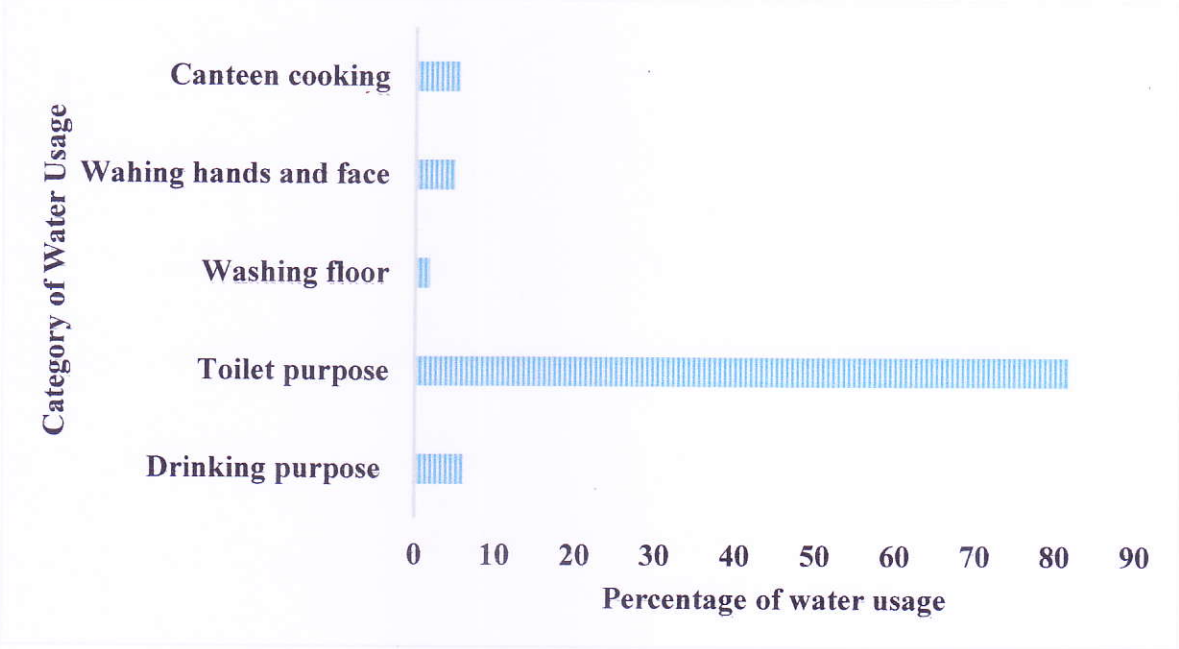

Fig. 2.1. Percentage of different categories of water consumption per annum

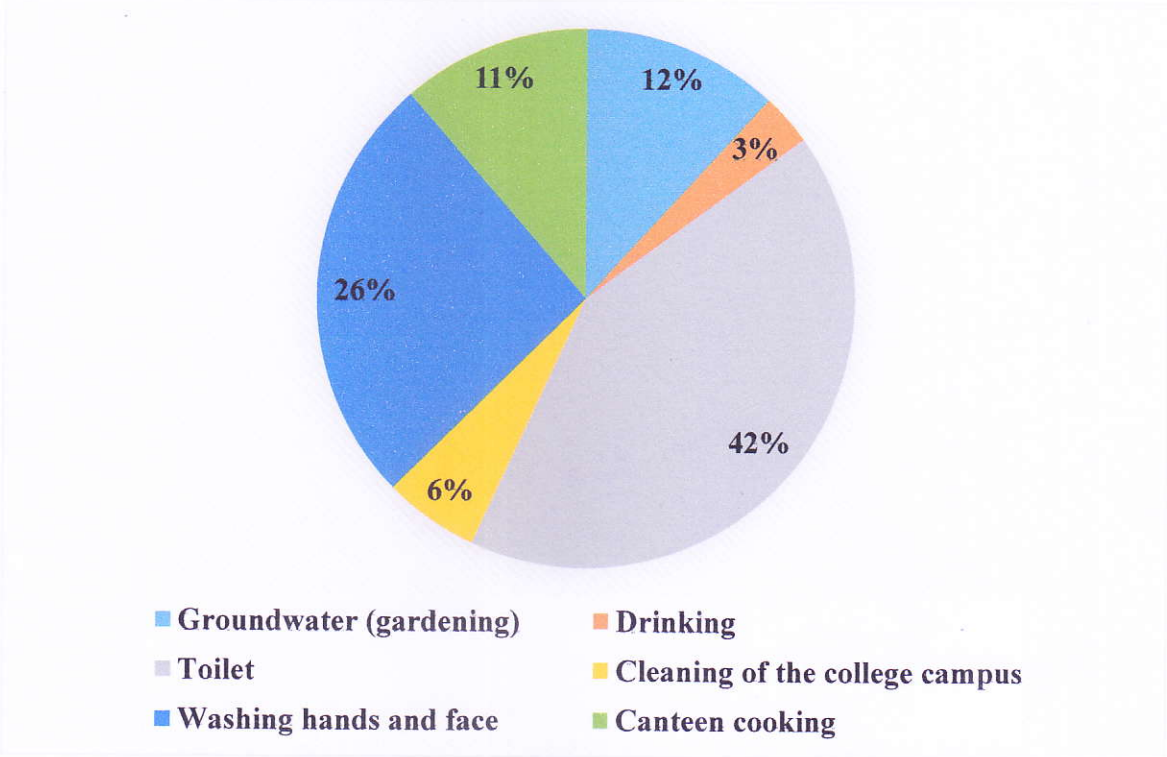

Fig 2.2. Percentage of wastewater generated per annum

Table 2.1. Different categories of water usage

Water source	*Activity*	*Days*	*No of user*	*Water usage/day (l/ day)*	*Activity/ day*	*Water usage/ annum (l/ year)*
Groundwater, Rainwater	***Gardening***	*122*	*College campus*	*1000*	*3*	*366000*
Groundwater	***Drinking purpose (Students)***	*212*	*2209*	*1.2*	*NA*	*561969.6*
	Drinking purpose (NTS & Casual Staff)	*212*	*21*	*1.2*	*NA*	*5342.4*
	Drinking purpose (Canteen Staff)	*212*	*3*	*1.2*	*NA*	*763.2*
	Drinking purpose (Security)	*212*	*2*	*1.2*	*NA*	*508.8*
	Drinking purpose (Permanent Teacher)	*212*	*28*	*1.2*	*NA*	*7123.2*
	Drinking purpose (SACT Teacher)	*178*	*19*	*1.2*	*NA*	*4058.4*
	Drinking purpose (Visting Teacher for PG)	*75*	*15*	*1.2*	*NA*	*1350*
	Drinking purpose (Visting Teacher for UG)	*178*	*5*	*1.2*	*NA*	*1068*
						582183.4
Groundwater	***Toilet (Students)***	*212*	*2209*	*8*	*2*	*7492928*
	Toilet (NTS & Casual Staff)	*212*	*21*	*8*	*3*	*106848*
	Toilet (Canteen Staff)	*212*	*3*	*8*	*3*	*15264*
	Toilet (Security)	*212*	*2*	*8*	*3*	*10176*
	Toilet (Permanent Teacher)	*212*	*28*	*8*	*3*	*142464*
	Toilet (SACT	*178*	*19*	*8*	*3*	*81168*

