MUGBERIA GANGADHAR MAHAVIDYALAYA

P.O.—BHUPATINAGAR, Dist.—PURBA MEDINIPUR, PIN.—721425, WEST BENGAL, INDIA
NAAC Re-Accredited B+Level Govt. aided College
CPE (Under UGC XII Plan) & NCTE Approved Institutions
DBT Star College Scheme Award Recipient
E-mail : mugberia_college@rediffmail.com // www.mugberiagangadharmahavidyalaya.ac.in

6.5.2. Quality assurance initiatives of the institution

DOCUMENTORY EVIDENCE FOR QUALITY AUDIT/ACCREDITATION RECOGNIZED BY STATE, NATIONAL OR INTERNATIONAL AGENCIES: Energy Audit

CONSULTRAIN MANAGEMENT SERVICE
Lake Road, Kolkata, West Bengal, India

TROPICAL INSTITUTE OF EARTH AND ENVIRONMENTAL RESEARCH (TIEER)
Reg. No. S/IL/42578 of 2006-07
Office address: M-10, Bidhannagar, Medinipur-721101, W.B., India

ENERGY AUDIT CERTIFICATE

Academic Year: 2021-2022

This is to certify that Mugberia Gangadhar Mahavidyalaya, Bhupati Nagar, Purba Medinipur, West Bengal has good and healthy eco-friendly environment created for saving Earth and Nature. Tropical Institute of Earth and Environmental Research associated with Consultrain Management Service are satisfied after successful completion of Energy Audit with moral support of Honorable Principal, IQAC Team, Staff and Students for academic year 2021-2022. This efforts taken by Faculty and Students towards environment and sustainable are highly appreciable and commendable.

(Dr. Binoy Kr. Chanda)
President, TIEER

(Dr. Pranab Sahoo)
Asst. Professor &
Secretary, TIEER

(Mrs. Sanchita Bhattachariya)
ISO-Auditor& CEO, CMS

(Mr. Ananda Kr. Das)
Expert & Member,
TIEER

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GREEN AND ENVIRONMENTAL AUDIT REPORT

(2021–2022)

CONSULTRAIN MANAGEMENT SERVICES,
LAKE ROAD, KOLKATA

MUGBERIA GANGADHAR MAHAVIDYALAYA, PURBA MEDINIPUR, WEST BENGAL

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AND ENVIRONMENTRAL
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President, TIEER	Asst. Professor & Secretary, TIEER	ISO-Auditor& CEO, CMS	Expert & Member TIEER

ACKNOWLEDGEMENT

We, The Environment Audit Team thank the management of Mugberia Gangadhar Mahavidyalaya for assigning us such an important work on Green & Environmental audit. We appreciate the cooperation to our team for the assigned study, giving us necessary inputs to carry out audit activities.

Our special thanks to:

- Principal of the College
- IQAC Members
- Teaching & supporting staff

AUDIT EXPERT MEMBERS

The Committee members are listed below:

SL. No.	NAME	DESIGNATION	AREA IN INTEREST
1.	Dr. Binoy Kr. Chanda	President, TIEER & Former IC, VU	Environment Science & Climatology
2.	Dr. Pranab Sahoo	Secretary, TIEER & Assistant Professor and HOD, Dept of Geography, S.B. Mahavidyalaya, Kapgari	Climate Change and Environment Management and Biogeography
3.	Mrs. Sanchita Bhattachariya	Consultant, Consultrain Management services, Kolkata, & Member, TIEER, ISO–9001,14001& 50001Cerfied Auditor.	Environment Management
4.	Dr. Pijush Kanti Panja	Associate Professor, Dept. of Geography, Haldia Govt. College	Ecology and Environment management
5.	Dr. Sudipta Maiti	Faulty, Dept. of Botany, Raja N.L. Khan Womens' College, Midnapore	Plants Diversity & Carbon stocking, Green Management
6.	Dr. Mrinmoy Ghorai	Assistant Professor in Zoology, Panskura Banomali college.	Fauna & Aqua animals and Biodiversity conservation
7.	Sri Ananda Das	Asst. Teacher & expert	Electro physics
8.	Sri Raju Mahata	Drone Surveyor	Aerial Photography
9.	Dr. Mousam Majumder	Asst. Teacher & Expert	Biodiversity & Environment Management

10.	Mr. Prasun Sahoo	B.Tech Electrical Engineer	**Electric management service**
11.	Sri Sarat Chatterje e	Surveyor	Water and Air Quality Measurement
12.	Sri Sanjib Mahata	Surveyor & Expert in RS &GIS	Map Designer

CONTENT

INTRODUCTION:

The term 'Green' stands for Resource balance, Quality environment, Recycled products and Ecofriendly environment. Green and environmental Audit is a process of systematic, documented, periodic and objective evaluation of components of environmental diversity with the aim of ensuring readiness in eco–friendly environment and conservation of natural resources in its operations. The process starts with systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of the college.

Green auditing is a means of assessing environmental performance. Green audit is a valuable means for a College to determine how and where they are using the most energy or water or other resources; the College can then consider how to implement changes and make savings. It can create healthy consciousness and promotes environmental awareness, values and ethics.

Goals & Objectives:

It aims to analysis environments within and outside of the concerned area, which will have an impact on the eco–friendly atmosphere. It provides staff and students better understanding of Resource management on their area of work.

The Main Objectives of Carrying out of Green and Environment Audit:

- To ensure the performance of the Institution with respect to environmental activities they are involved in, in compliance with existing

laws and regulations

- To locate the Green area and the Geographical location of the College – aerial view
- To document the floral and faunal diversity of the College
- To develop and follow the waste management system
- To reduce the energy consumption of the Institution
- To report the expenditure on green initiatives, carbon foot print
- To record the air, water quality of the Institution
- To conserve the natural resources

Areas of Concern:

- WATER MANAGEMENT
- ENERGY MANAGEMENT
- AIR QUALITY AND CARBON FOOTPRINT
- WASTE MANAGEMENT
- E–WASTE MANAGEMENT
- BIODIVERSITY

This Audit has been conducted by a Committee constituted by the Experts & Scientists from different reputed Institutes. The Committee developed a questionnaire for audit based on the regulatory and statutory requirements of Centre as well State. The basic data was gathered and compiled, which the committee analyzed. By and large, the audit reveals a healthy environment inside the Mugberia College campus. The committee has suggested short term as well as long–term suggestions for improved environmental conditions to

Meeting with Hon'ble Principal & IQAC

ahigher level and authorities and all stakeholders of the College conform that they will give due attention and utilize opportunities for identified improvements.

About the College :

Mugberia Gangadhar Mahavidyalaya was established on 2nd of July, 1964 as a co– education college by a society of the same name in a village in Contai

Subdivision of Purba Medinipur District (Erstwhile Midnapore District) after the name of Medinipurs pride – Late Raisaheb Gangadhar Nanda – a great lover of education.

The college is situated in a culturally rich locale, and it is the only college in the vast area of Bhagwanpur–II block. The college is located in the rural area in HeNria Itaberia Road. It was founded with the help of the donations collected from the local people with the aim to serve the poor inhabitants of the area who were unable to send their wards to distant places for higher education. It is noteworthy that some eminent people, enthusiasts in education and social work, took the initiative in

establishing this college. Notable among them are Shri Jyotirmay Nanda, Shri Hrishikesh Gayen, Shri Rammay Nanda, Shri Biswanath Sarangi, Shri Tarapada Maity, Shri Sudhir Kumar Hazra, Shri Rakhal Chandra Sarangi, Shri Nanda Gopal Maity, Shri Bankim Chandra Hazra, Shri Ajit Kumar Paria, Shri Jogesh Chandra Nanda, Shri Jagattaran Tripathy, Shri Sachikanta Nanda, Shri Satish Chandra Manna, Shri Swadesh Gayen, Shri Surendranath Jana, Shri Sitanath Das, Shri Gunadhar Maity and Shri Baneswar Maity. The authorities were mainly dependent on the charity of the people for buying the required land and construction of buildings.The college greatly owes to Mugberia Gangadhar Trust for a donation of Rs. 15,345/–, and to late Shri Sailajacharan Nanda for giving away a house along with land where a suitable hostel has been constructed recently.

Pandit Jyotirmay Nanda, B.A, Vedantakabyatirtha, Vidyabhusan was in charge of the college as the secretary for six years from the commencement of the institution. His efficient administration enabled the college to begin its odyssey surmounting colossal difficulties.

The college is grateful to the famous psychiatrist Dr. Asit Baran Patra and his wife Prof. Gouri Patra for their donation of Rs. 3 lakhs in memory of Shri Bhimacharan Patra for the construction of the Science Building. Shri Kiranmay Nanda, Honble Minister of the Dept. of Fishery of the State Government who was the President of

the College did his best in terms of monetary donations and physical efforts for the development of the college. Moreover, he had taken initative for constructing an auditorium in memory of his father Shri Jyotirmay Nanda. Again, the college had received Rs. 5 lakhs from the Government of Uttar Pradesh under Shri Mulayam Singh Yadav through his endeavour. The boundaries of the campus was constructed with the help of his fund and co-operation of the local people.

A magnificent gate was constructed at the entrance of the college with the financial aid from the teaching and non-teaching staff as well as the students of the college. Several beautiful gardens were constructed to enhance the beauty of the premises at the initiative of NSS, NCC and the employees of the library. Dr. Nilabja Nayan Sarangi donated a substantial amount in memory of his mother Late Susama Devi and Smt. Jyotshna

Sasmal of Contai town also donated a substantial amount in memory of her husband Late Aurovinda Sasmal. Apart from these major donations many well–wishers have contributed towards the development of the college and still continue to do so.

The college is grateful to Late Prof. Sudhir Giri, the former M.P., for contributing Rs. 2 lakhs from his MPLAD fund. The former M.P. Shri Prasanta Pradhan had donated Rs. 7.5 lakhs from his MPLAD fund for the construction of the Four Decade Memorial Building. The Zilla Parishad had given away Rs. 5 lakhs for the building of the B.P.Ed. section. Education Directorate, Government of West Bengal, Fishery Department, Governemnt of West Bengal and Shri Kiranmay Nanda (from BEUP fund) had granted Rs. 25 lakhs, Rs. 16 lakhs and Rs. 18 lakhs respectively for the construction of college buildings and the purchase of laboratory equipments. Education Directorate, Government of West Bengal and Shri Ardendu Maity (froom BEUP fund) granted Rs. 24.6 lakhs and Rs. 3 lakhs respectively for the construction and repair of college buildings. The UGC has contributed in many respects and has granted Rs. 70 lakhs for womens hostel. Bhagwanpur II Panchayet Samiti has arranged for a tubewell in the college campus. Shri Ranajit Mondal, the former President of the college, was instrumental in

arranging for a grant of 1.6 lakhs from the Zilla Parishad for developing toilet facilities in the college.

Mugberia Gangadhar High School had permitted the use of their rooms for the first four years and the college remains ever grateful to them.

The college has started a diploma course in Tourism and Hotel Management under Community College of UGC from July 2015. For this financial assistance has been given by UGC of Rs. 71.96 Lakhs.

The college has been awarded the CPE status from 1st April 2016 to 31st March 2021 from the UGC for enhancing the quality of education in the college. For this UGC has granted Rs. 110 Lakhs.

The college has a dedicated environmental cell that formed a Green Club aiming to encourage in a self sufficient, energy minimal college campus.

General Information:

Total area of the college campus – 5.8 acres

Building area: 2.37 acres,
Green & Vegetated area: 0.7 acres.
Play Ground & Vacant land area: 1.93 acre
Water Bodies area: 0.8 acre

Departments:

Post Graduate and Under Graduate–27

Laboratories: 12

Students: 2639

Teaching Faculties: 116

Non–teaching staff: 33

Others

stakeholder: 07

Total Stake

holders: 2795

Total classrooms:

55

Auditorium /Seminar hall: 02

Hostels: 04

Hostel students:

260 Gymnasium

Hall : 01

Smart class rooms: 37

The Green Club details:

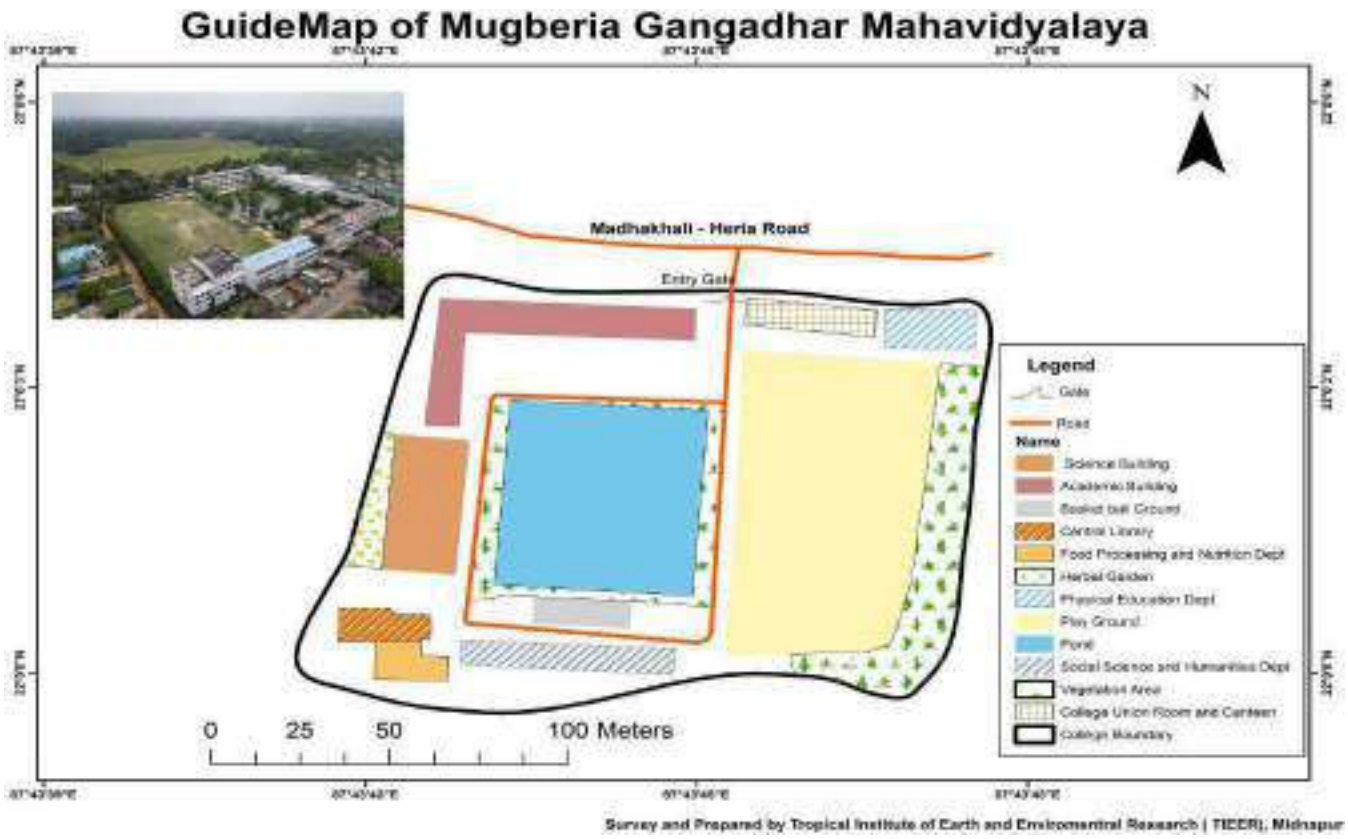
CO- ORDINATOR AND MEMBERS

S.No	Name of the faculty	Designation	Position in Green Club
01.	Irani Banerji Chatterjee	Assistant Professor	Co–ordinator

S.No	Name of the faculty	Designation	Position in Green Club
		Department of Geography	
02.	Dr. Prasenjit Ghosh	Associate Professor HOD History and Secretary, Teachers Council	Member
03.	Dr. Bidhan Samanta	Assistant Professor HOD Department of Chemistry	Member
04.	Dr. Goutam Barman	Assistant Professor Department of Bengali	Member
05.	Dr. Sourav Sikdar	Assistant Professor HOD Department of Zoology	Member
06.	Kingshuk Karan	Assistant Professor HOD Department of Education	Member
07.	Manas Khalua	Assistant Professor HOD	Member

S.No	Name of the faculty	Designation	Position in Green Club
		Department of Botany	
08.	Sougata Bera	Clerk and Secretary, Non Teaching Staff	Member
09.	Kamal Panda	General Secretary, Students Union	Member
10.	Durgapada Bhattacharya	Guest Faculty Vermicompost Cell	Member

The green club used to take up green audit internally previously to ensure a proper sustainable environment inspection.