	Teacher)					
	Toilet (Visting Teacher for PG)	*75*	*15*	*8*	*3*	*27000*
	Toilet (Visting Teacher for UG)	*178*	*5*	*8*	*3*	*21360*
						7897208
Groundwater	***Washing Floor***	*89*		*2000*		***178000***
Groundwater	***Wahing Hands and face***	*265*	*2302*	*0.5*		***305015***
Groundwater	***Canteen cooking***	*212*		*2500*		***530000***

Table 2.3. Categories of the water reservoir and its water holding capacity

Sl. No	*Category of reservoir*	*No of reservoir*	*Holding capacity (l)*	*Total stored water (l)*
1	*Over headed*	*1*	*500*	*500*
2	*Over headed*	*2*	*1000*	*2000*
3	*Over headed*	*4*	*2000*	*8000*
4	*Underground*	*1*	*2000*	*2000*
5	*Underground (Rainwater)*	*1*	*12000*	*12000*

Table 2.4. Amount of wastewater based on various activities

Activity	*Wastewater generated (l/ annum)*
Groundwater (gardening)	*73200*
Drinking	*125417.52*
Toilet	*1686299.2*
Cleaning of the college campus	*106800*
Washing hands and face	*524488*
Canteen cooking	*212000*
Total	*2728204.72*

Table 2.5. Water quality assessment

Parameters	*Raw water*	*Treated water*	*Standard value (BIS)*
Odor	*Agreeable*	*Agreeable*	
Taste	*Agreeable*	*Agreeable*	

pH	*7.12*	*7.10*	*6.5-8.5*
Fe(mg/ l)	*2.157*	*0.068*	*0.30*
Total hardness as CaCO3(ppm)	*280*	*240*	*200*
Arsenic (mg/ l)	*0.010*	*0.007*	*0.01*
Chloride (mg/ l)	*14.2*	*14.2*	*250*
Turbidity(NTU)	*1.0*	*0.3*	*1*
Mn (mg/ l)	*0*	*0*	*0.10*
TDS(mg/ l)	*370*	*110*	*500*
Total coliform (cfu/ 100ml)	*0*	*0*	*0*
Faecal coliform (cfu/ 100ml)	*0*	*0*	*0*

2.4. Water Management Methods of the Campus

- ✓ The college has rainwater harvesting system for a few years. A rainwater harvesting system of 12 kl capacity has been installed. One underground reservoir (having 2 kl capacity) and 7 overhead reservoirs of which one having 0.5 kl capacity, two having 1 kl capacity, and 4 having 2 kl capacity have been installed for this purpose.
- ✓ Rainwater collection reservoirs are processed in order to recharge groundwater.
- ✓ More greenery has been added and consistently modified to improve groundwater resources.

Fig 2.3. Water filter in the college campus

Fig 2.4. Rainwater reservoir in the college campus to store excess rainwater

2.5. Recommendations

- ✓ Overhead tank cleaning should be done every after 4 months
- ✓ Monthly check-ups for pipe leakage or tap leakage must be done
- ✓ A major preference for the recycling of water used for cleaning may be adopted in the college for efficient water management.
- ✓ Phytoremediation for wastewater
- ✓ Awareness programs for the management of sustainable water use will be highly efficient in this college for the proper water usage
- ✓ More area on the rooftop or overhead rainwater harvesting should be installed

Malamalika Dey

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata
700099
www.progyan.in

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE
Estd.-1986
Affl. Under
W.B.S.U.
Madhyamgram, Kolkata-700129

SECTION 3

WASTE MANAGEMENT AUDIT

3 Waste Management Audit

3.1. Introduction

Pollution from waste is aesthetically unpleasing and results in large amounts of litter in our communities which can cause health problems. Wastes may be classified into different categories depending on their source, structure, adverse effect, etc. In the educational institute, different kinds of waste like E-waste, plastic waste, chemical waste, solid waste, liquid waste, biodegradable waste, etc. are produced which are intended to be disposed of or are required to be disposed of. An increasing number of students in colleges generate large volumes of waste. It has been reported earlier that most of the colleges effectively function as small municipalities, with their own canteen, gyms, laboratory, etc. to generate lots of waste. Educational institutes differ widely in their sizes, student body compositions, and administrative approaches, causing widely varied waste management approaches. Some campuses boast extensive recycling and composting programs, while others are still beginning to implement waste management strategies.

A waste management audit is a total and clear representation for identifying all waste streams that an agency is responsible for producing, or for managing on behalf of others. The type and amount of waste generated by an institute are explained by a waste management audit. A waste management audit can evoke current waste performance and offers potential missing controls and improvements that could be made to the systems in place through scientific and sustainable approaches. The type and amount of waste generated by an institute are explained by a waste management audit.

3.2. Importance of Waste Management Audit

A waste audit can tell what is working or not working with your current waste and recycling management program. It can uncover breakdowns, expose wasteful problems or confirm successes. This enables make necessary adjustments to improve and maximize our operational efficiency. The importance of waste management audit is as follows:

- ✓ A waste management audit helps one educational institute to be better prepared to efficiently and responsibly dispose of the waste that it generates every day
- ✓ By designing a more efficient waste disposal program through a waste audit, we can enhance recycling practices

- ✓ Deterioration of environmental status can be occurred due to the unavailability of proper waste management practices
- ✓ On-going cost savings
- ✓ Identification of new sources of revenue
- ✓ Improved environmental performance
- ✓ Improved resource efficiency

3.3. Waste Management Audit of the College

Different kinds of waste are generated from the different structures of the college. The quality and quantity of the waste are primarily controlled by the source of their generation. Wastes generated by this college with a huge number of students along with a significant number of teaching and non-teaching staff are required to manage with proper strategies.The amount of E-waste, plastic waste, solid waste, chemical waste, paper waste, and garden waste was found to be generated more than 5000 kg per year. The plastic and solid waste generated by the college campus is collected by the municipality every week. The chemical waste generated in the campus through science laboratories, both solid and liquid is disposed in an acid soak pit situated in the college campus. There is a practice in the laboratories to store these hazardous chemicals in containers and cans for safe disposal. E-waste generated from the college is recycled and disposed scientifically. Paper waste is dumped in a particular place and recycled properly. The waste collected from the college garden is cleaned by incineration three days a week. The E-waste materials (306.60kgs) are channelized for recycling under standards set down in the e-waste management rules 2016.