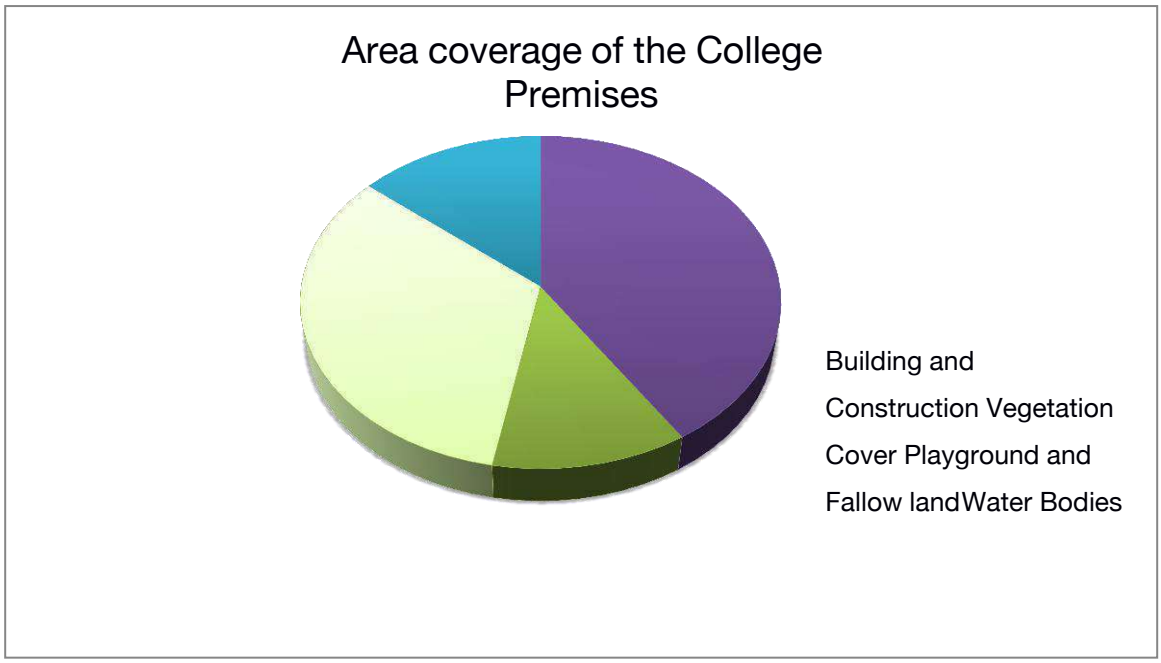

GuideMap of Mugberia Gangadhar Mahavidyalaya
N
Madhakhali - Heria Road
Entry Gate
Legend
Gate
Road
Name
Science Building
Academic Building
Basket ball Ground
Central Library
Food Processing and Nutrition Dept
Herbal Garden
Physical Education Dept
Play Ground
Pond
Social Science and Humanities Dept
Vegetation Area
College Union Room and Canteen
College Boundary
0
25
50
100 Meters
Survey and Prepared by Tropical Institute of Earth and Environmental Research (TIEER), Midnapur


Landuse Land Cover Map of Mugberia Gangadhar Mahavidyalaya
N
Legend
Landuse Land Cover
Name
Basket ball Ground
Building
Play ground
Pond
Vacant Land
Vegetation Area
College Boundary
0
25
50
100 Meters

Table 1 Area Coverage of the College Campus

Area Coverage of College Premises:	Area in Percentage
Building and Construction	40.86
Vegetation Cover	12.08
Playground and Fallow land	33.27
Water Bodies	13.79

Fig. 1 Area Coverage of College Premises



Academic Department and Research Centre

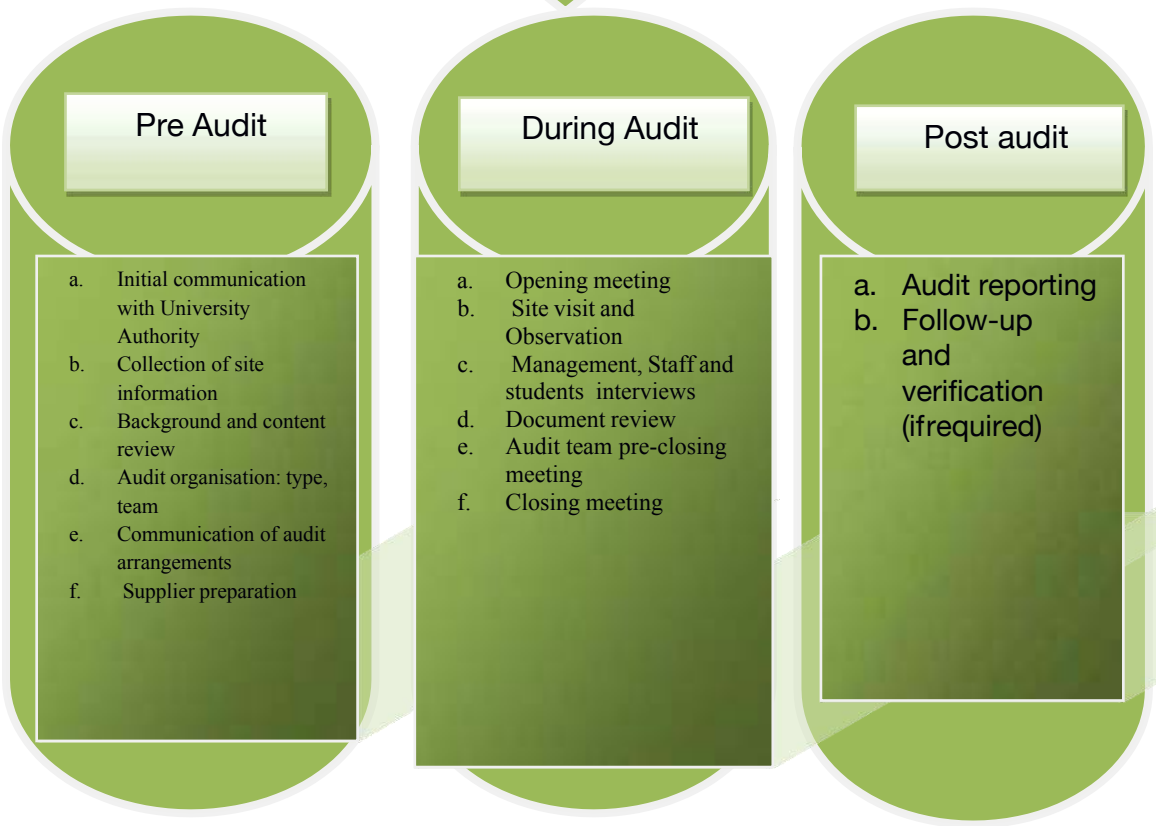
Purpose of Green and Environmental Auditing:

- To develop to more efficient resource management
- To provide basis for improved sustainability
- To create a green campus
- To enable waste management through reduction of waste generation, solid– waste and water recycling
- To promote plastic free campus and evolve health consciousness among the stakeholders
- To recognize the cost saving methods through waste minimizing and managing
- To empower the organizations to frame a better environmental performance
- To develop an environmental ethics and values systems in youngsters.
- To establish valuable tools and methods for managing and monitoring of environmental and sustainable development programs.

PRE-AUDIT STAGE:

Methodology and Survey Schedules:

The methodology is adopted for this assessment by collecting the information by c observation. Perception study and opinion survey also included in the AuditingReport.



The Audit team started the audit at the College Campus on 13th June,2022,

SL.NO	PURPOSE	DATE	REMARKS
1.	Communication with College authority	01.04.2022	Discussion about term and condition
2.	Opening Meeting	06.04.2022	Submitted the survey schedule
3.	Collection information about the College	13.05.2022	Introduced to Administrative Officer
4.	Campus visit , site enquiry and department survey &observation	13.05.2022	Outdoor observation with Drone camera & Photo camera, Laboratory enquiry
5.	Review data and Assessment	13.05.22 to 25.05.2022	Data generate and drone figures
6.	Pre Closing meeting	06.06.2022	Meeting with IQAC
7.	Closing Meeting	15.06.2022	Pre-submission of the Report
8.	Submission the audit report	27.06.2022	Submission of the Report

Site Visit:

1. College and its premises were visited and analyzed by the audit–teams several times to gather information.
2. Campus trees were counted and identified.
3. Medicinal garden, play grounds, canteen, library, All Department, office

rooms, Hostels, Staff Quarter and parking grounds were also visited to collect data.

4. Number and type of vehicles used by the stakeholders were counted and fuel consumption for each vehicle was verified with the user.
5. Number of LPG cylinders used in labs, canteen and hostel kitchen were also counted.
6. Water taps were checked. Leakage of a few water taps and over–flow tanks were noticed during the site inspection.

Ecofriendly College

Following steps were taken for data collection:

- Survey to each department, centers, Library, canteen etc.
- Data collected by observation and interview.
- Assessment of the environmental condition through measurement

Survey & Data Collection:

- A Questionnaire was developed covering all aspects of Green and Environment aspects for collection of data.
- Arrangement of Drone survey was made available to cover every corner of the college and its neighborhood areas.
- Data Analysis – Calculation of energy consumption, analysis of water reused, waste generation & disposal arrangements.
- Recommendation — On the basis of results of data analysis and observations, some steps for reducing power consumption, water consumption, waste management etc. were recommended.

We have discussed and interacted with different groups like teachers, students and

staff to identify the attitudes and awareness towards environmental issues at the institutional, district, national and global level. Data and information were also collected form utility bills, reuse of water, waste management, use of energy–saving devices and e–waste. This information was added to the carbon footprint data, generating a fairly clearer picture of the emissions and impact of the reduction measures undertaken.

Greenery campus with surface water

Academic Buildings

AUDIT STAGE :

Campus Survey and Enquiry:

Green and Environmental audit forms part of a resource management process. Total area including neighborhoods was surveyed using Drone and the data derived from this survey was detailed in our report.


Aerial Views of the College Campus

Eco–campus concept mainly focuses on the reduction of contribution to emissions, on the efficient use of energy and water; Minimize waste generation or pollution and

also economic efficiency. All these indicators are assessed in process of "Green Auditing of educational institute". Covered areas included in this green auditing are water, energy, air quality & carbon footprint, waste, biodiversity campus.

The Audit covered the following major areas:

1. Water Efficiency and Water Management
2. Energy Efficiency and Energy Management
3. Air Quality and Carbon foot print and Management
4. Waste Produce and Waste Management
5. Biodiversity and Green Zone management

Table–2 Total population of the College

Students –	2639	persons
Teaching, Non–teaching and Other Stakeholders	156	persons
Total	2795	persons
Approximate no of visitor (per day)–	15	persons

3.2 Water Efficiency and Water Management :

The concerned auditor investigates the relevant method that can be adopted and implemented to balance the demand and supply of water and also proper water management practices along with rooftop rain water harvesting system must be installed in whole campus for recharging ground water and meeting part of the water requirements. It is therefore essential that any environmentally responsible institution examine its water use and Re–use practices.

a	Usage of water	That water is use for Drinking, Washing, Cleaning, Cooking, Bathing and gardening purpose. The maximum water is use for Bathing and washing in Hostels & Staff Quarter. About 27646 Litre water

		has been supplied for that sector.
b.	Consumption o fwater	About 40500 Litre water per day (the values not understood)
c.	Water wastage	The leakage and misuse of water is about 500 Litre in whole campus. Small drip from a leaky tap, sewage water from pan in toilets and over flow can waste significant amount of water per day.
d.	Water recycle	Waste water recycle is not practiced in the institute as grey water/ sewage treatment /recycle facility is not provided. One rain water harvesting system is available in Mugberia College

		campus.
e	Surface wate rHarvesting	The surface water bodies (one) are available in Mugberia College campus. About 0.8 acres area has covered with one pond.

Table–3 Use of water for Different Purpose of College **Premises**

Use of water for Different Purpose Per Day	Use in Percentage
Bathing and washroom	68.26
Cooking and washing	8.64
Cleaning and gardening	7.41
Drinking	10.76
Others	3.70
Misuse of Water	1.23

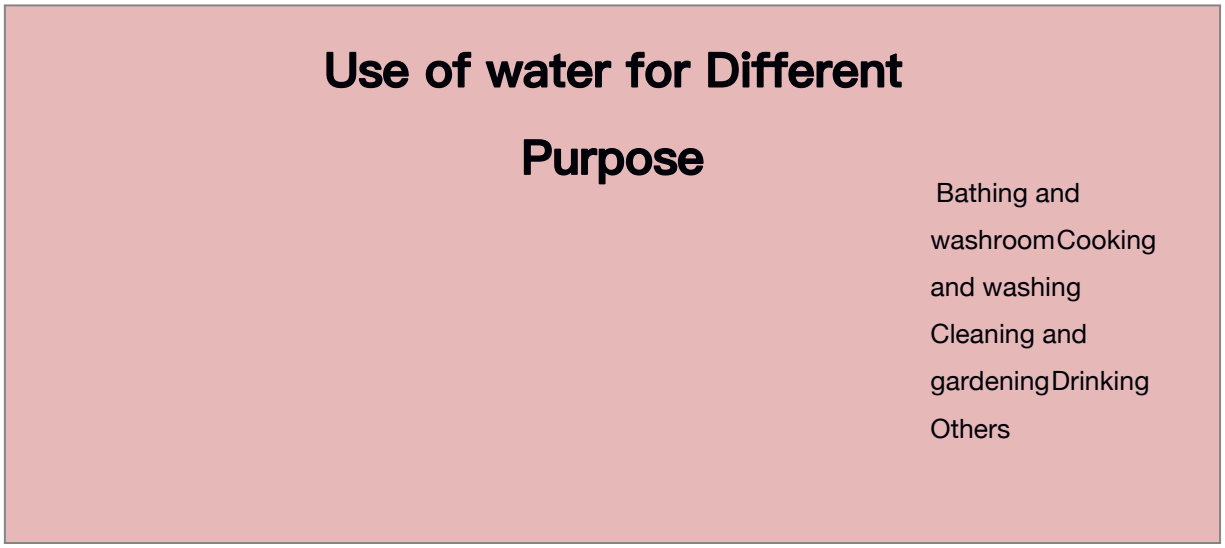


Fig.2 Use of water in Different Purpose Per Day

Taken Water management policy

Sl. No.	Factors	Weightage
1	Quality of Water	H
2	Re–use of water	M
3	Water Harvesting & Recharge	H
4	Use of Surface Water	H

* H denote– Taken management policy level above 60%

** M denote– Taken management policy level 40%–60%

*** L denote–Taken management policy level below 40%

Recommendation

Water conservation faucets in washrooms were not seen. Installation of such faucets can save water and will help in minimising the water footprint of the institute. Sanitary wastewater generated from washrooms is connected to sewerage system.