Table 3.1. Different types of waste generated in the college campus and their disposal

Sl. No.	*Types of waste*	*Disposal method*	*Amount (kg/ year)*
1	***E-Waste***	*Repair, Recycling*	*306.6*
2	***Plastic waste***	*Collected by municipality*	*1325*
3	***Solid waste***	*Collected by municipality*	*1500*
4	***Chemical waste***	*Reserved soak pit*	*114*
5	***Paper waste***	*Dumped, Recycling*	*1855*
6	***Garden waste***	*Incineration*	*510*
Total			***5610.6***

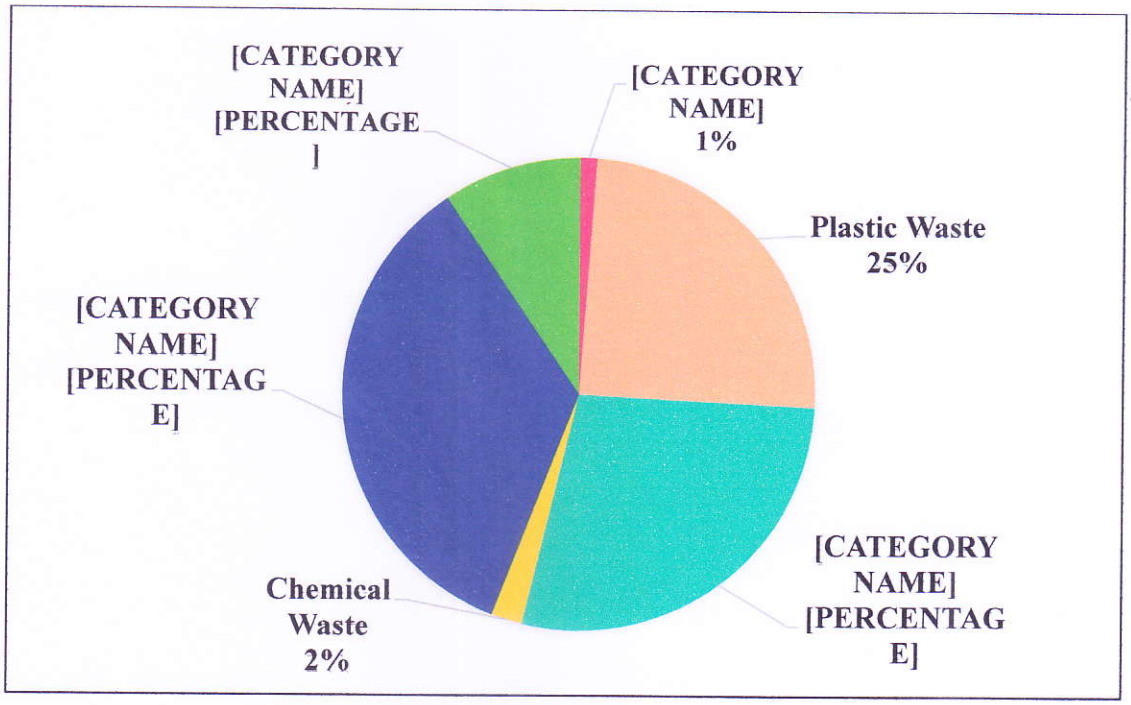

Fig 3.1. Percentage of different types of waste generated in college campuses per annum

Fig 3.2. Dust bin in the college building

Fig 3.3. Waste found somewhere in the college campus

Fig 3.4. Plastic wastes were present in college

Fig 3.5. Using pesticides for pest control in the garden area

CERTIFICATE
OF E-WASTE RECYCLING

This certificate is proudly presented to
Vivekananda College
for the ethical collection and channelization for recycling of
306.60 kgs of E-waste.

This document certifies that all materials/equipment have been chanelized for recycling under standards set down in the E-waste (Management) Rules, 2016 and amendments thereafter.

Chief Executive Officer

Certificate No.: 1901/22-23/08020
Date: 17-Sep-22

CPCB REGISTRATION NO.: B-29016(12)/(PRO)/18/WM-III Division

Fig.3.6. Certificate of E-waste recycling by college

3.4. Recommendations

- ✓ An open pit has been found in the college campus which can be used for gardening or vermicomposting. No areas should be left open which may later become a waterlogged breeding ground for disease-causing vector
- ✓ Waste minimization should be introduced within the college campus
- ✓ The solid waste of the chemistry laboratory should be disposed of in a proper way, pieces of glass were seen lying outside the storeroom of the lab
- ✓ The amount of paper waste should be reduced a little, old records should be dumped in a proper way, and waste paper should be recycled
- ✓ Plastic waste was seen behind the toilet, which should be disposed of properly
- ✓ Waste material recycling can be implemented for the biodegradable substances mainly found beside the toilet to produce bio compost to use in the gardens in the college
- ✓ Waste processing for resource recovery is recommended
- ✓ By planting more trees in the garden, the butterfly park can be made which will lead to biodiversity enrichment
- ✓ Provision of installation of garbage units should be introduced where the multilevel segregation of various wastes such as paper, construction, glass, metal scrap, and food waste should be done. Further various waste recycling plans for different types of waste should be introduced
- ✓ Finally, the college campus should be made a green campus

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE Estd.-1986 Aff. Under W.B.S.U. Madhyamgram, Kolkata-700129

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION Kolkata 700099 www.progyan.in

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

SECTION 4

ELECTRICITY AND ENERGY AUDIT

4 Electricity and Energy Audit

4.1. Introduction

Energy conservation is an important aspect of campus sustainability which is also linked to the carbon footprint of the campus. Energy today has become a key factor in deciding the product cost at the micro level as well as in dictating the inflation and the debt burden at the macro level. Energy cost is a significant factor in economic activity at par with factors of production like capital, land, and labor. The important imperatives of an energy shortage situation call for energy conservation measures, which essentially mean using less energy for the same level of activity. Energy audit attempts to balance the total energy inputs with is used and serves to identify all the energy streams in the systems and quantify energy usage according to its discrete function. An energy audit helps in energy cost optimization, pollution control, and safety aspects and suggests methods to improve the operation and maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, the decision on appropriate energy mix, and the decision on using improved energy conservation equipment's instrumentation and technology.

4.2. Importance of the Electricity and Energy Audit

From a general point of view, an energy audit provides enormous benefits in different areas

- ✓ An energy audit will identify energy-saving opportunities
- ✓ It helps reduce environmental damage and pollution
- ✓ It can increase the security of the energy supply
- ✓ It can reduce the consumption of natural resources
- ✓ It can reduce damage to the environment associated with the exploitation of resources

4.3. Energy Audit Report

The sustainability of the campus community depends in large part on an evaluation of energy use, energy sources, energy management, lighting systems, and other appliances. Hence this is a relevant aspect of the assessment. The major use of energy is at the office, canteen, and laboratory for different purposes. Table 4.1 shows the energy consumption pattern of the college for one year. The energy consumption was calculated by employing the standard

method: (kWh/year) = P(W) × Hrs × Number × Days. The total energy consumption by the college is 184187.851kW per year. From Figure 4.1. it is concluded that the major electrical energy consumed by Fans (42%) followed by Split AC (24%), Refrigerators (7%), Exhausted fans (3%),2-ton Carrier window AC, and Water coolers (4%). Different electrical equipment and their electricity consumption during the assessment years were depicted in Table 4.1. Different kinds of electrical appliances are there in college campuses. The rate of electric energy consumed also varied depending on the number and nature of the electrical equipment. It was found that Fan consumed 336 kW of electrical energy per day during the reporting period which was responsible for 42% of total consumption. Simultaneously, AC, Refrigerator, Exhaust fan, and Water cooler consumed respectively 192 kW,57.6 kW,20.8 kW, and 25.6 kW of electrical energy during the reporting period which was cumulatively responsible for 54% of total consumption. Computers, Xerox machines, and Printers are responsible for 3% of total consumption. From Table 4.3., we concluded that some instruments are also responsible for energy consumption in laboratories during working days in college. The amount of total energy consumed by this equipment is 169373.971 kW every year, besides Figure 4.3., it concluded that the Electric heater, Hg vapour lamp, and Lamp for light practical are responsible for 64% of total consumption.

Table 4.1. Electrical equipment and their electricity consumption in college per year

Sl No	*Appliances*	*No of appliances*	*Power used (kW)*	*No of days*	*Usage per day (h)*	*Average of energy usage per year (kWh/ Year) [kW× hrs× Number ×days]*
1	*Fan*	*168*	*0.25*	*212*	*8*	*71232*
2	*Tube Light*	*210*	*0.02*	*265*	*8*	*8904*
3	*Bulb*	*78*	*0.006*	*265*	*8*	*992.16*
4	*Vapour LED Light (Outside)*	*11*	*0.011*	*265*	*3*	*96.195*
5	*2 Ton Carrier Window AC*	*6*	*1*	*212*	*8*	*10176*
6	*2 Ton Carrier Window AC*	*1*	*1.5*	*212*	*8*	*2544*
7	*Split AC*	*16*	*1.5*	*212*	*8*	*40704*
8	*CCTV*	*33*	*0.002*	*212*	*8*	*111.936*
9	*Computer (Working in*	*11*	*0.2*	*212*	*7*	*3264.8*

	Office)						
10	*Computer (Working in other room)*	*46*	*0.2*	*212*	*1*	*1950.4*	
11	*TV*	*4*	*0.08*	*212*	*8*	*542.72*	
12	*Laptop*	*3*	*0.06*	*212*	*8*	*305.28*	
13	*Exhaust Fan*	*13*	*0.2*	*212*	*8*	*4409.6*	
14	*Refrigerator*	*3*	*0.8*	*212*	*24*	*12211.2*	
16	*Xerox machine*	*3*	*1*	*212*	*4*	*2544*	
17	*Submersible water pump*	*2*	*1.5*	*212*	*2*	*1272*	
18	*Tullu water pump*	*2*	*0.5*	*212*	*2*	*424*	
19	*Water cooler*	*4*	*0.8*	*212*	*8*	*5427.2*	
20	*Aquaguard*	*5*	*0.05*	*212*	*8*	*424*	
21	*Printer*	*10*	*0.15*	*212*	*5*	*1590*	
22	*Biometric machine*	*1*	*0.005*	*212*	*8*	*8.48*	
23.	*Sound system*	*4*	*0.25*	*80*	*3*	*240*	
							169373.971

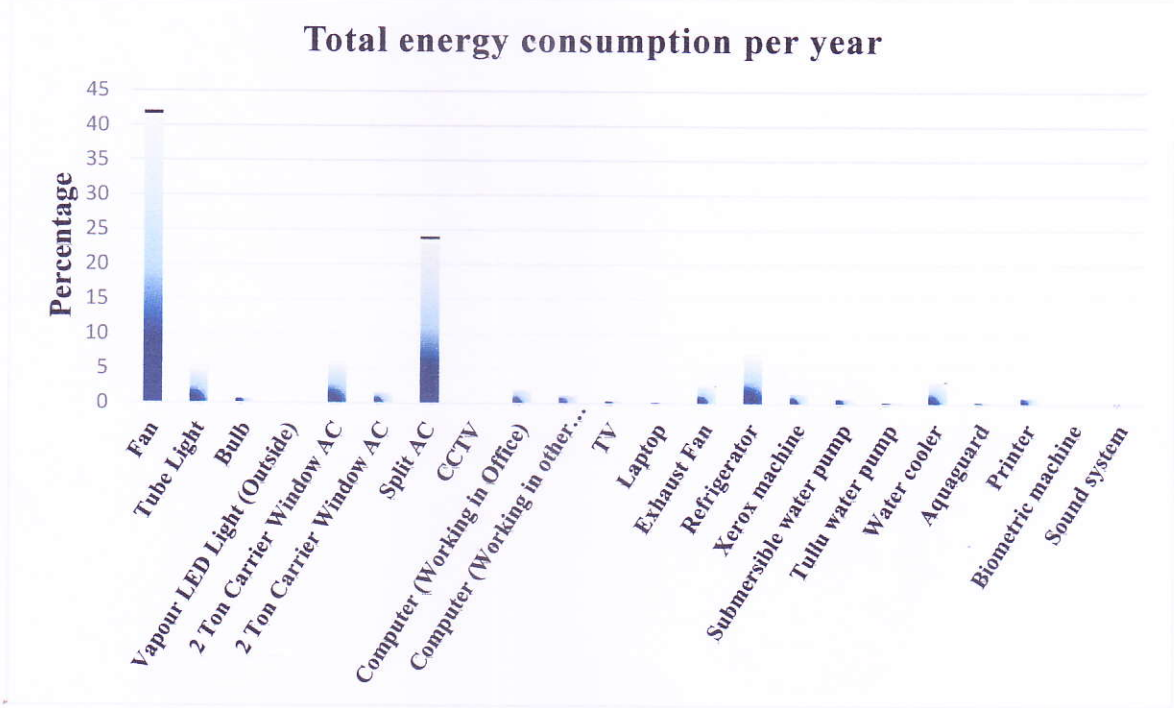

Figure 4.1. Consumption of energy by different electrical equipment

4.4. Fuel Energy (LPG)

LPG is one of the major important sources of fuel energy used in college for various purposes. It is mostly required for laboratory work in science departments and support services canteens of the college. From Table 4.2 it is concluded that the total energy consumed by generators and gas cylinders is 102570 kW per year. Figure 4.2 shows that the major energy consumed by gas cylinders is 90% and by generators only 10%.