Energy Efficiency and Energy Management:

a	Energy sources	Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. An old incandescent Tube uses approximately 40W while an energy efficient light emitting diode (LED) uses only less than 24 W.

b.	Energy consumption	The useable energy is Conventional and Non–Conventional energy. The used energy is 56825 units costing to Rs. 568250/. About 20.27% energy is Non–conventional energy contributed from Solar Power. The Maximum energy is consumed for Light & Fan amounting to 43.7% of total consumption. Departmental and Computer laboratory uses about 39% of total consumed energy.
c.	Usage of LPG	It has been observed that LPG gas cylinders are used in Canteen, & Laboratories (27 PC/year) for cooking and other purpose. There are Green generators used in the premises.

Electric power unit and Green generator

Table–4 Source of Energy in Percentage

Source of Energy	In Percentage
Conventional	79.73
Non –Conventional	20.27

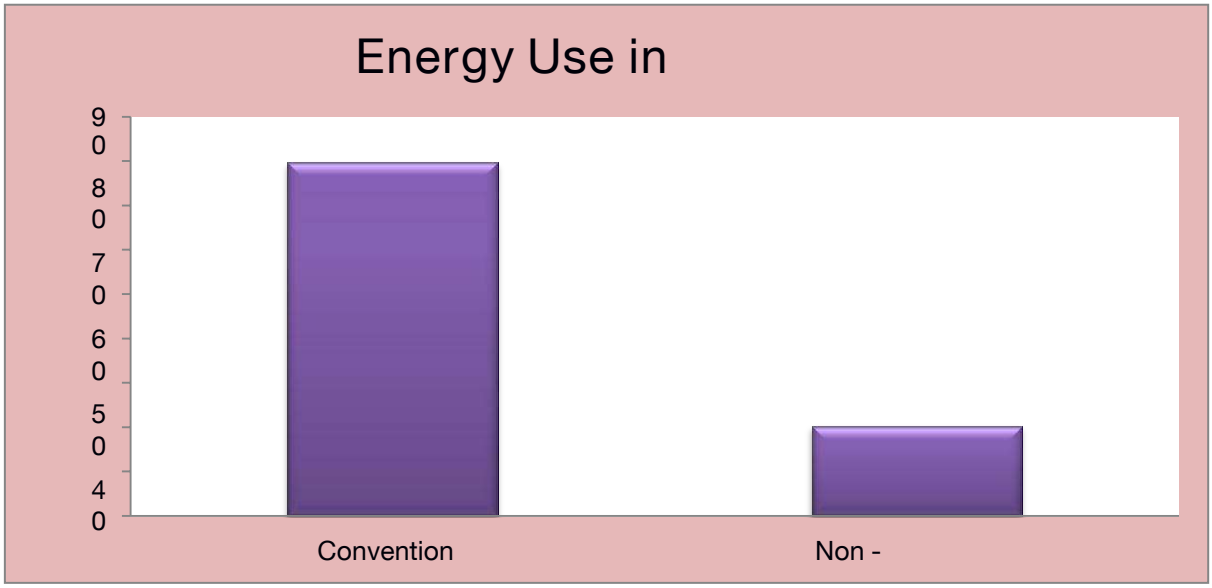


Fig. 3 Use of Energy in Percentage

Source of NCE (Solar

Table–5 Energy Consumption for different

Purpose in Percentage

Energy Consumption for different Purpose	In Percentage
light and fans	43.7
AC	20.76
Pump	0.79
Computer and Laboratory	31.60
Others	3.15

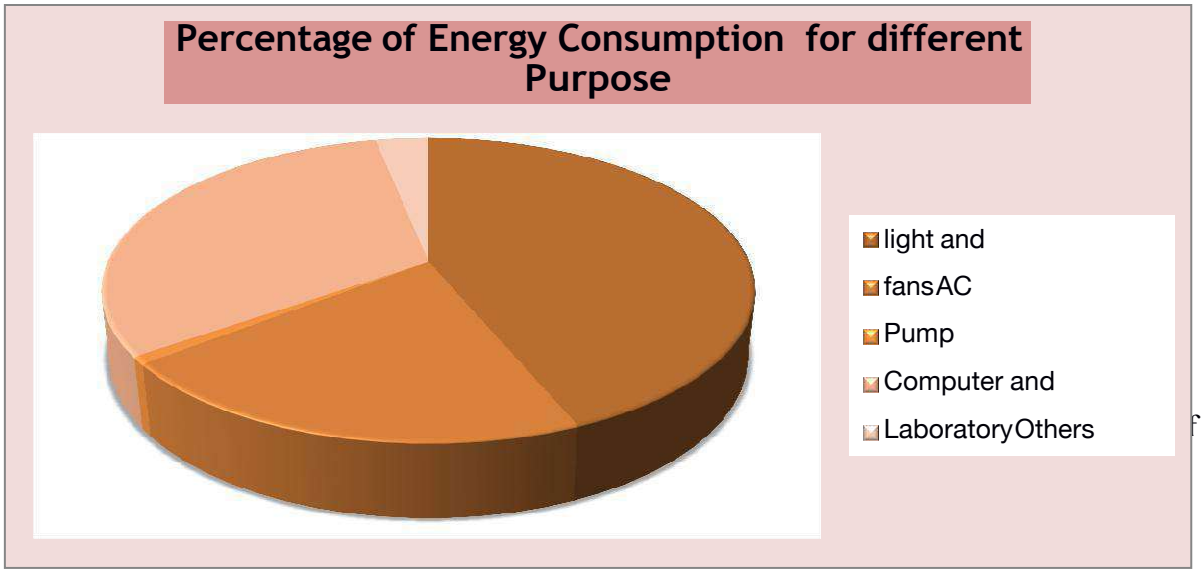


Fig. 4 Percentage of Energy Consumption in different Purpose

Recommendations:

a) Every classroom and lab with central switch board should have a diagram linking place of tube light, fan etc. with corresponding switch. This will ensure that correct fitting is switched on/ off and can save time & unnecessary operation.

b) Installation of automatic lights with sensors can be considered.

c) Standard Operation Procedures (SOPs) should be prepared and followed for green purchasing wherein equipment's with star rating; those using eco–friendly materials; those with safe disposal policy or return to supplier after unused, can be considered.

d) For purchasing new electronic appliances, star rating provided by Bureau of Energy Efficiency (BEE) should be considered. The equipment which has maximum

Energy used for different

and also operate at low cost.

e) Usage of light reflectors is recommended as the reflectors can spread light to relatively large areas.

f) Notices/ signage can be put up/ displayed near switches and on notice boards, informing students and staff to switch off all Departments & Sectors when not in use.

g) Use of large percentage renewable energy should be considered.

Air Quality and Carbon Footprints :

Commutation of stakeholders has an impact on the environment through the emission of greenhouse gases into the atmosphere consequent to burning of fossil fuels (such as petrol, Diesel, LPG Gas). The most common greenhouse gases are carbon dioxide, CFC, water vapor, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most leading greenhouse gas, comprising about 214ppm (2019) to the Earth's atmosphere. It undertakes the measure of bulk of carbon dioxide equivalents exhaled by the

organization through which the carbon accounting is done. It is observed that the Outdoor air quality is Fresh and comfortable for breathing to human life.

Measurement of Air Quality

Table–6 Amount of CO2 (ppm) in different location of the College Campus

Different location of the College Premises	Amount of CO2 (ppm)
Principal Office	460
Chemistry Lab	465
Zoology Lab	430
Nutrition Lab	410
Computer Lab	475
Physics Lab	450
Library	475
Cycle Stand	390
Play Ground	370
Canteen	430
Hostel	420

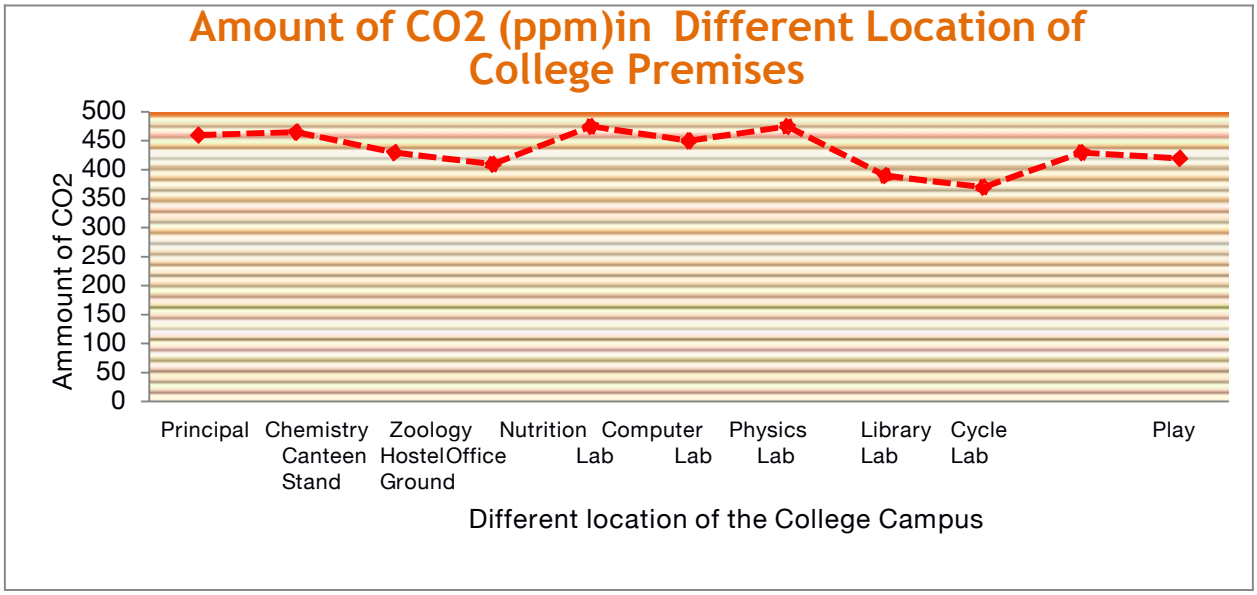


Fig. 5 Amount of CO2 (ppm) in Different Location of the College Premises

Table–7 Amount of CO_2 (ppm) in the air in different location,(College Campus) session 2021–2022

Amount of CO_2 (ppm) in the Air in Different places of the College Premises	**Amount of CO_2 (ppm)**
Outdoor	390
Indoor (Class room)	430
Indoor (Laboratories)	460

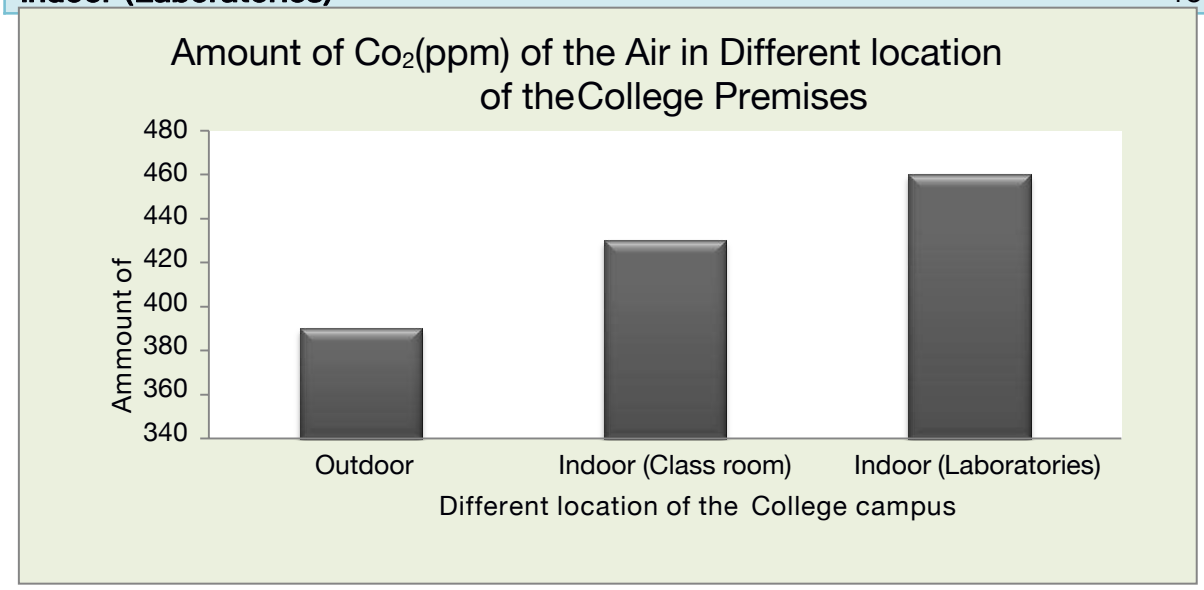


Fig. 6 Amount of Co_2(ppm) of the Air in Different location of the College Premises

Table 8 Amount of O_2 (%) of the Air in Different location of the College Premises

Different location of the	College Premises	Amount of O_2 (%)
Principal Office		20.2
Chemistry Lab		20.3
Zoology Lab		20.5
Nutrition Lab	(nothing is written about geography lab)	20.7
Computer Lab		20
Physics Lab		20.3
Library		20.2
Cycle Stand		20.8
Play Ground		20.8
Canteen		20.4
Hostel		20.5

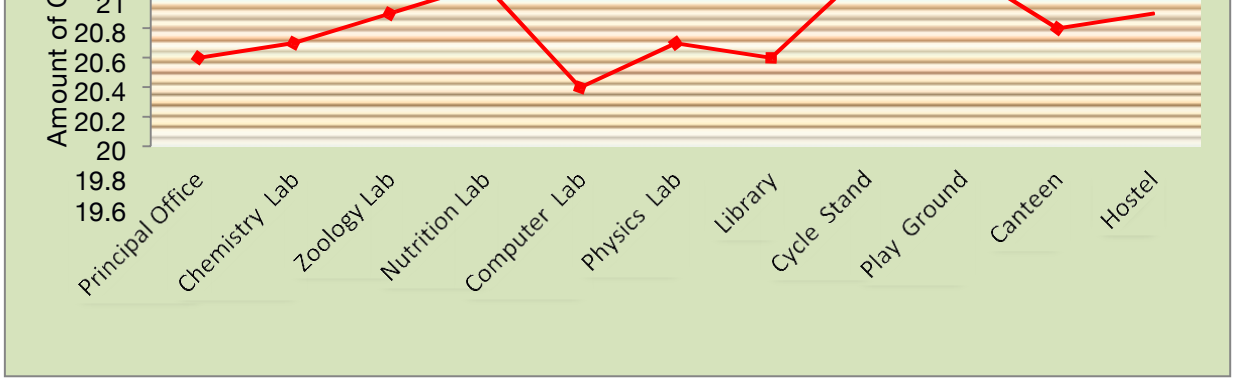


Fig. 7 Amount of O2 (%) in Different location of the College Premise

Recommendation: (or observation?)

a) Ventilation is achieved by fans in the institute and air conditioners in Official and Lab. places.

b) Heating Ventilation and Air Conditioning (HVAC) system is not installed.

d) Exhaust fans are only provided in washrooms and chemistry lab.

e) No indoor plants were observed in the entire institute (the department of geography has 14 indoor plants in the varanda) Indoor plants can be plotted not only for the aesthetic appearance but also for health benefits.

Generation of Waste and Waste Management:

Waste (or wastes) is useless or unusable materials or components which are discarded after principal use. Sometimes, it is a defective article and of no use. In modern outlook waste may be a valuable substance subject to an appropriate operation or action on the waste. With the context of waste management RRR (Reduce, Reuse and Recycle) model may be followed in appropriate fashion.