Table 4.2. Energy consumption from fuel in college per year

Sl No	*Appliances*	*No of appliances*	*Energy used*	*No of days*	*Usage per day (hr)*	*Average energy usage per day*	*Average of energy usage per year*
1	***Generator***	*1*	*25.6*	*265*	*1*	*25.6*	*6784*
2	***Generator***	*1*	*20*	*265*	*1*	*20*	*5300*
3	***Generator***	*1*	*2.4*	*265*	*1*	*2.4*	*636*
4	***Gas cylinder***	*6*	*19*	*270*	*3*	*342*	*92340*
	Total						***105060***

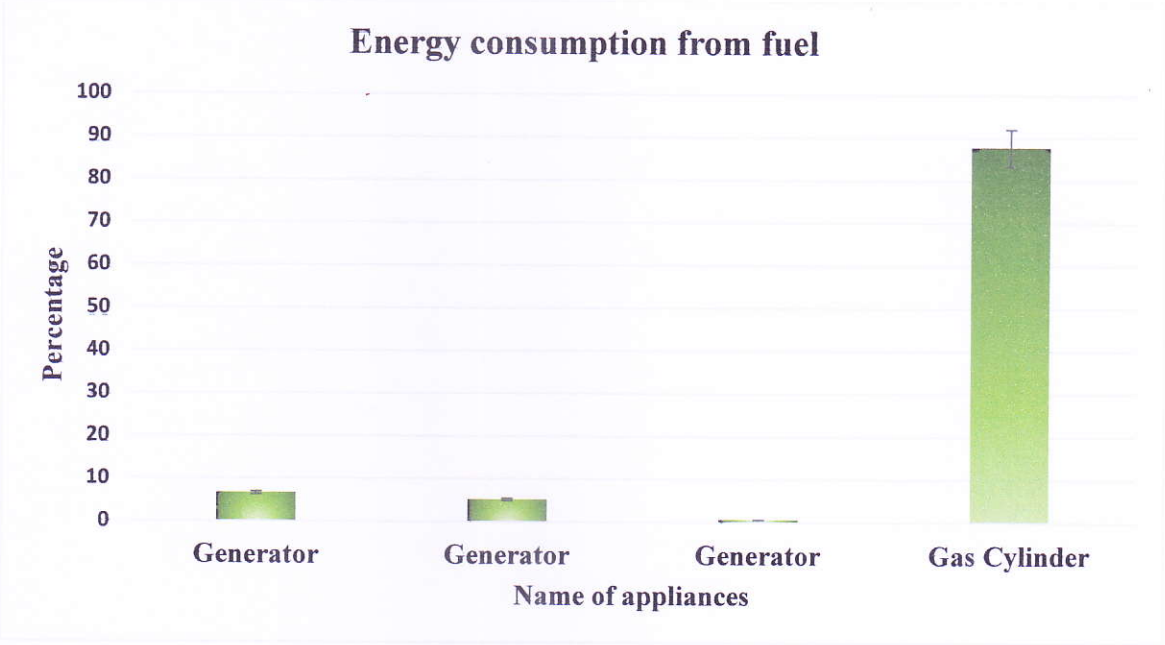

Figure 4.2. Consumption of energy from fuel by different equipment

Table 4.3. Energy consumption in laboratories

Sl No	*Appliances*	*Power used (kW)*	*No of days*	*Usage per day (h)*	*Average of energy usage per year (kWh/ Year)*
1	*DC voltage source*	*25*	*212*	*5*	*26500*
2	*DC source in setup*	*100*	*212*	*5*	*106000*
3	*Laser source*	*100*	*212*	*4*	*84800*
4	*Hg vapour lamp*	*200*	*212*	*5*	*212000*
5	*Na vapour lamp*	*100*	*212*	*4*	*84800*
6	*Electric heater*	*1000*	*212*	*3*	*636000*
7	*Computer*	*50*	*212*	*5*	*53000*
8	*Polari meter lamp*	*60*	*212*	*5*	*63600*
9	*Lamp for light practical*	*100*	*212*	*5*	*106000*
10	*Source (DC) for free-falling body*	*100*	*212*	*5*	*106000*
	Total				***1478700***

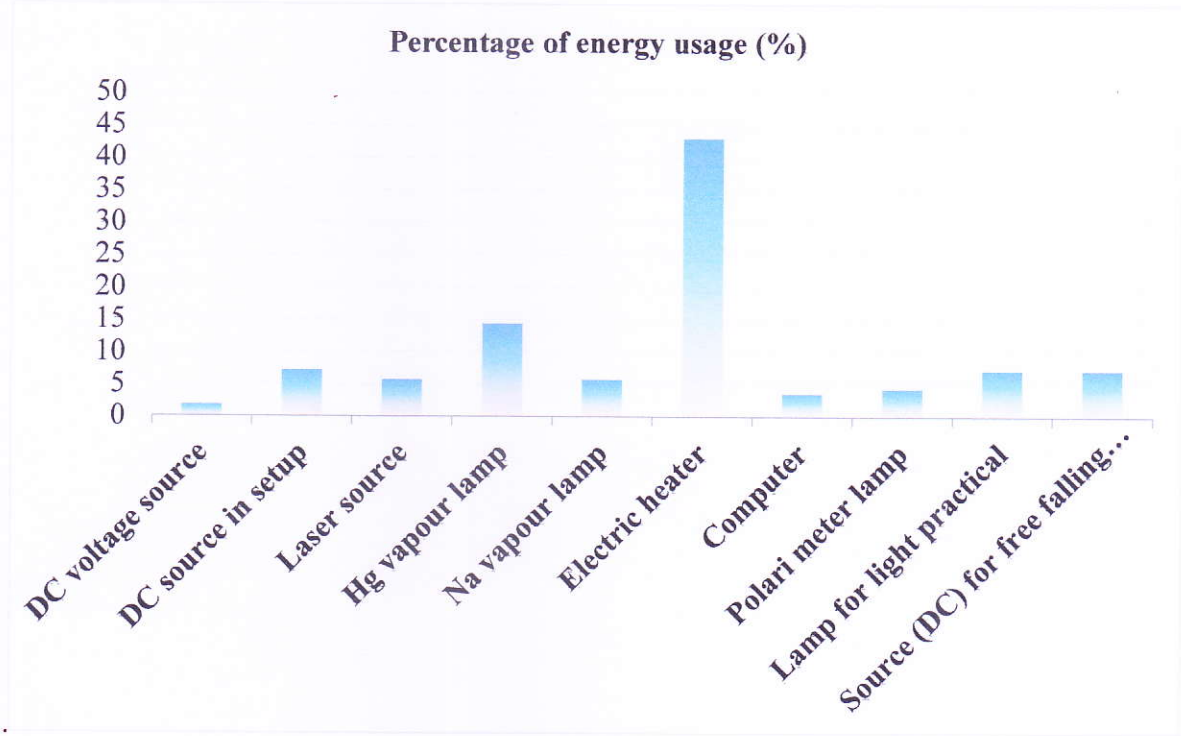

Figure 4.3. Consumption of energy in laboratories by different equipment

4.5. Renewable Energy

The college takes some serious initiatives for moving towards renewable energy sources considering recent carbon emissions and climate change. Solar panels are installed in the parking area of the college campus. Solar panel cleaning is done by College's maintenance team and the system is maintained by Power Solar Systems Limited.