The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems. It is therefore essential that any environmentally responsible institution examine its waste processing practices. Keeping the objective of the audit the following study will be limited to the waste generated in an academic campus and surroundings.

Table–9 Types of wastes

Type of Wastage	Amount in Kg
Degradable	75
Non degradable	3.5

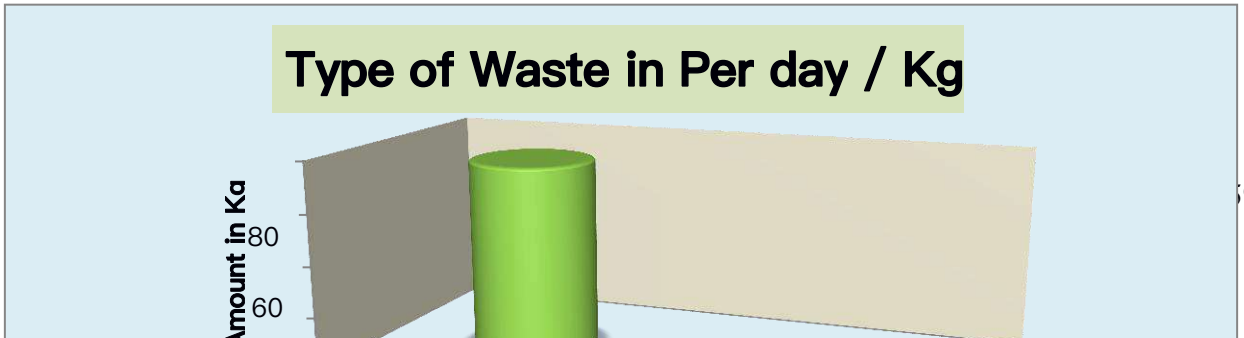


Fig. 8 Type and Amount of Waste

The following categories of wastes are generated in the College campus:

a) Solid waste – Waste generated through paper, plastic packaging causes nuisance. Some wastes are generated after various experiments, primarily, chemistry laboratory; broken test tube, glassware are the example.

b) Liquid waste – There are bio–chemical wastes generated through various chemical reactions and biological processes. Generally, these are being drained to nearby Surface water bodies contaminating water and soil. Appropriate means is suggested to adopt scientific liquid waste management practices. These are neutralization, bacterial control, and natural control through plantation.


Solid wastes

Table–10 Source of Wastage in Different Sector (per day in Kg)

Source of Wastage in Different Sector(per day in Kg)	Degradable wastage Amount in Kg.	Non Degradable wastage Amount in Kg.
Canteen, Quarter and Hostels	57	2
Office	1	0.5
Laboratories	2	0.5

Garden	10	0.25
Others	5	0.25

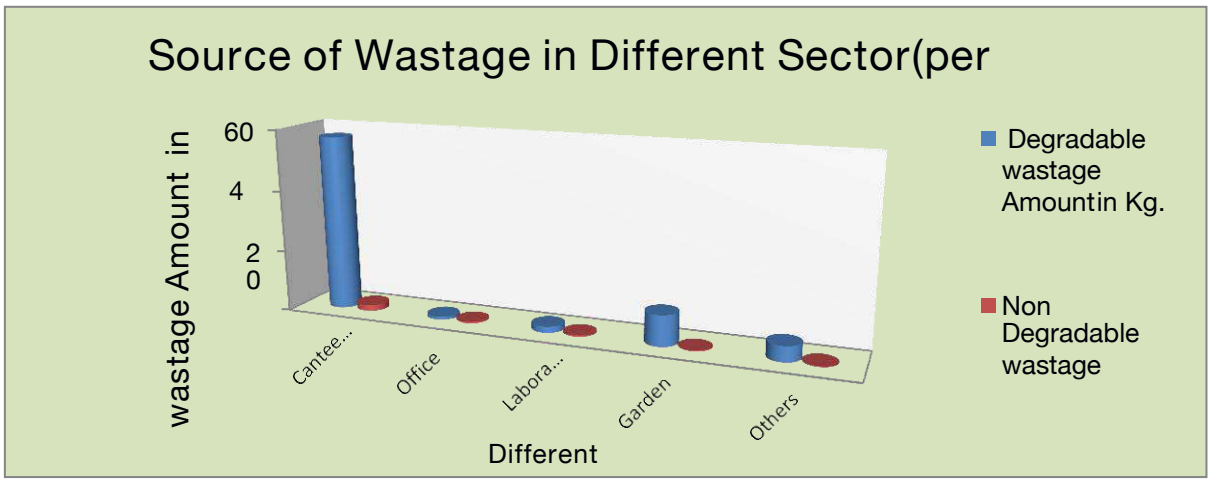


Fig. 9 Source and Amount of Wastage in Different Sector (per day in Kg)

The following are being emphasized during audit of waste management:

a) Name of the waste

b) Category of waste

c) Quantity of waste

d) Hazardous effect of the waste

e) Institutional action and mechanism for waste management Compliance audit of waste issues:

At the present stage the institute is capable in managing their waste. They are complying with the essential requirements of waste management although

suggestions are given for future improvements.

Performance Audit of Waste Issues:

No critical audit issue is there with respect to the waste management.

Implemented wastes management		
Sl.no	Factors/Indicators	Weightage
1	Plastic and Polythene free	M
2	Re–use of papers	H
3	Hazardous effect waste management	M

4	Removal of E–Wastes	M
5	Organic & food waste	M
6	Others solid wastes	M

* H denote– Taken management policy level above 60%

** M denote– Taken management policy level 40%–60%

*** L denote–Taken management policy level below 40%

Use of Separate Dustbin for waste

Auditing for Biodiversity & Green Campus Management:

Unfortunately, biodiversity is facing serious threats from habitat loss, pollution, over consumption and invasive species. Species are disappearing at an alarming rate and each loss affects nature's delicate balance and our quality of life. In one year, a single mature tree will absorb up to 48 pounds of Carbon dioxide from the atmosphere, and release it as Oxygen. The amount of oxygen that a single tree produces is enough to provide one day's supply of oxygen for people. So while you are busy studying and working on earning those good grades, all the trees on campus are also working hard to make the air cleaner for us. Trees on our campus impact our mental health as well; studies have shown that trees greatly reduce stress, which a huge deal is considering many students are under some amount of stress.

About 12.08% area is under greenery and biodiversity zone and 13.79% area is water body also wet land. Biodiversity includes the genetic variability and diversity of life forms such as plants, animals, microbes etc. living in a wide range of ecosystems. Flora and fauna of College campus in Mugberia College premises is rich.

Table 11 Area Coverage of the College Campus

Area Coverage of College Premises:	Area in Percentage
Building and Construction	40.86
Vegetation Cover	12.08
Playground and Fallow land	33.27
Water Bodies	13.79

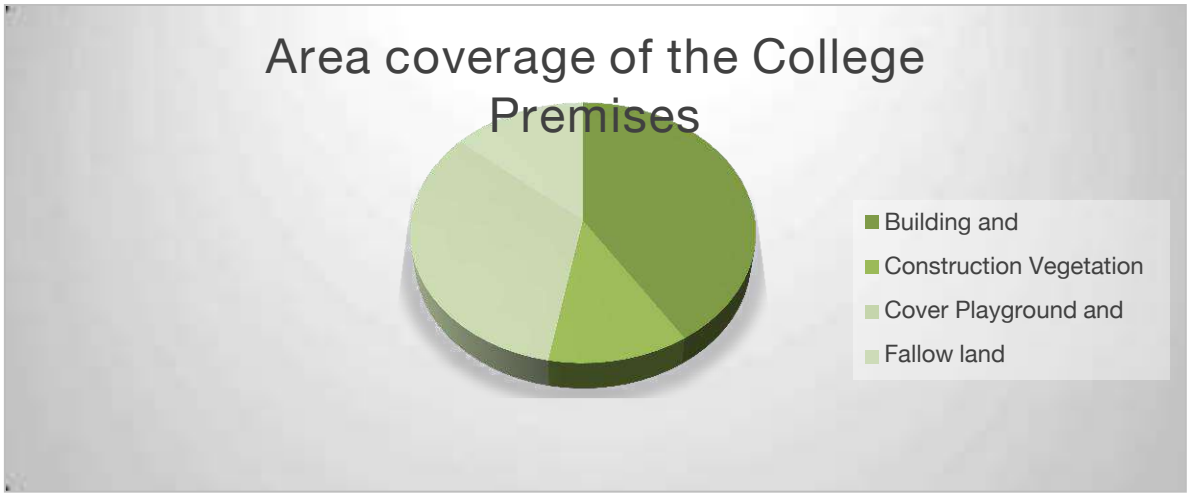


Fig. 10 Area coverage of the College Premises

Biodiversity Study

Plant diversity – The campus of Mugberia Gangadhar Mahavidyalaya is lashing green. There is a large pond in the centre of the college and a small in the boy's hostel. East side of the pond is a playground and other three sides are covered by different college buildings. East and south side of the playground is a large and dense (17-20 plant within 5m transect) plantation of Erica plam (*Dypsis lutescens*) found. It is reported that the seeds are sellable and college is earning rupees fifteen thousand per year regularly. There are 50 (approx.) Cuban royal plam (*Roystonea regia*) tree which are making an avenue on south and west side of the pond. There is a large banyan tree on north side of the pond but it is pruned. One medicinal plant garden is seen which needed restoration (Table -2). A small plantation of *Acacia auriculiformis* is found in front of Sailasuta

Students hostel (Boy's Hostel). There was a kitchen garden also. Details of plants are given in table -4. There are fruit gardens between boy's and girl's hostel (Bijoy Krisnha Girl's Hostel)

(Table -3). Sailaja Nanda Student's hostel (Bp.Ed. hostel) is another spot where two mango (*Mangifera indica*), one Neem (*Azadirachta indica*) and six coconut (*Cocos nucifera*) plants are available.

The plant diversity study has been done through quadrat method. Two sets of quadrats have been laid in the main campus. For this purpose a standard method has been followed i.e. 10m x 10m for trees, 5m x 5m for shrubs and 1m x 1m for herbs. Data of quadrats are given below (Quadrat – 1 and 2).

Quadrat - 1

Tree Quadrat (10m x 10m)

Sl. No.	Scientific name	GBH (in cm)	Height (in m)
1.	*Eucalyptus hybrid*	171	12
2.	*Eucalyptus hybrid*	224	14

Shrub quadrat (5m x 5m) - Nil

Herb quadrat (1m x 1m)

Sl. No.	Scientific name	Number of individuals
1.	*Cyanodon dactylon*	124
2.	*Cyperus kyllinga*	11
3.	*Andropogon aciculatus*	22

Quadrat - 2

Tree Quadrat (10m x 10m)

Sl. No.	Scientific name	GBH (in cm)	Height (in m)
1.	*Anthocephalus kadamba*	160	10
2.	*Anthocephalus kadamba*	105	9.5

Shrub quadrat (5m x 5m) - Nil

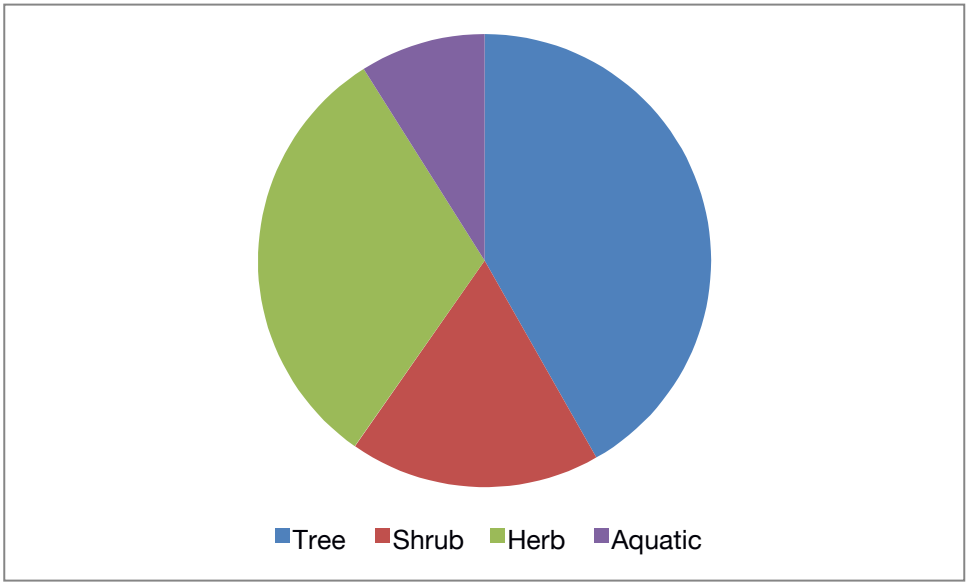
Sl. No.	Scientific name	Number of individuals
1.	*Nerium sp.*	1
2.	*Euphorbia pulcherima*	15
3.	*Asperagas racemosus*	

Herb quadrat (1m x 1m)

Sl. No.	Scientific name	Number of individuals
1.	*Cyanodon dactylon*	24
2.	*Desmodium gangeticum*	2
3.	*Andropogon aciculatus*	9
4.	*Digitaria sanguinales*	2

5.	*Oxalis corniculata*	6
6.	*Eclipta alba*	2
7.	*Desmodium gyrance*	3

It has been found from the study that there are approximately 28 tree species, 12 shrubs, 21 herbs and aquatic 6 species (Table-1 and Fig.-a). Beside this there are also 20 medicinal plants, 5 fruits



bearing and 7 kitchen garden plants. Medicinal plants are very important such as *Cymbopogon citrates, Hemidesmus indicus, Cissus quadrangularis* etc. (Fig,-b). From

Fig. – a: Plant composition of Mugberia Gangadhar Mahavidyalaya

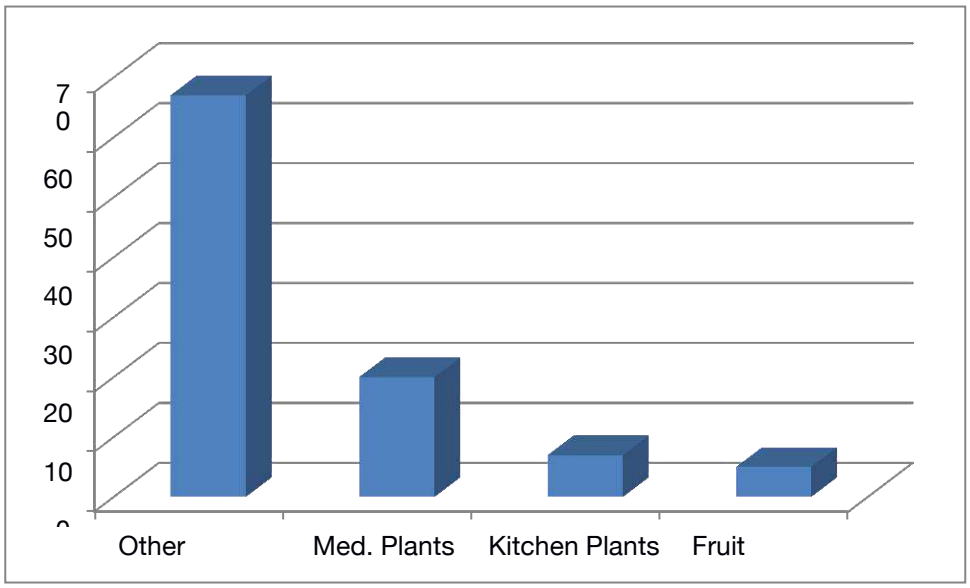


Fig.-b: Composition of different types of plants

quadrat analysis three girth class of trees are calculated (Table-5). From this data Carbon sequestration potential of trees have been calculated. It is found that from above ground biomass of trees, 9023.5 kg. of carbon has been stocked under quadrats.

List of plants in Mugberia Gangadhar Mahavidyalaya campus.

Tree

Sl. No.	Scientific Name	Local name	Family
1.	*Acacia auriculiformis*	Sonajhuri	Fabaceae
2.	*Acacia auriculiformis* A.Cunn.exBenth.	Sonajhuri	Fabaceae
3.	*Albizzia lebbeck* (L.) Benth.	Khiris	Fabaceae
4.	*Anthocephalus cadamba* (Roxb.) Bosser	Kadam	Rubiaceae
5.	*Azadirachta indica* A.Juss.	Neem	Meliaceae
6.	*Butea monosperma* (Lam.) Taub.	Palas	Fabaceae
7.	*Casuarinas equsetifolia*	Jhau	Casuarinaceae
8.	*Cocos nucifera* L.	Narkol	Arecaceae
9.	*Dalbergia sissoo*Roxb.	Sisso	Fabaceae
10.	*Dypsis lutescens*	Areca plam	Arecaceae
11.	*Eucalyptus hybrid*	Euc	Myrtaceae

12.	*Ficus benghalensis* L.	Bot	Moraceae
13.	*Lagerstroemia perviflora* .	Jarul	Lythraceae
14.	*Mangifera indica* L.	Amm	Anacardiaceae
15.	*Michelia champaca* (L.) Baill. ex Pierre	Champa	Magnoliaceae
16.	Mimosops elangi	Bakul	
17.	*Murrya koenigii*(L.)Sprengel	Kamini	Rutaceae
18.	*Nyctanthes arbor-tristis* L.	Seuli	Oleaceae
19.	*Peltophorum pterocarpum* (DC.) K.Heyne.	Radhachura	Fabaceae
20.	*Phoenix sylvestris* (L.)Roxb.	Khejur	Arecaceae
21.	*Polyalthea longifolia*Sonn.	Debdaru	Annonaceae
22.	*Psidium guajava L.*	Peyara	Myrtaceae
23.	*Roystonea regia*	Cuban royal plam	Arecaceae
24.	*Samania saman* F.Muell	Siris	Fabaceae
25.	*Saracca asoca* (Roxb.)Willd.	Asoke	Fabaceae
26.	*Swietenia macrophylla* King	Mahogini	Meliaceae
27.	*Swietenia mahagoni* (L.) Jacq.	Mahogini	Meliaceae
28.	*Wodyetia bifurcata*A.K.Irvine	Plam	Arecaceae

Shrub

Sl. No.	Scientific Name	Local name	Family
1.	*Asperagas racemosus*	Satamuli	Asperagaceae
2	*Canna indica* L.	Kalabati	Cannaceae
3	*Duranta erecta* L.	Duranta	Verbenaceae
4	*Epipremnum aureum*	Devils Ivy	Araceae
5	*Euphorbia pulcherima*		Euphorbiaceae
6	*Hibiscus rosa-sinensis* L.	Joba	Malvaceae
7	*Hyophorbe lagenicaulis* (L.H.Bailey) H.E. Moore	Bottle plam	Arecaceae
8	*Ixora* coccinea	Rangan	Rubiaceae
9	*Mucuna pruriens*	Alkhusi	Fabaceae
10	*Nerium oleander*	Karabi	Apocynaceae

11	*Rhapis excelsa* (Thunb.) A. Henry	Lady plam	Arecaceae
12	*Tinospora cordifolia*	Giloi	Menispermaceae

Herb

Sl. No.	Scientific Name	Family
1	*Achyranthuys aspera*	Amaranthaceae
2	*Andropogon aciculatus*	Poaceae
3	*Blumea lacera*	Asteraceae
4	*Cephalandra indica*	Cucurbitaceae
5	*Cleome viscosum*	Capparaceae
6	*Cyanodon dactylon*	Poaceae
7	*Cyperus kyllinga*	Cyperaceae
8	*Desmodium gangeticum*	Fabaceae
9	*Desmodium gyrance*	Fabaceae
10	*Desmodium triflorum*	Fabaceae
11	*Digitaria sanguinales*	Poaceae
12	*Eclipta alba*	Asteraceae
13	*Heliotropium indicum*	Boraginaceae
14	*Oldanladia corymbosa*	Rubiaceae
15	*Oxalis corniculata*	Oxalidaceae
16	*Phyllanthus amaru*	Euphorbiaceae
17	*Scoparia dulsis*	Plantaginaceae
18	*Triamphetta rhomboida*	Malvaceae
19	*Urena lobata*	Malvaceae
20	*Vernonia cineria*	Asteraceae
21	*Vitis trifolia*	Vitaceae

Aquatic plants

Sl. No.	Scientific Name	Family
1.	*Commelina diffusa*	Commelinaceae
2.	*Enhydra fuctuens*	Asteraceae
3.	*Ipomoea aquatica*	Convolvulaceae
4.	*Jussiaea repens*	Onagraceae
5.	*Nymphea alba*	Nympheaceae
6.	*Salvinia sp.*	Salviniaceae

Gymnosperm

Sl.no.	Scientific Name	Family
1.	*Cycas* sp.	Cycadaceae

List of Medicinal Plants Present in Campus

Sl. No.	Scientific Name	Local name	Family
1	*Acalypha indica*	Muktijhuri	Euphorbiaceae
2	*Aloe vera*	Ghritakumari	Liliaceae
3	*Andrographis paniculata*	Kalmegh.	Acanthaceae
4	*Asparagus racemosus*	Satamul	Asparagaceae
5	*Bryophyllum pinnatum*	Patharkuchi	Crassulaceae
6	*Catharanthus roseus*	Nayantara	Apocyanaceae
7	*Cissus quadrangularis*	Harjora	Vitaceae
8	*Clitoria turnatea*	Aparajita	Papilionaceae (Fabaceae)
9	*Coleus amboinicus*	Mexican mint	Labiate (Lamiaceae
10	*Crotalaria pallid*	Atasi,	Papilionaceae (Fabaceae)
11	*Cymbopogon citrates*	Citronella	Poaceae
12	***Datura stramonium.***	Dhutra	Solanaceae
13	*Eclipta prostrata*	Keshutra	Asteraceae

14	*Hemidesmus indicus*	Anantamul	Asclepiadaceae
15	*Justicia adhatoda*	Basak	*Acanthaceae*
16	*Ocimum gratissimum*	Ramtulsi	Labiatae (Lamiaceae)
17	*Ocimum tenuiflorum*	Krishna tulsi	Labiatae (Lamiaceae)
18	*Ricinus communis* Linn.	Castor	Euphorbiaceae
19	*Tinospora cordifolia*	Gulancha	Menispermaceae
20	*Vitex negundo*	Nishinda	Verbinaceae

List of fruits plants present in campus

Sl. No.	**Scientific name**	Common name	Family
1	*Aegle marmelos*	Bel	Rutaceae
2	*Citrus decumana*.	Batabilabu	Rutaceae
3	*Eugenia jambolana*	Kalojam	Myrtaceae
4	*Psidium guava*	Piara	Myrtaceae
5	*Mangifera indica*	Aam	Anarcardiaceae

Plants of kitchen garden

Sl. No.	**Scientific name**	**Local name**	**Family**
1.	*Lycopersicum esculantum*	Tomato	Solanceae
2.	*Solanum melongena*	Begun	Solanaceae
3.	*Carica papaya*	Papaya	Caricaceae
4	*Zea mays*	Maize	Poaceae
5	*Alocasia esculanta*	Cochu	Araceae
6	*Basella rubra*	Pui	Basellaceae
7	*Capsicum annuum*	Lanka	Solanaceae

Carbon sequestration potential of trees of college campus

Sl. No.	GBH Class (in cm)	No. of Trees	Biomass (in Kg.)	Carbon stock (in Kg.)
1	100-150	1	1964	982
2	150-200	2	8442	4221
3	200-250	1	7641	3820.5

Faunal Diversity:

Mugberia Gangadhar Mahavidyalaya campus is a habitat of a number of wide varieties of fauna. Different types of insects including moths, butterfly, wasp, bees, amphibian, reptilian, birds and mammals are found here. There are one big size and one small size (in hostel) pond in the college campus. This pond is herbaring different indigenous fish species. Following tables are given an account on fauna. Members of different phylum are given in figure (Fig.-3).

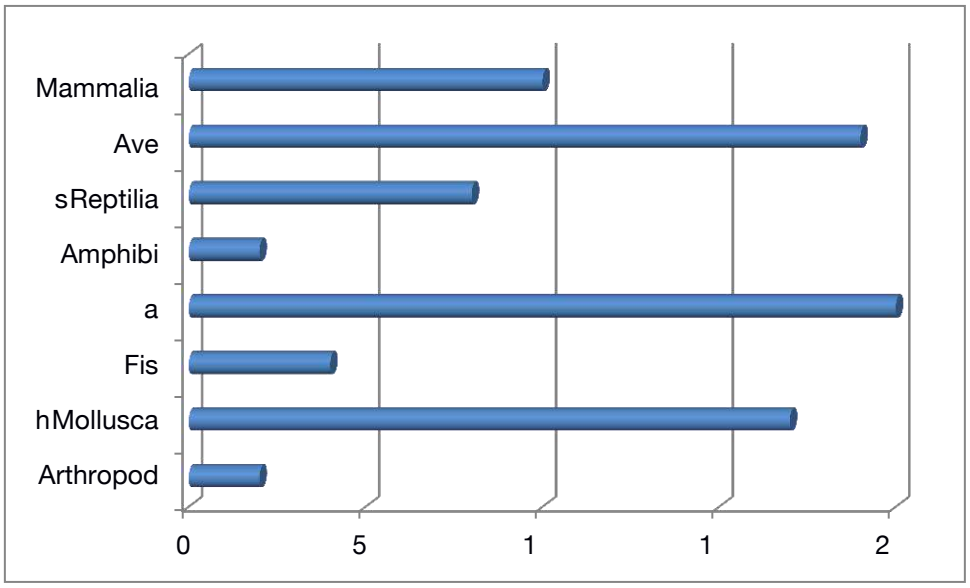


Fig.-c: Comparison between different animal members of different phylum found in the campus

Phylum: Annelida

Sl. No.	Scientific name	Local name
1.	*Hirudinaria* sp	Joke
2.	*Pheretima sp.*	Kecho

Phylum: Arthropoda

Sl. No.	Scientific name	Local name
1	*Anopheles* sp	Anopilis masa
2	*Apis* sp	Moumachi
3	*Buthus* sp	Kakrabicha
4	*Copris lunaris*	Gubrepoka
5	*Galleria* sp	Moth
6	*Julus* sp	Kenno
7	*Lampyri snoctiluca*	Jonaki
8	*Muska domestica*	Machi
9	*Nephila* sp	Makarsa
10	*Odontotermes* sp	Wepoka
11	*Oecophyllas maragdina*	Lalpipra
12	*Orthetrum* sp	Pharing
13	*Papilio* sp	Prajapati
14	*Periplaneta americana*	Arsola
15	*Schistocera gregaria*	Pangapal
16	*Scolopendra* sp	Tetulbicha
17	*Vespa orientalis*	Vimrul

Phylum: Mollusca

Sl. No.	Scientific name	Local name
1	*Acatina fulica*	Sthal samuk
2	*Bellamya bengalensis*	Gugli
3	*Lamellidens marginalis*	Jhinuk
4	*Pila globosa*	Jal samuk

Fresh water fishes

Sl. No.	Scientific name	Local name
1	*Amblypharyngo donmola*	Mourlamach
2	*Anabas atestudineus*	Koi mach
3	*Catla catla*	Katlamach
4	*Chanda* sp	Chandamach
5	*Channa gachua*	Chang mach
6	*Channa punctatus*	Latamach
7	*Channa striata*	Sholmach
8	*Cirrhinus mrigala*	Mrigelmach
9	*Clarias batrachus*	Magurmach
10	*Colisa* sp	Kholsamach
11	*Esomus danricus*	Dhariamach
12	*Heteropneus tesfossilis*	Singimach
13	*Labeo bata*	Bata mach
14	*Labeo calbasu*	Kalbose
15	*Labeo rohita*	Ruimach
16	*Mastacem belussp*	Pankalmach
17	*Mystus* sp	Tangra

18	*Notopterus notopterus*	Phaloimach
19	*Ompo kpabda*	Pabdamach
20	*Punti usticto*	Phutimach

Class : Amphibia

Sl. No.	Scientific name	Local name
1	*Duttaphrynusmelano stictus*	Kuno bang
2	*Rana tigrina*	Sona bang

Class: Reptilia

Sl. No.	Scientific name	Local name
1	*Ahaetullana sutas*	Loudaga sap
2	*Calottes versicolor*	Girgiti
3	*Daboia russelii*	Chandrabora sap
4	*Elachistodon westermanni*	Matiali sap
5	*Hemidactylus flaviviridis*	Tiktiki
6	*Ptyas mucosus*	Jamna sap
7	*Varanus* sp	Godi sap
8	*Xenochriphis piscator*	Jaldhora sap

Class : Aves

Sl. No.	Scientific name	Local name
1	*Acridotheres tristris*	Shalik
2	*Alcedo atthis*	Chotomachranga
3	*Amaurornis phooniurus*	Dahuk
4	*Ardeola grayii*	Bak
5	*Athene brama*	Kuturepancha
6	*Columba livia*	Paira
7	*Copsychuss aularis*	Doyel
8	*Corvus splendens*	Kak

9	*Dicrurous adsimilis*	Phinge
10	*Dinopium benga*	Kat thokra
11	*Eudynamys scolopacea*	Kokil
12	*Merops orientalis*	Baspati
13	*Orthoto mus*sp	Tuntuni
14	*Passer domesticus*	Charaipakhi
15	*Pisttacula* sp	Tia
16	*Pycnonotus* sp	Bulbul
17	*Streptopelia chinensis*	Gughu
18	*Turdoidesea udatus*	Satbhaya
19	*Tyto alba*	Lakhsmipancha

Class : Mammalia

Sl. No.	Scientific name	Local name
1	*Bandicota bengalensis*	Indur
2	*Felis chaus*	Katas
3	*Funam buluspennantii*	Katbirali
4	*Herpestes edwardsii*	Neul
5	*Musmus culus*	Nenhtiindur
6	*Pipistrellus tenuis*	Chamchika
7	*Prionailurus viverrinus*	Mechobiral
8	*Pteropus* sp	Badhur
9	*Suncus murinus*	Chucha
10	*Vulpes bengalensis*	Khaksial

Table–13 Green Coverage of the College Premises

Green Coverage of the College	Premises	Area in Percentage
Native and Natural Vegetation		27
Plantation		23
Agro–Plants		38
Medicinal Plants		12