Figure 4.4. Solar panels are in the college campus

4.6. Recommendations

- To avoid the use of more energy-consuming electrical appliances and to replace them with more environment-friendly and energy-efficient appliances in the college
- Moving towards solar and other non-conventional energy can reduce the burden of heavy electric energy consumption
- Installing a sensor-based lighting system can be introduced to sustainably manage the electrical resources
- Old laboratory equipment and other power-consumed old technology can be replaced by energy savings systems and green technology
- A huge amount of energy is wasted because no one really cares about switching off the fans and lights when not required in the classroom. Hence, planning workshops on energy conservation to educate students, faculty and staff can generate huge results
- The college should take initiative for solar powered water heater and cooker in the college canteen
- Students, faculty, and staff should unplug overhead projectors, computers, and smart boards when not in use. This simple way to conserve energy can help save a large amount of power and money in the long run

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata 700099
www.progyan.in

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE
Estd.-1986
Aff. Under
W.B.S.U.
Madhyamgram, Kolkata-700129

SECTION 5
AIR AUDIT

5 Air Audit

5.1. Indoor Air Quality

Indoor Air Quality (IAQ) refers to the air quality within & around buildings and structures, it relates to the health and comfort of building occupants. Common indoor pollutants are listed below:

- Carbon monoxide – Sources of carbon monoxide are incomplete combustion of fossil fuels

- Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions, etc.

- Carbon dioxide – Due to human respiration

- Particulate matter – Due to construction and maintenance activities, vehicular pollution

- Nitrogen oxides- Due to vehicular pollution

Every day there are 90 two-wheelers and 10 four-wheelers are coming to the college premises but there is no system observed to check for PUC certificates like vehicle exhaust gas analysis, vehicular movement noise, and vibration pollution. The air pollution at the time of ignition off and on is more than it is in riding mode.

5.2. Recommendations

The college may consider these on top priority: -

1. World Environment Day is 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.

2. Chemistry department shall monitor the Ambient Air Quality as per the guidelines of the Air (Prevention and Control of Pollution) Act 1981

3. Exhaust gases shall be monitored, analyzed, and check regularly

4. Parking zone of the college shall be neat & clean.

5. Use of bicycles in campus to be promoted

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata
700099
www.progyan.in

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE
Estd.-1996
Aff. Under
W.B.S.U
Madhyamgram, Kolkata-700 129

SECTION 6

BIOLOGICAL DIVERSITY AUDIT

6 Biological Diversity Audit

6.1. Introduction

Biodiversity or biological diversity is the variety and variability of life on Earth. Biodiversity is a measure of variation at the genetic, species, and ecosystem levels. Human activities are the main cause of biodiversity loss. Habitat fragmentation, caused by urbanization and agriculture and the overexploitation of resources, leads to the depletion of species. Biodiversity is crucial for the well-being of people and the Earth. Ecological communities maintain the ecological and evolutionary processes that sustain life. These are necessary to help maintain the planet's chemical balance, moderate climate, renew soil, and conserve species diversity. Plants, animals, and other species have intrinsic worth. They are also the source of all biological wealth—supplying food, raw materials, medicines, recreational resources, and a store of other goods and services. The biodiversity audit approach is an innovative, landscape-scale, and evidence-based approach to the delivery of biodiversity. It provides a working example of the implementation of an integrated approach to biodiversity delivery in a region. The rapid biodiversity inventory may include documentation of existing flora and fauna, their current status, threats, etc. to formulate a biodiversity-specific management plan.

- A biodiversity audit may deliver a current understanding of prevailing biotic resources of the surroundings
- Updated information on the flora and faunal diversity
- To identify possible threats and hazards to the existing diversity
- Formulate conservation measures on the existing biotic resources and increase carbon stocks

6.2. Faunal Diversity in College

The college sustains a good diversity of fauna due to its healthy and green vegetation in the vicinity of the college. 15 species of faunal species have been recorded belonging to 11 families (Table 6.1.). Spotted doves and Common pigeons (3 species) of the Columbidae family have been observed there. House crows (3 species) and House sparrows of Corvidae and Passeridae family have been seen there. Along with Red-vented Bulbul and Jungle babbler with families, Oriolidae and Timallidae, respectively has been spotted there.

Therefore, it can be noticed that the avian community is quite common in the case of faunal diversity rather than faunal other communities.

Table 6.1. List of avifaunal diversity of the college campus

Sl no.	*Family*	*Common name*	*Scientific name*
1	Passeridae	House sparrow	*Passer domesticus*
2	Corvidae	House crow	*Corvus splendes*
3	Pycnonotidae	Black drongo	*Dicrurus macrocercus*
4	Oriolidae	Red-vented bulbul	*Pycnonotus cafer*
5	Sturnidae	Common myna	*Acridotheres tristis*
6	Timaliidae	Jungle babbler	*Turdoides striata*
7	Columbidae	Spotted dove	*Stigmatopelia chinensis*
8	Columbidae	Common pigeon	*Columba livia*
9	Cuculidae	Common hawk cuckoo	*Hierococcyx varius*
10	Ardeidae	Indian pond heron	*Ardeola grayii*
11	Strigidae	Spotted owlet	*Athene brama*

6.3. Floral Diversity in College

The rapid biodiversity assessment depicted a healthy green environment of the college campus. It is pertinent to note that the college authority research team is already instrumental in recording the biodiversity of the college surroundings and has already taken some conservation and awareness education among the college students. The college sustains a luxuriant plant along with medicinal plant diversity ranging from trees, grasses, herbs, shrubs, ornamental plants, and seasonal flowers. More than 50 varieties of floral species were observed in the college campus. Some of the plants are massively destroyed by the recent cyclonic events. Table 6.2. depicted some examples of commonly occurring plant species.

Table 6.2. List of major tree species observed in the college campus

Sl No.	*Family*	*Common name*	*Scientific name*
1	Anacardiaceae	Aam	*Mangifera indica*
2	Meliaceae	Mahogany	*Swietenia mehagani*
3	Myrtaceae	Eucalyptus	*Eucalyptus globulus*

4	Annonaceae	Debdaru	*Polyalthia longifolia*
5	Combretaceae	Hartuki	*Terminelia chebula*
6	Moraceae	Dumur	*Ficus hispida*
7	Leguminosae	Palas	*Butea monosperma*
8	Moraceae	Kathal	*Artocarpus heterophyllus*
9	Compositae	Rabonlata	*Mikania scandens*
10	Ceasalpiniaceae	Ashok	*Saraca asoca*
11	Apocynaceae	Karabi	*Nerium indicum*
12	Combretaceae	Arjun	*Terminalia arjuna*
13	Palmae	Supari	*Areca catechu*
14	Caricaceae	Papeya	*Carica papaya*
15	Meliaceae	Neem	*Azadirachta indica*
16	Rubiaceae	Kadam	*Anthocephalus indicus*
17	Moringaceae	Sajina	*Moringa oleifera*
18	Combretaceae	Bohera	*Terminalia belerica*
19	Rutaceae	Kadi Pata	*Murraya koenigii*
20	Fabaceae	Tetul	*Tamarindus indica*