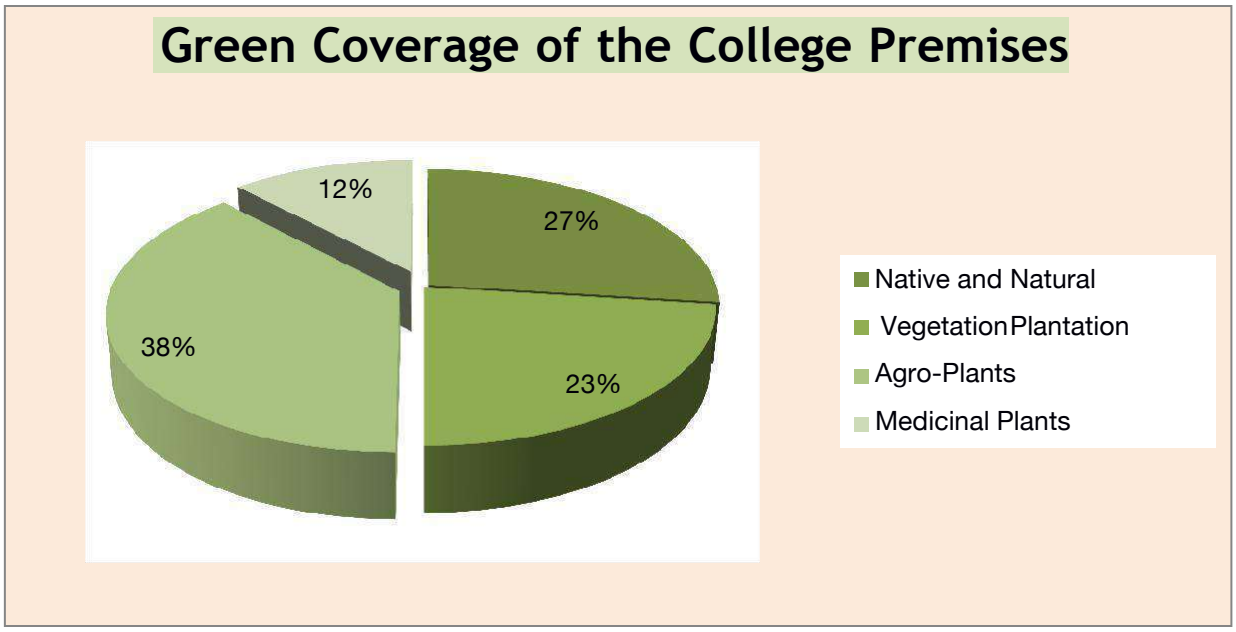


Fig. 11 Green Coverage of the College Premises

Table–14 The Avian fauna observed in the campus is enlisted below–

SL. NO.	COMMON NAME	BENGALI NAME	SCIENTIFIC NAME	IUCN STATUS

1	Red Whiskered Bulbul	Sipahi Bulbul	*Pycnonotusjocosus*	LC
2	Red Vented Bulbul	Bulbul	*Pycnonotuscafer*	LC
3	House Sparrow	ChotiCharai	*Passer domesticus*	LC
4	Eurasian	Par ghughu	*Streptopeliadecaocto*	LC

	Collared Dove			
5	Oriental Turtle Dove		*Streptopaliaorientalis*	
	Spotted Dove	Chhiteghughu	*Streptopeliachinensis*	DD
6	Rock Dove	Rock Pigeon	*Columba livia*	LC
	Black Drongo	Finga	*Dicrurusmacrocercus*	LC
7	Asian Pied Starling	GuyeSalik	*Sturnus contra*	LC
8	White–breasted Kingfisher	SandabukMachhranga	*Halcyon smyrnensis*	VU
9	Common Kingfisher	ChottoMachhranga	*Alcedoatthis*	LC
10	House Crow	Kak	*Corvussplendens*	LC
11	Jungle Babbler	Chhatare/Satbhai	*Argyastriatus*	LC
12	Black–headed Oriole	BeneBau	*Oriolusxanthornus*	LC
13	Eurasian Golden Oriole	SonaBau	*Oriolusoriolus*	LC
14	Common Myna	Salik	Acridotherestristis	LC
15	Blue Rock Pigeon	GolaPayra	*Columba liviadomestica*	
16	Common Hoopoe	Mohonchura	*Upupaepops*	LC
17	Asian Koel	Kokil	*Eudynamysscolopacea*	LC
18	Rose–ringed Parakeet	Tia	*Psittaculakrameri*	LC
19	Brown Shrike	Karkata	*Laniuscristatus*	LC
20	Indian Treepie	HandiChacha	*Dendrocittavagabunda*	LC

Table–15 The Mammalian checklist is as follows–

SL. NO	COMMONNAME	BENGALINAME	SCIENTIFICNAME	IUCN RED LIST
1	FivestripedPalm Squirrel	Kath Berali	*Funambuluspennantii*	Least Concern(LC)
2	Free–rangingCat	Biral	*Felisdomesticus*	DD
3	Free–rangingDog	Kukur	*Canisfamiliaris*	DD
4	AsianPalmCivet	Bham	*Paradoxurushermaphroditus*	LC

5	FieldRat	MetholIndur	*Bandicotabengalensis*	LC
6	GreyMongoose	Beji	*Herpestesedwardsii*	LC
7	HouseMouse	NengtiIndur	*Musmusculus*	LC
8	Small Indian Civet	Kotas	*Viverriculaindica*	LC
9	Bengal Fox	Fox	*Vulpesbengalensis*	LC
10	Indian gray mongoose	Neul	*Herpestesedwardsii*	LC

*NE: Not evaluated; LC: Least concerned; NA: Not accessed

Implemented Biodiversity & Green Management		
Sl. No	Factors/ Indicators	Weightage
1	Plants Diversity	M
2	Birds and Insects	M
3	Mammals	M
4	Fishes and Amphibian	H
5	Fungus & Organisms	M

* H denote– Taken management policy level above 60%

** M denote– Taken management policy level 40%–60%

*** L denote–Taken management policy level below 40%

Reviews of Documents and Records:

Documents such as admission registers, registers of Engineering and water charge remittance, furniture register, laboratory equipment registers, purchase register, audited statements, and office registers were examined and data were collected.

College calendars, college magazines, annual report of the college and NAAC self–assessment reports, UGC report etc. were also verified as part of data collection.

Plant Diversity Counting and Species

Review of Policies:

Discussions were made with the College management regarding their policies on environmental management. Future plans of the College were also discussed. The management would formulate a revised environment /green policy for the college in the light of green auditing. The purpose of the green audit was to ensure that the practices followed in the campus are to be in accordance with the Green Policy adopted by the institution.

Interviews:

In order to college information for green auditing different audit groups which are IQAC Cell, Dept. HOD, Green club members, Teaching and non–teaching staff, students, Students Union, parents and other stakeholders of the College. Discussions were also made with the office bearers to clarify doubts regarding certain points.

4.0 POST AUDIT STAGE :

T E gs are
s le s, on a
s , ensure

that they are carried out according to systems requirements and in the correct manner.

Although Green & Environmental audits are carried out using policies, procedures, documented systems and objectives as a test, there is always an element of subjectivity in an audit. Each of the three components is crucial in ensuring that the organization's environmental performance meets the goals set in its green policy. The individual functioning and the success of integration will all play a role in the degree of success or failure of the organization's environmental performance.

lity

4.2 Results and Findings:

a) Water –

Water Audit and Assessment (Mugberia College**):**

Sl. No.	Object and Parameter	Observation and Finding
1	Source of water	➢ Underground(40000 liter) ➢ Surface water bodies(0.8 acre)
2	Capacity of water storage (Daily)	➢ Reservoir and Overhead tanks– 35000 liter ➢ Lift of Surface water – 5500ltr ➢ Total amount of used & misused water– 40500ltr ➢ Total misuse of water–500 ltr
3	Amount of used water per day	40000liter
4	Misuse of water in daily	Leakage, overflow and Misuse– 500 liter
5	Maximum used of water per day – Clinging and Gardening purpose	7.41% (3000 liter)
6	Amount of water for used per day– Drinking Purpose	10.76 % (4354 liter)
7	Number of Rain Water Harvesting unit	One unit
8	Installation of water reuse units	In the processing

9	pH level of drinking water	6.6–6.9
10	TDS level of drinking water	130ppm –150 ppm
11	Use of surface water	5500 ltr

b. Energy–

❖ Electricity Consumption – 56,825 Unit, Rs.– 5,68,250/– Per Year

a) Conventional energy– 45,305 Unit

b) Nonconventional energy– 11,520 Unit Less–Rs. 115200/ .Rs. for Paid– Rs.–4,53,050 /

- Fossil fuel consumption per Year:
  a. Number of Gas cylinders used for cooking purpose(Hostels& Canteen) – 16 PC
  b. Number of Gas cylinders used in Chemistry Laboratory – 07 PC
  c. Diesel used for green Generator– 90 liter
- Number of Green Generators – 03
- Cost of generator fuel – Rs. 1275 /month

Energy Audit and Assessment (Mugberia College**)**

Sl. No.	Object and Parameter	Observation and Finding
1	Source of energy (conventional)	79.73 %
2	Source of energy (Non–conventional)	Solar– 20.27 %(17 Kwh Grid)
3	Total consumption of Electric Power	56825 unit
4	The maximum use of conventional Electric Power	45305 unit
5	Maximum energy consumption in the purpose	Light and fans – 277.76 Unit/Day
6	Energy Consumption in Computer & Lab.	201 unit /Day
7	No. of LPG Gas cylinder for coking purpose	16PC/ Year
8	No. of LPG Gas cylinder used in Laboratories	07pc/Year
9	Amount of diesel used for green generator	90 liter/Year
10	No. of AC and use of energy	132 Kwh/Day

Energy consumption for different purpose, 2021–22		
1.	Lights & Fans	24832.52 unit
2.	Air Condition	11796.87 unit

3. Lifting of water(HP pump)	4048.92 unit
4. Computer & Dept. Lab	17956.7 unit
5. Others(CCTV,TV, water cooler & others)	1789.99 unit

c. Wastes–

- Total Students – 2639 persons
- Other Stakeholders – 156 persons

- Total Stakeholders – 27 95 persons
- Departments — 27
- Student Hostels & Staff Quarters – 07
- Canteen– 02

D. Wastes Management Policy:

- Biological Wastes treatment by Vermi–compost system .
- E–wastes– computers, electrical and electronic parts — Disposal by selling
- Plastic waste– disposal by selling
- Solid wastes — Damaged furniture, Iron & Metal scraps– Disposal by Selling
- Food wastes — Waste Rice, Vegetable, Paper plates– Disposal in Earthen pit .
- Chemical wastes — Laboratory waste — Not proper treatment
- Waste water — washing, urinals, and bathrooms in soak pits.
- Glass waste — Broken glass wares from the labs by selling.
- Napkin & Clothes incinerators– Disposal in earthen pit

Waste Audit and Assessment

Sl. No.	Object and Parameter	Observation and Finding
1	Degradable waste	75 (Kg/Day)
2	Non degradable	3.5 (Kg/Day)

3	Source of waste (Organic)	Hostels, Canteen and Garden
4	Source of waste (Chemical Waste)	Zoology Lab., Chemistry Lab.,Botany Lab. and Nutrition
5	Plastic waste management	Use of separate dustbin and Established of different waste unit

d) Green Campus–

Green cover of the campus– 0.7 acre area

Free space including Playground– 1.93 acre area

Crops cultivated in the campus:

Banana, Tapioca, Chilly, Cabbage, Tomato, Spinach, Brinjal, Cauliflower, Ladies finger, Pea and different seasons flowers are produced during different seasons in Hostels and Quarters Kitchen garden and College premises area.

Table 17 Biodiversity and Green Coverage

Sl. No.	Object and Parameter	Observation and Finding
1	Vegetation coverage area	12.08 %(0.7 Acre)
2	Types of green coverage	➢ Native and Natural Vegetation– 27% ➢ Medicinal plants– 12% ➢ Agro–plants– 38 %
3	Different types of Animal	➢ Mammals –Squirrel, Rat, Free ranging Cat, Free ranging Dog, Field Rat, Bengal Fox etc. ➢ Amphibian–Snake, Frogs ➢ Birds– Crow, Common Moyna, Pigeon, etc. ➢ Insects– Ants, Butterfly, Spider etc.

4	Biodiversity and Green Management Programme	➢ Awareness program arrange by– Dept. of Zoology and Dept. of Botany among the students and Stuff through the year ➢ Observation and celebration of environmental days ➢ Maintain the ponds ecosystem & fishes cultivation ➢ Installation of different trees and plants naming plate

Medicinal plants garden and Vermi- compost unit

Table–18 Green Coverage of the College Premises

Aerial views and Green coverage area

Green Coverage of the College	**Premises**	**Area in Percentage**
Native and Natural Vegetation		27
Plantation		23
Agro–Plants		38
Medicinal Plants		12

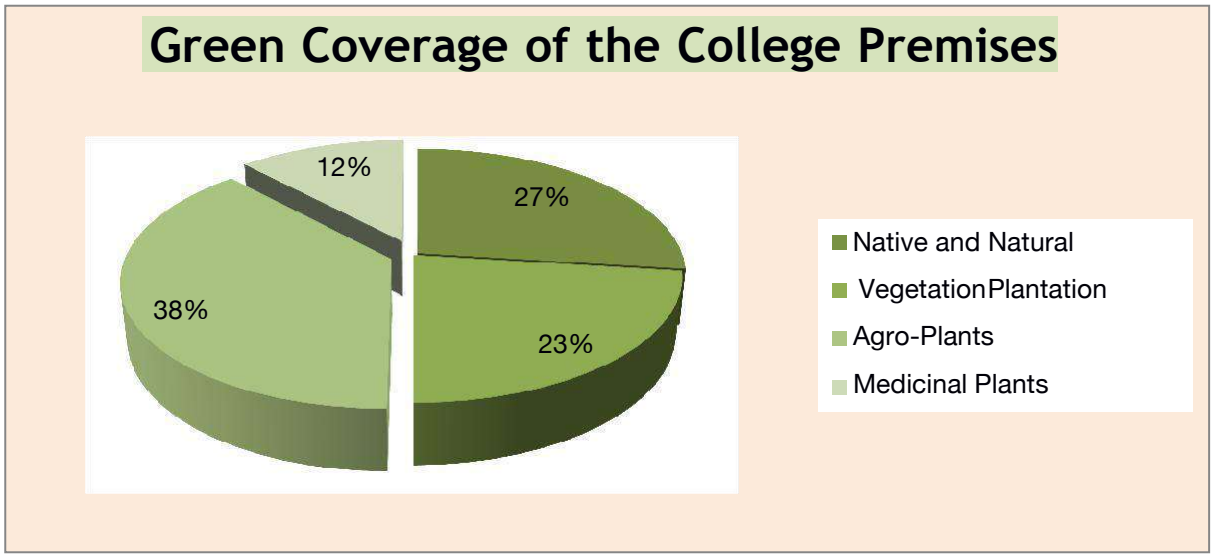


Fig.–12 Green Coverage of the College Premises

Campus farming

Organic vegetable cultivation as interim crop is another plan to be materialized soon. The department of Zoology has been consistently undertaking Fishes cultivation , and Botany department has been planting of flowers and ornaments trees in winter .

e) Carbon Footprint–

- Number of Students & Staff using cycles – 550
- Number of persons using cars – 15
- Number of persons uses two wheelers – 95
- Number of students uses Buses –
- Number of persons using other transportations – 1600
- Number of visitors per day – 15
- Number of Students staying in the hostel –260
- Average distance travelled by stake holders – 20 kms /day
- Expenditure for transportation per person per day – Rs.30 /–

SUMMARY:

I. The environmental awareness initiatives are adequate.
II. The College campus is plastic free and maintained the outdoor air quality.
III. The installation of solar panels, organic vegetable cultivation, Vermi composting practices are adequate.
IV. There is NSS team of the College towards its environmental performance for Community development.
V. Indoor air quality of the laboratories is very uncomfortable and inhospitable.

VI. Use of notice boards and signs are inadequate to reduce over exploitation of natural resources.

VII. Programs on green initiatives have to be increased. Campus is declared "Clean Campus"

VIII. Fully carbon foot prints and wastes free zone actions should be taken to maintain this.

IX. Rain water harvesting systems, solar power generation, Bio Gas, Re-use of water environmental education programs have to be fully explored.

Implemented Air Quality management		
Sl No	**Indicator**	**Weightage**
1	Carbon & Smoke free	H
2	Exhaust fans &Ventilation	M
3	Emission of GHGs	L
4	Indoor Plants	L

*H denote– Taken management policy level above 60%

** M denote– Taken management policy level 40%–60%

*** L denote–Taken management policy level below 40%

Major Audit Observations		
Sl. No	**Sectors/Indicators**	weightage
1	Water efficiency Audit	H
2	Energy efficiency Audit	M
3	Air Quality & Carbon foot print Audit	H
4	Wastes Audit	M
5	Green & Biodiversity Audit	H

*H denote– Taken management policy level above 60%

** M denote– Taken management policy level 40%–60%

*** L denote–Taken management policy level below 40%

Environmental Education:

The following environmental education program may be implemented in the College before the next green and environmental auditing:–

- Training programs in solid waste management, liquid waste management, setting up of medicinal plant nursery, water management, vegetable cultivation, tree planting, energy management, landscape management, and rain water harvesting and water re–use methods.
- Increase the number of display boards on environmental awareness such as – save water, save electricity, no wastage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.
- Activate the nature or green clubs
- Set up Organic vegetable garden, Honey farm, Mushrooms, Indigenous fish farm etc. for providing proper training to the students.
- Conduct exhibition of recyclable waste products
- Implement chemical treatment system for waste water from the Laboratories.

Observation of Vermi-compost Production Unit

Campus

4.7

Common Recommendations

- ✓ Establish water, waste and energy management systems
- ✓ Establish a 'Nature Club' for Resources and Green campus management (it is there)
- ✓ Maintain of Indoor air quality
- ✓ Establish a solar pump house or solar submersible pump
- ✓ Adopt an environmental policy for the college
- ✓ Establish a purchase policy for environmental friendly materials
- ✓ Introduce UGC Environmental Science course to all students
- ✓ Conduct more seminars and group discussions on environmental education
- ✓ Students and staff can be permitted to solve local environmental problems
- ✓ Renovation of cooking system in the canteen to save gas and wooden fuel

4.8 Criteria Wise Recommendations

Water Audit

- Remove damaged taps and install sensitive taps is possible.
- Drip irrigation for gardens and micro irrigation technology can be initiated.
- Establish the re-use water management methods.
- Establish rain water harvesting systems for each building and each campus.
- Establish the more water reuse unit in the Hostel & staff quarter's area.
- Establish water treatment systems.
- Awareness programs on water conservation to be conducted.
-

Energy Audit

- ✓ Employment of more solar panels and other renewable energy sources.
- ✓ Conduct more save energy awareness programs for students and staff.
- ✓ Replace computers and TVs with LED monitors.
- ✓ More energy efficient fans, tubes and bulb should be replaced.
- ✓ Automatic power switch off systems may be introduced.

Waste Audit

- ❖ Establish a Regular functional bio gas plant.
- ❖ A model solid waste treatment system to be established.
- ❖ Practice of waste segregation to be initiated.
- ❖ Establish of a unit for chemical liquid wastes and Hazardous waste management
- ❖ A model Vermi composting plant to be set up in the Hostels, canteen and Quarters of college campus.
- ❖ Establish an e-waste management unit

Green Campus Audit

- ✓ All trees in the campus should be named scientifically.
- ✓ Create more space for planting in vacant land.
- ✓ Develop the Herbal and medicinal plants garden for large area

- ✓ Establish a butterfly park.
- ✓ Establish an Orchid ex–situ zone .
- ✓ Develop the Fruits trees area for Birds conservation
- ✓ Grow potted indoor plants at verandah, class rooms and Laboratories.
- ✓ Create automatic drip irrigation system during summer holidays.
- ✓ Not just celebrating environment day but making it a daily habit.
- ✓ Providing funds to nature club for making campus more green
- ✓ Encouraging students not just through words, but through action for making the campus green

- ✓ Conducting competitions among departments for making students more interested in making the campus green.

Carbon footprint Audit

- ❖ Establish a system of carpooling among the staff and visitors to reduce the number of four wheelers coming to the college.
- ❖ Establish the indoor plants in office rooms ,computer lab and other laboratories to CO_2 management
- ❖ Providing more college bus services to the students and staff.
- ❖ Encourage students and staff to use cycles.
- ❖ Establish a more efficient cooking system to save gas.

Survey Team with Staff

(kindly insert atleast one picture with the green club members)

Executive Summary: 2021-22

Environmental Audit is a process of systematic, documented, periodic and objective evaluation of components of environmental diversity with the aim of safeguarding the environment and natural resources. The process starts with the systematic identification, quantification, recording, reporting and analysis of components of environmental diversity and is a means of assessing environmental performance (Welford, 2002). It aims to analyze environments within and outside of the concerned area, which will have an impact on the eco–friendly atmosphere. Green and Environmental audit is a valuable means for an institution to determine how and where they are using the most resources; the institution can then consider how to implement changes and take necessary management measures. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on their area of work. Environmental auditing and the implementation of mitigation measures is a win–win situation for the institution, the learners and the planet. It can also create health

consciousness and promote to holistic approaches to environmental management, awareness, values and ethics. Green and Environmental auditing promote financial savings through efficiency of resource usage. It gives an opportunity for the development of ownership, personal and social responsibility for the students and teachers. If self–enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self–enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the institute

evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

In Mugberia Gangadhar Mahavidyalaya, Purba Medinipur, W.B the audit process involved initial interviews with the teachers and staffs to clarify policies, activities, records and the cooperation in the implementation of mitigation measures. This was followed by collection of data through the questionnaires, review of records, observation and enquiry of practices and observable outcomes. In addition, the approach ensured that the management and staff are active participants in the Green and Environmental auditing process. The baseline data prepared for the St. Xavier's College, Kolkata will be a useful tool for campus greening, resource management, planning of future projects, and a document for implementation of sustainable development. Existing data will allow the College to compare its programmers and operations with those of peer institutions, identify areas in the need of improvement, and prioritize the implementation of future projects.

The area of the College premises is 5.8 acre out of which about 0.7 acre areas is covered by trees, plants etc. and 0.8 acre areas is covered by surface water bodies and wetland In the present audit report most of

the aspects are covered such as tree plantation, awareness about environment programmers, rain water harvesting and plastic free premises. The College has already taken some steps to protect the environment with help of teachers, staff and students under the guidance of Dr. Swapan Kumar Misra, Principal, Mugberia Gangadhar Mahavidyalaya, Purba Medinipur. We expect that the management will be committed to implement the green and environmental audit recommendations. We are happy to submit this green and environmental audit report to the Mugberia Gangadhar Mahavidyalaya, Purba Medinipur,W.B.

Gren and Healthy Environment

CONSULTRAIN MANAGEMENT SERVICE
Lake Road, Kolkata, West Bengal, India

TROPICAL INSTITUTE OF EARTH AND ENVIRONMENTAL RESEARCH (TIEER)
Reg. No. S/1L/42578 of 2006-07
Office address: M-10, Bidhannagar, Medinipur-721101, W.B., India

(TIEER) MIDNAPUR ESTD - 2007

GREEN AND ENVIRONMENTAL AUDIT CERTIFICATE

Academic Year: 2021-2022

This is to certify that Mugberia Gangadhar Mahavidyalaya, Bhupati Nagar, Purba Medinipur, West Bengal has good and healthy eco-friendly environment created for saving Earth and Nature. Tropical Institute of Earth and Environmental Research associated with Consultrain Management Service are satisfied after successful completion of Green and Environmental Audit with moral support of Honorable Principal, IQAC Team, Staff and Students for academic year 2021-2022. This efforts taken by Faculty and Students towards environment and sustainable are highly appreciable and commendable.

(Dr. Binoy Kr. Chanda)
President, TIEER

(Dr. Pranab Sahoo)
Asst. Professor &
Secretary, TIEER

(Mrs. Sanchita Bhattacharya)
ISO-Auditor & CEO, CMS
Auditor for
ISO9001, ISO14001
& ISO50001

(Dr.Sudipta kr. Maiti)
Expert & Member TIEER
Expert
Tropical Institute of Earth
& Environmental Research

President
Secretary

MUGBERIA GANGADHAR MAHAVIDYALAYA

P.O.—BHUPATINAGAR, Dist.—PURBA MEDINIPUR, PIN.—721425, WEST BENGAL, INDIA
NAAC Re-Accredited B+Level Govt. aided College
CPE (Under UGC XII Plan) & NCTE Approved Institutions
DBT Star College Scheme Award Recipient
E-mail : mugberia_college@rediffmail.com // www.mugberiagangadharmahavidyalaya.ac.in

6.5.2. Quality assurance initiatives of the institution

DOCUMENTORY EVIDENCE FOR QUALITY AUDIT/ACCREDITATION RECOGNIZED BY STATE, NATIONAL OR INTERNATIONAL AGENCIES: Green Audit

THE GREEN AUDIT REPORT

MUGBERIA GANGADHAR MAHAVIDYALAYA

Academic session 2020-21

ACKNOWLEDGEMENT

Mugberia Gangadhar Mahavidyalaya conducts an internal audit for the campus environment whereby it aims to maintain the greenery and pollution-free environment. The initiative is still young and several other measures are still to be taken to ensure the concept of environmental sustainability.

The academic session of 2020- 2021 has seen a worldwide pandemic (which we are still fighting) that restricted our mobility which in turn had an impact on the green environment initiative of the campus. Due to the restriction and lockdown on the educational institutions, the managerial paperwork took some time. The field work of the audit had however been carried out sincerely before the pandemic stroked our country and report are submitted within the stipulated period. Sincere thanks to all for providing us necessary amenities and co-operation during the audit that helped in making the audit, a success.

THE AUDIT TEAM

1.	Dr. Prasenjit Ghosh	HOD History and Secretary, Teachers Council
2.	Dr. Bidhan Samanta	HOD Chemistry, Coordinator research cell
3.	Dr. Goutam Barman	Assistant Professor, Bengali
4.	Irani Banerji Chatterjee	HOD Geography, Coordinator Green Campus
5.	Kingshuk Karan	HOD Education
6.	Manas Khalua	HOD Botany
7.	Kousik Kr. Mondal	HOD Zoology
8.	Sougata Bera	Clerk and Secretary, Non Teaching Staff
9.	Subham Paria	General Secretary, Students Union

Audit Key Timeline

Field work completed	February 2020
Draft report completed and sent for management response	June 2020
Management (Principal) response received	August 2020
Final report completed	November 2020
Report presented to the Management	February 2021

TABLE OF CONTENTS

EXECUTIVE SUMMERY

1. Background:

   In accordance with the Green Campus Evaluation Plan, as suggested by the Internal Quality Assessment Cell (IQAC) of the college, Mugberia Gangadhar Mahavidyalaya planned for conducting a green audit of the college in August, 2017 and set up a timeline for submitting an audit report to the Governing Body of the institution for approval. The audit is internal but essentially transparent and critical. After the field work and other formalities, the first audit report was finally send for approval to the authority (principal and IQAC) in August 2018.

2. Present Report (2020-21):

   The present report making had however been a tough procedure due to the ongoing pandemic situation. The delay in publishing of the report had mainly been due to the health hazard of the audit team. The field works carried on inside the campus suffers no such delay as it was before this pandemic time. After much impediment, finally the audit report was published on March 2021 (that was supposed to be published within august).

3. The purpose:

   The purpose of the audit was to make sure that the practices followed in the campus are healthy and environment friendly. With this in mind, the specific objectives of the audit were to evaluate the degree to which the Departments are in compliance with the applicable regulations, policies and standards and to ensure that the development of the college aims at sustainable development and green campus.

The methodology used included physical inspection of the campus and review of the relevant documentation.

STATEMENT OF ASSURANCE

This audit is been conducted for the fourth time in the college. The audit procedure tried to meet the terms of International Standards of Internal Auditing.

In our decision, sufficient and appropriate audit procedures were completed and evidence gathered to support the precision of the conclusions reached and contained in this report. The conclusions are based on a comparison of the situations as they existed at the time of the audit.

SUMMERY OF FINDINGS

The main findings of the audit show that, in general, all the departments and students are aware about the need for environmental protection at a general level. The location of the campus at the rural environment had helped in empowering the students about the need of a sustainable campus. Maintenance of a garden, Vermicomposting, plantation of trees, maintenance of the water body, proper waste management measures, all these practices are followed inside the campus that contributed to the green audit report in a positive way.

However, on detailed review, it was observed that though the college had been implementing the Green Campus Policy for the last few years, some areas still need some deliberations to ensure sustainability. In addition, certain processes need to be implemented that could benefit from further review in order to improve their efficiency, fairness and consistency.

OBJECTIVE AND SCOPE

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyze environmental practices within and outside (not in our purview) the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Later on, it is implemented as a measure to enhance a healthy environment to almost all the organizations. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Green audit is assigned to the criteria 7 of NAAC, National Assessment and Accreditation Council which is a self governing organization of India which declares the institutions as Grade A, B or C according to the scores assigned during the accreditation.

The present Audit is conducted in view of assessing all necessary environmental components of Mugberia Gangadhar Mahavidyalaya, a college under the affiliation of Vidyasagar University, West Bengal.

ABOUT THE COLLEGE

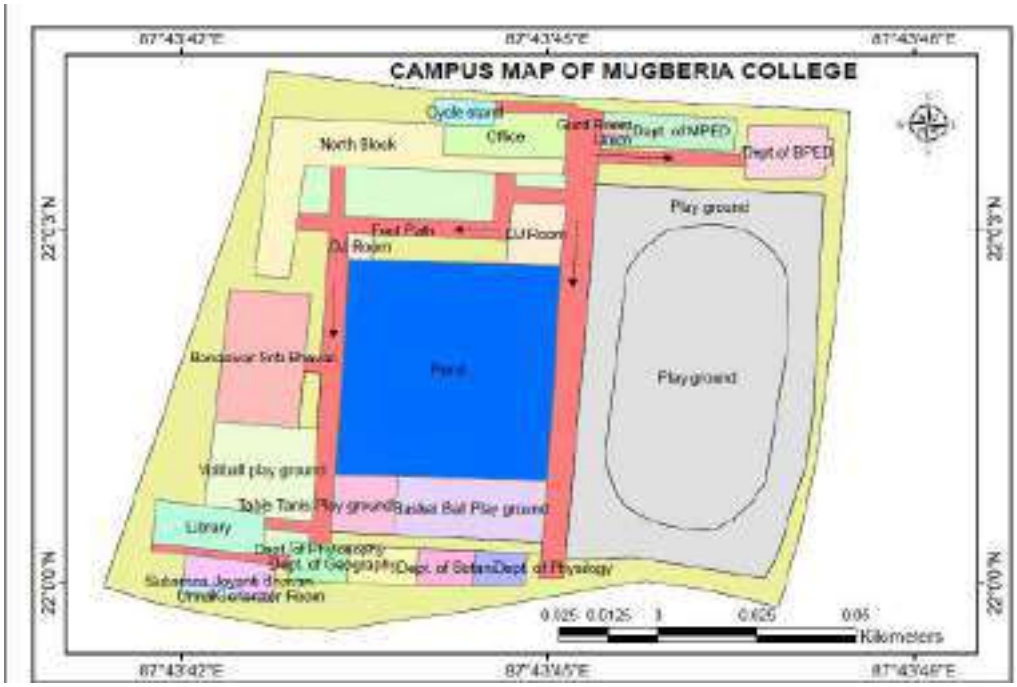
Mugberia Gangadhar Mahavidyalaya was established on 2nd of July, 1964 as a co-education college by a society of the same name in a village in Contai Subdivision of Purba Medinipur District (Erstwhile Midnapore District) after the name of Medinipur pride- Late Raisaheb Gangadhar Nanda - a great lover and patron of education. The college is situated in a culturally rich locale, and it is the only college in the vast area of Bhagwanpur-II block. It was founded with the help of the donations collected from the local people with the aim to serve the poor inhabitants of the area who were unable to send their wards to distant places for higher education. Gradually the college gained eminence, not only from Mugberia but also from faraway places.