Table 6.3. List of some medicinal plants observed in the college campus

Sl No.	*Family*	*Common name*	*Scientific name*
1	Zingiberaceae	Halud	*Curcuma longa*
2	Labiatae	Krishna Tulsi	*Ocimim tenuiflorum*
3	Euphorbiaceae	Amlaki	*Emblica officinalis*
4	Acanthaceae	Basabpata	*Justicia adhatoda*
5	Fabaceae	Lajjabati	*Mimosa pudica*
6	Solanaceae	Ashwagandha	*Withania somnifera*

Table 6.4. List of herbs and shrubs observed in the college campus

Sl No.	**Family**	**Common name**	***Scientific name***
1	Rutaceae	Lebu	*Citrus acida robb*
2	Solanaceae	Ashwagandha	*Withania somnifera*
3	Solanaceae	Krishna dhutura	*Datura innoxia*
4	Solanaceae	Lonka morich	*Capsicum annum*
5	Asclepiadaceae	Ananta mul	*Hemidesmus indicus*

6	Rutaceae	Kamini	*Murraya paniculata*
7	Liliaceae	Ghritakumari	*Aloe barbadensis*
8	Urticaceae	Kaluruki	*Pouzolria indica*
9	Acanthaceae	Kalmegh	*Andrographis paniculata*
10	Rosaceae	Golap phul	*Rosa damasccene*
11	Acanthaceae	Patpati	*Dipteracanthus prostrathus*
12	Oleaceae	Bel phool	*Jasminum samback*
13	Mimosaceae	Kuchikata	*Mimosa rubicanlis Linn*
14	Liliaceae	Pipul	*Piper longum Linn*
15	Verbenaceae	Jarbas	*Stachytarpheta jamaicensis linn*
16	Compositae	Bringaraj	*Weddelia chinesis merill*
17	Poaceae	Harali	*Cynodon dactylon*
18	Nyctaginaceae	Punornova	*Boerhaavia diffusa*
19	Apocynaceae	Karabi	*Nerium indicum*
20	Myrtaceae	Peyara	*Psidium guajava*
21	Annonaceae	Ata	*Annona squamosa*
22	Crassulaceae	Patharkuchi	*Kalanchoe pinnata*
23	Brassicaceae	Kopi gach	*Brassica oleracea var. botrytis*

6.4. Recommendations

- The college may form a green monitoring team or Eco-club to monitor and assess the floral and faunal diversity periodically
- Proper action and management strategies should be formulated to maintain plant health.
- Urban forestry should be encouraged in the native varieties of plants by replacing invasive plants
- Proper propagation of green diversity is necessary to facilitate carbon sequestration.
- The vermicomposting facility should be practiced, the product of which can be used as manure or fertilizer for plantation purpose
- Community awareness within the local areas by the students of the college to generate interest in urban biodiversity
- Increased student involvement and participation during research and conservation actions in the college

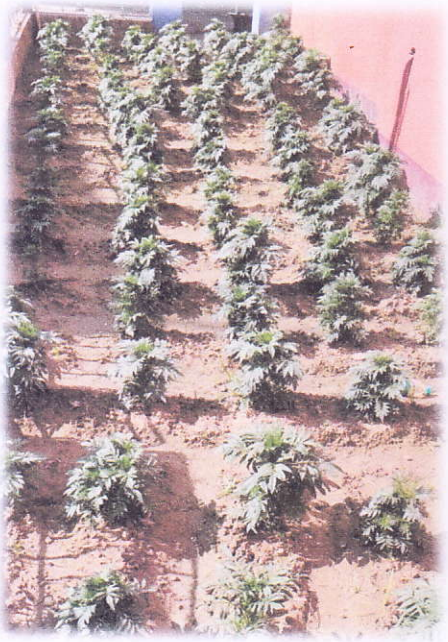

Fig 6.1 ***College garden***

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700 099

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION
Kolkata 700099
www.progyan.in

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE
Estd.-1986
Aff. Under W.B.S.U.
Madhyamgram, Kolkata-700129

SECTION 7
CONCLUSION

7 Conclusions

7.1. Overall Upshots of the Green Audit

The current assessment tried to capture the overall scenarios on water, wastewater, waste management, and biodiversity condition of Vivekananda College. Every section provides a precise methodology applied and findings in a systematic manner. Finally, sets of recommendations were provided for each section to improve the prevailing energy and biotic components of the college campus. The college has already taken a series of initiatives to maintain a healthy and green environment on campus. The situation can be further accelerated by considering suggested recommendations from the study. The major activities, approaches, and innovations undertaken by the college toward transforming a green campus are as follows

- The college has introduced a rainwater harvesting system of 12 kl capacity.
- The college has replaced incandescent lamps with LED bulbs for efficient energy savings.
- In college, there is a dark room for the physics department which is used for different experiments
- The college has a smart classroom and a big auditorium for educational purposes.
- Science laboratories are provided with exhaust fans so that the fumes are safely discharged outside the building
- College involved in yearly plantation activities with all classes of participants including students, teachers, and other staff

7.2. Study Team and Acknowledgments

Progyan Foundation for Research and Innovation (PFRI) is thankful to Vivekananda College for entrusting us. We would also like to thank Honourable Principal Sir **Dr. Chandan Kumar Chakraborty** for his encouragement and guidance in preparing this report. The team is also like to acknowledge other staff members of the college for their unwavering support. The study team is headed by Dr. Malancha Dey (M.Sc.; B.Ed.; M.Phil.; Ph.D.) which is supplemented by Dr. Dipayan Dey (M.Sc.; M.Phil.; Ph.D.; PGDHE), Dr. Shantanu Bhunia (M.Sc.; Ph.D.), Mr. Supriya Maity (M.Sc.) and Mr. Pulak Priti Patra (M.F.Sc).

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata- 129

Director
PROGYAN
Foundation for Research & Innovation
Kolkata-700099

Annexure I.

1. Water Quality Assessment Report

PUBLIC HEALTH ENGINEERING DTE.
NORTH 24 PGS DISTRICT LABORATORY
(LABORATORY TEST REPORT)

Agency Name *Vivekananda College* Receipt No. 3078 Work Order No. Date

Water sample collected by *Party* Receipt Date 26.08.2022 Date of collection 29.08.2022

SL. NO.	Municipality/ Block Name	G.P. Name / Mouza Name	Habitation & Landmark	Type Of Source	Depth of tubewell in mtr	CHEMICAL TEST RESULTS									BACTERIOLOGICAL TEST RESULTS				Remarks
						Date of Testing	As mg/ltr	Fe mg/ltr	pH	Total Hardness as ($CaCO_3$)	Turbidity (NTU)	Cl mg / ltr	Mn mg / ltr	TDS mg / ltr	Date of Testing	Date of Completion	CFU of Total Coliforms at 370C per 100 ml	CFU of Faecal Coliforms at 370C per 100 ml	
1	Madhyamgram Ward no-06		Vivekananda College Near Satsangha Bhavan	Raw Water		30-08-2022	0.010	2.157	7.12	280	1.0	14.2	x	370					
	Do		Vivekananda College Near Satsangha Bhavan	Treated Water		30-08-2022	0.007	0.068	7.10	240	0.3	14.2	x	110	29.08.22	30-08-2022	0	0	

Signature of Chemist / Bacteriologist
Barasat Division , P.H.E.D

Signature of Asstt.Engineer
R.W.S. Barasat Sub Division, PHED

Signature of Executive Engineer
Barasat Division,PHED

Drinking water specification : IS: 10500, 2012

Sl. No	Parameter	Acceptable limit		Permissible limit in absence of alternate
1	As	0.01 mg/l		No relaxation
2	Fe	0.30 mg/l		1.0 mg/l
3	Cl	250 mg/l		1000 mg/l
4	pH	6.5 - 8.5		No relaxation
5	TDS	500 mg/l		2000 mg/l
6	Mn	0.10 mg/l		0.30 mg/l
7	Turbidity (NTU) Max	1		5
8	Total Hardness (as $CaCO_3$)	200 mg/l		600 mg/l

Note :- Water sample is collected by the party. Lab'd
BDL – Below Detection Limit.

Bacteriological Drinking Water Specification , BIS: 10500,2012
Note: Minimum limits as per CL. 3.2.1. of IS-10500
a) Throughout any year, 95% of samples should not contain any coliform organisms in 100 ml.
b) No sample should contain coliforms organisms per 100 ml
c) Coliform organisms should not be detectable in 100 ml of any two consecutive samples.

2. Document of E-waste Manifest

18 PM

Hulladek ERP

Hulladek Recycling Pvt. Ltd

Regd office : 4, DL Khan road, Flat B-401, 4th Floor, Kolkata 700025

PRO Collection Centre : 135 Foreshore Road , Godown No. 26B/1, Shibpur Howrah - 711102

Form 6

(see Rule 19)

E-WASTE MANIFEST

Copy 1: Sender's Copy

1	Sender's Name and mailing address (including Phone No.)	Vivekananda College, Madhyamgram Vivekananda College P.O. E Udayrajpur - Vivekananda Nagar Po Vivekananda Nagar, Madhyamgram, West Bengal 700129 9830278374
2	Sender's Authorisation No.,if applicable	N/A
3	Manifest document No.	100122-23/08/20
4	Transporter's Name and address (including Phone No.)	34C/1, D. L. Khan Road, Kolkata - 700 025, 9830208855
5	Type of Vehicle	☐ Truck ☐ Tanker ☐ Special vehicle ☐ Other
6	Transporter's Registration No.	B-29016(12)(PRO)/18/WM-III Division
7	Vehicle Registration No.	WB03 D0306
8	Receiver's Name and address (including Phone No.)	Hulladek Recycling Private Limited 4, D. L. Khan Road, Kolkata - 700 025 (H)
9	Receiver's Authorisation No.,if applicable	B-29016(12)(PRO)/18/WM-III Division
10	Description of E-waste (Item Weight/Numbers)	IT/EW 2, 306.6 kg
11	Description of E-waste (Item Weight/Numbers) (Producer or Bulk Consumer or Collection Centre or Producer Responsibility Organisation or Dismantler or Recycler) Date 17/08/2022	17/08/2022 Principal VIVEKANANDA COLLEGE Madhyamgram, Kolkata - 129 Name & Signature
12	Transporter's Acknowledgement of Receipt of E-waste Date 17/08/2022	Authorised Signatory Name & Signature
13	Name and Stamp of Receiver (Collection Centre or Producer Responsibility Organisation or Dismantler or Recycler) Date 17/08/2022	Authorised Signatory Name & Signature

hulladek.in/Pickup/show_form_six/136566/1

Hulladek Recycling Private Limited
5, Deshpran Sashmal Road,
Kolkata 700033
1800-212-7880
help@hulladek.re

(2) Time 03:00 Pm

Hulladek

Company Name	Vivekananda College, Madhyamgram	Contact person	Dr.Chandan Kumar Chakraborty	Concerned person	Dr.Chandan Kumar Chakraborty	Date	2022-08-16	Logistics Executive	Adarsh Dubey
Pickup Location	Vivekananda College Rd, E Udayrajpur - Vivekanada Nagar Rd, Vivekananda Nagar, Madhyamgram, West Bengal 700129	Contact no.	9830276374	Contact No	9830278374	AM/CTM/PE/GBM/CP Name	Bhaskar Adak	Pick Up Request Number	PICKUP-REQNO-8130

Item Code	Item	Description	Quantity	Weight/unit	Net Weight	UOM	HSN Code	Price/UOM (inclusive of applicable taxes)	Total Price (inclusive of applicable taxes)
ITEW2	~~Mixed IT scrap Tot~~	TFT ,CRT Monitor,LCD TV,UPS,CPU,Keyboard ,Mouse,Printer	1	~~[illegible]~~	~~[illegible]~~	Kg	84	~~[illegible]~~	~~[illegible]~~
~~[illegible]~~	~~Lead acid Battery~~		1	~~[illegible]~~	~~[illegible]~~	Pcs	84	~~[illegible]~~	~~[illegible]~~
~~[illegible]~~	~~Diesel Generator~~	~~Honda~~	~~1~~	~~[illegible]~~	~~[illegible]~~	Pcs	84	~~[illegible]~~	~~[illegible]~~
ITEW2	CPU		8		52.8	kg	84	20.00	1056
ITEW2	CRT		9		94.6	kg	84	20.00	1892
ITEW2	Keyboard		11		7.7	kg	84	20.00	154
ITEW2	TFT	Monitor	3		9.7	kg	84	20.00	194
ITEW2	UPS		4		20.1	kg	84	20.00	402
ITEW6	Printer	Scrap	4		21.1	kg	84	20.00	422
ITEW7	Xerox		1		43.2	kg	84	20.00	864
ITEW2	UPS Battery		6		12.2	kg	84	20.00	244
ITEW2	mixed IT		1		6.4	kg	84	20.00	128
ITEW5	LED TV		3		38.8	kg	84	20.00	776
					306.6	Kg			6,132/-

I hereby declare that I will receive/have received Rs. 6000 in the form of Cheque/NEFT/RTGS/DD/IMPS/Cash on 16-08-2022 for the above mentioned items.

How would you like to rate our pick-up hero?

Poor | Bad | Neutral | Good | Excellent

17/08/2022

Signed Above for Principal, Vivekananda College, Madhyamgram

VIVEKANANDA COLLEGE Madhyamgram, Kolkata - 129

Signed Above for Hulladek Recycling Private Limited

GSTIN: 19AADC[illegible]
CPCB REGISTRATION NO.: B-29016(12)/(PRO)/1B/WM-III Division

Principal,
VIVEKANANDA COLLEGE
Madhyamgram, Kolkata - 129

VIVEKANANDA COLLEGE Estd.-1986 Aff. Under W.B.S.U. Madhyamgram, Kolkata-700129

PROGYAN FOUNDATION FOR RESEARCH & INNOVATION Kolkata 700099 www.progyan.in

Director PROGYAN Foundation for Research & Innovation Kolkata-700 099