Mugberia Gangadhar Mahavidyalaya, Bhupatinagar, Purba Medinipur, is a NAAC B+ Grade college (2019 assessment) and 50 years old college carrying out four streams of academic disciplines (Arts, Commerce, Science and Physical Education) along with several certificate courses. The college also has a Hotel Management discourse. This is a government aided UGC-approved and NCTE recognized college affiliated by the Vidyasagar University. The college is situated on a beautiful campus of 4.59 acres inside and 1.2 acres outside the college. The college building is located in a rural backdrop amidst lush green surroundings. The college has7 academic buildings and 3 hostel buildings.

The college has an intention to adopt the ‘Green Campus’ system for environmental conservation and sustainability with prominent emphasis on reduction of CO_2 emission, energy and water usage. The college targets at creating an environmentally literate campus where students can learn the idea of protection of environment and stay healthy. The college administration is still working on the several facets of ‘Green Campus’ including Water Conservation, Tree Plantation, Waste Management, Paperless Work, carbon footprints and Alternative Energy.

THE COLLEGE:

	ATTRIBUTES	VARIABLES
COLLEGE AREA	CAMPUS AREA	4acre 59 decimal
	BUILT UP AREA	2acre 37 decimal
POPULATION	STUDENTS	2339
	TEACHERS	104
	NON TEACHING STAFFS	37



TOTAL CAMPUS AREA:
199940SQ FT

AUDIT GOALS OF THE COLLEGE

The college, with the advice of the Internal Quality Assessment Cell (IQAC) has set up an environmental quality assessment body (GREEN CAMPUS) that aimed at performing an internal green audit of the institution. The main objectives of the audit are:

- More efficient resource management
- To provide basis for improved sustainability
- To create a green campus
- To enable waste management through reduction of waste generation, solid- waste and water recycling
- Recognize the cost saving methods through waste minimizing and managing
- Point out the prevailing and forthcoming complications
- Impart environmental education through systematic environmental management approach and Benchmarking for environmental protection
- Financial savings through a reduction in resource use
- Enhancement of college profile

METHODOLOGY

The Green Audit taken up by the Mugberia Gangadhar Mahavidyalaya had been divided into three stages:

The Pre Audit Stage:

In the pre-audit stage, meetings provide an opportunity to support the capacity and objectives of the audit and enable discussions on the feasibility associated with the audit. The meeting provides the first opportunity to meet the audit and deal with several practical knowledge and concerns. The meeting provided the chance to gather information that the audit team can study before arriving on the site. The audit procedure and audit plan was handed over at this meeting and discussed in advance of the audit itself. In Mugberia Gangadhar Mahavidyalaya, the planning of audit processes was discussed in the pre-audit meeting. Audit team was also selected in this meeting with the help of staff and the college management. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself.

The Management of the college has shown the commitment towards the green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environment friendly such as awareness programs on the environment, campus farming, planting more trees on the campus, etc., after the green auditing. The management of the college was willing to formulate policies based on green auditing report

The Audit Stage:

The Audit Stage encompasses of the team selection and the field works performed. Looking after the unique structure, location and ambiance of the

college, the Green Audit Team focused on Material Issues pertaining to college which have the highest influence on the Green Attributes of the College. The Audit stage also focused on the Methodology adopted. Checklist approach is adopted for transparent evaluation of the topics and increase readability for independent reader.

The Post Audit Stage:

The post-audit stage ensures formulation of Draft findings and sent to management response. Since the audit is done internally, it was important to ensure management approval for the draft. After getting draft approval, the audit team went for final report formulation.

AUDIT FRAMEWORK AND DETAILED FINDINGS

The following audit framework is used for conducting Green Audit in 2020-21. The framework also lists the findings and observations for every criterion.

Control objective	Control(s)	Audit Observation
WATER MANAGEMENT	Repair sources of water leakage, such as dripping taps.	Regular checking and maintenance of pipelines are done to control water wastage.
	Minimize wastage of water and use of electricity during water filtration process, if used, such as Aquaguard filter.	Yes, the college has aquaguard filters installed in all departments.
	Use an efficient and hygienic water storage mechanism to minimize the loss of water during storage	The college has a pond and reservoir to ensure emergency water use other than the submersible pump.
	Encourage to decrease excess water usage.	Though water is used nominal in the college, but to ensure a further minimal rate, placards and warnings are set up inside the college premise.
	Install water recycling mechanism.	Such mechanism is adopted which ensures that the rainwater gets deposited in the pond that is pumped through to ensure water in the toilets of the college buildings.
ENERGY MANAGEMENT	To look into preferable renewable sources of electricity purchase from an eco friendly company.	The college does not have any choice other than WBSEB for electric supply.
	To appreciate the purchase of electric devices and equipments those are eco friendly and sustainable.	The college also has 2 ecofriendly generators (Kirloskar Green) for the supply of emergency electricity to save our ecosystem.
	Look in to the possibility of on-site micro-generation of renewable electricity.	The college has set up two solar panels in the campus.

	Give preference to the most energy efficient and environmentally sound appliances available, this includes only using energy-saving light bulbs	The college is using LED lights as much as practicable.
	Encourage staff, students and conference guests to save energy through visible reminders, incentives and information to increase awareness. This particularly concerns turning off electrical appliances when not in use	Yes, the college has put several posters and reminder notes in classrooms and other relevant places to turn off electric appliances when not in use.
	Monitor and understand the importance of different sources of college energy consumption.	The college tries to put the main switch off when there is no need of electricity.
	Ensures that all electronic and electrical equipments, such as computers, are switched off when not in use and is generally configured in power saving mode when and if such option is available	It is practiced.
GREEN CAMPUS	Establish a Garden in the campus	College already has a well maintained garden.
	Encourage the faculties and students to plant trees in the garden.	The college celebrates "Bana Mahotsab", an annual tree plantation program in the campus where students and teachers plant trees in the campus in July.
	Minimize the use of fertilizers and pesticides in college grounds, opting for the use of vermi-compost produced on site wherever possible	Moderate amounts of bio-fertilizers are used in the college.
	Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. are biodegradable and non-toxic	Negligible amounts of washing liquids are used in the college and all the toilet cleaners are eco-friendly/ organic.
	Dispose the chemical waste generated from the laboratories in a scientific manner	Non toxic chemicals are included in Vidyasagar University practical curriculum. Most of the waste generated is water-soluble and ultimately disposed through normal sewage system, diluted largely so the biomagnifications are negligible.

WASTE MANAGEMENT	Compost, or cause to be composted, all organic waste, green waste and non-recycled collected from kitchens, gardens, offices and rooms.	The college has set up a vermi compost plant that ensures proper treatment of all organic wastes.
	Recycle or safely dispose of dry wastes, computers and electrical appliances.	All dry wastes (paper, metal, glass, other dry waste, e-waste, etc.)are separated in different bins in the college and resell to the local vendor
	Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated	The college has set up separate bins to ensure proper segregation and collection of the various wastes. The responsibility of recyclable waste is however still not taken up the college.
	Make specific arrangements for events, such as community events, seminars and conferences in order to both arise consciousness among students and others and also to minimize the waste produced and maximize what is recycled/reused	The college organized several seminar and community program by the departments to ensure both consciousness and awareness among students and community members.
	Dispose all waste, whether solid or otherwise, in a scientific manner and ensure that it is not released directly to the environment	Yes, the college disposes all waste, whether solid or otherwise, in a scientific manner. In order to ensure that the wastes released have no direct impact on the environment, the college looks through it.
	To recycle and reuse of kitchen wastes (from canteen and hostels) and garden waste	Kitchen wastes and garden wastes commonly are recycled to form nutrient rich quality organic manure for the gardens inside the campus.
		The college uses the waste in vermin composting station which is used as not only inside the campus but is also distributed to the community.
		The college gives away the surplus of the bio wastes to the Self Help Group who in turn uses in vermin composting.
CARBON FOOTPRINT	Ensure use of eco friendly transport option	About 90% of the students and teaching and non teaching staffs of the college use bicycle as the main mode of transport. The college also

		encourages transport by bicycle to students.
	Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service	UGC projects on sustainable development/ natural resources. Compulsory ENVS paper of 100 marks in the University Syllabus for all the students of all streams to develop Environmental Awareness (70 MCQ + 30 Project).
		Also, the college conducts vermin composting course that encourages students to practice environmental sustainability and community service with environmental friendliness.
	Reduce the rate at which the College contributes to the depletion and degradation of natural resources	College does not directly or indirectly participate in depletion and degradation of natural resources.
	Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.	Seminars and awareness programmes are conducted periodically on nature and natural resources.
	Review architecture of existing buildings and reviews ways, in consultation with experts, to reduce usage of energy for such buildings, offering greatest efficiency for energy and water usage.	New construction of the science building is in compliance with green standard.
	Conduct environmental awareness posters and seminars as a part of the programme.	Yes, the college places several posters and placards in the campus to ensure that environmental awareness is conducted. Also, seminars are organized on environmental theme in the college.

RECOMMENDATIONS

Criteria	Recommendation
Maximize the renewable flow energy to initiate healthy and continuous flow of energy	To set up solar panel in the college to ensure continuous renewable energy flow.
To channelize flow resource	To initiate rainwater harvesting by digging wells to accommodate rainwater flowing through the roof tops.
Maximize the proportion of waste that recycle & minimize the quantity of non-recyclable refuse	1. Implement a mechanism to recycle plastic waste in a scientific manner. 2. To implement measures to recycle dry wastes
Reduce energy consumption, especially of energy derived from fossil fuels	All the areas of the campus should be under the preview of solar renewable power control. Also, switch off drills are to be set up in the campus to ensure all the electric devices to be in power off measure.
Minimize the use of chemical pollutants	The chemical pollutants from the chemical laboratories are water soluble. So, it is recommended that this water is recycled properly.

SOME VISUALS OF THE COLLEGE GREEN CAMPUS

Bon Mahostob to encourage planting trees

The dependency on bicycle shows less pollution

Waste Management Program

Distribution of plants to students

Students taking initiative to protect greenery in campus

Use of green generator to have less pollution.

The departmental garden

The water tap for students use

The waterbody that not only adds to the green campus, but also provides a good ecosystem inside the campus

DECLARATION

I agree with all the observation and recommendation of the report.

Original signature of the principal with seal

Otabu

Certificate of Registration

MUGBERIA GANGADHAR MAHAVIDYALYA

P.O. BHUPATINAGAR, : DIST. PURBA MEDINIPUR PIN- 721425, INDIA

has been assessed and Certified by Otabu Certification Pvt. Ltd.
as meeting the requirements of:

ISO 9001:2015

Quality Management System

For the following scope of activities:

B. A.(GENERAL), B. A. (HONOURS), B. SC.(GENERAL), B. SC(HONOURS), B. COM. (GENERAL), B. COM. (HONS.), BACHELOR OF PHYSICAL EDUCATION B. P. ED., DIPLOMA IN TOURISM & HOTEL MANAGEMENT, DIPLOMA IN COMPUTER APPLICATION & I.T., DIPLOMA IN SOIL MANAGEMENT BY VERMI COMPOSTING, MASTER OF PHYSICAL EDUCATION M. P. ED, M. SC. IN APPLIED MATHEMATICS WITH OCEANOLOGY AND COMPUTER PROGRAMMING, M.A. IN BENGALI, B. VOC. IN TOURISM AND HOTEL MANAGEMENT, B. VOC. IN FOOD PROCESSING, CERTIFICATE COURSE IN INCOME AND SALE TAX PRACTICES, COMMUNICATIVE ENGLISH, BUSINESS MANAGEMENT, YOGA THARAPY, VERMI COMPOSED, HUMAN RIGHT EDUCATION

Issue No: 01
Date of Certification: 12 December 2019
1st Surveillance Due: 11 December 2020

Revision No( ) : NA
2nd Surveillance Due: 11 December 2021
Certificate Expiry: 11 December 2022
(subject to the company maintaining its system to the required standard)

Certificate Number: 1212Q71919

Validity of this certificate can be verified at www.otabucert.com

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EGAC 1150018

IAF INTERNATIONAL ACCREDITATION FORUM

Managing Director

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Otabu Certification Pvt. Ltd., RZ-9 (Ground Floor), Prem Nagar, Uttam Nagar, New Delhi-110059 (India)
Email:- info@otabucert.com website:-www.otabucert.com

RAPL

Accredited Registrar - 119012A

Registration Certificate

This is to certify that

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P.O. BHUPATINAGAR, DIST. PURBA MEDINIPUR - 721425, WEST BENGAL, INDIA

has been assessed by RAPL and found to comply with the requirements of

ISO 9001 : 2015

Quality Management System

For the following activities:

PROVIDING B.A. (GENERAL), B.A. (HONOURS), B.SC. (GENERAL), B.SC. (HONOURS), B.COM. (GENERAL), B.COM. (HONOURS), BACHELOR OF PHYSICAL EDUCATION B. P. ED., DIPLOMA IN TOURISM & HOTEL MANAGEMENT, DIPLOMA IN COMPUTER APPLICATION & I.T., DIPLOMA IN SOIL MANAGEMENT BY VERMI COMPOSTING, MASTER OF PHYSICAL EDUCATION M.P.ED, M.SC. IN APPLED MATHEMATICS WITH OCEANOLOGY AND COMPUTER PROGRAMMING, M.A. IN BENGALI, B.VOC. IN TOURISM AND HOTEL MANAGEMENT, B.VOC. IN FOOD PROCESSING, M.VOC IN FOOD TECHNOLOGY, NUTRITION & MANAGEMENT, COMMUNICATIVE ENGLISH, BUSINESS MANAGMEMENT, YOGA THARAPY, VERMI COMPOSED, HUMAN RIGHT EDUCATION

Certificate Number: E2022101292
Date of certification: 03/10/2022
Ist Surveillance on or before: 02/09/2023
IInd Surveillance on or before: 02/09/2024
Certification Valid Until: 02/10/2025

Director (Certification)
Royal Assessments Pvt. Ltd.
(Formerly SCS Assessments Pvt. Ltd.)

EGAC

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

623 A, Tower-B, iThum, Plot No. A - 40, Sector - 62, Noida 201301, India.
www.royalapl.com, info@royalapl.com
Phone : +91 120 4251329
This Certificate can be verified at www.royalapl.com

RAPL

Accredited Registrar - 119012A

Registration Certificate

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ISO 14001 : 2015
Environmental Management System

For the following activities:

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Certificate Number: E2023022651
Date of certification: 03/02/2023
Ist Surveillance on or before: 02/02/2024
IInd Surveillance on or before: 02/02/2025
Certification Valid Until: 02/02/2026

Director (Certification)
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राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

An Autonomous Institution of the University Grants Commission

Certificate of Accreditation

The Executive Committee of the
National Assessment and Accreditation Council
on the recommendation of the duly appointed
Peer Team is pleased to declare the
Mugberia Gangadhar Mahavidyalaya
Bhupatinar, Contai, Dist. Purba Medinipur, affiliated to Vidyasagar University,
West Bengal as
Accredited
with CGPA of 2.71 on seven point scale
at B+ grade
valid up to March 31, 2024

Date : April 01, 2019

Director

MUGBERIA GANGADHAR MAHAVIDYALAYA

P.O.—BHUPATINAGAR, Dist.—PURBA MEDINIPUR, PIN.—721425, WEST BENGAL, INDIA
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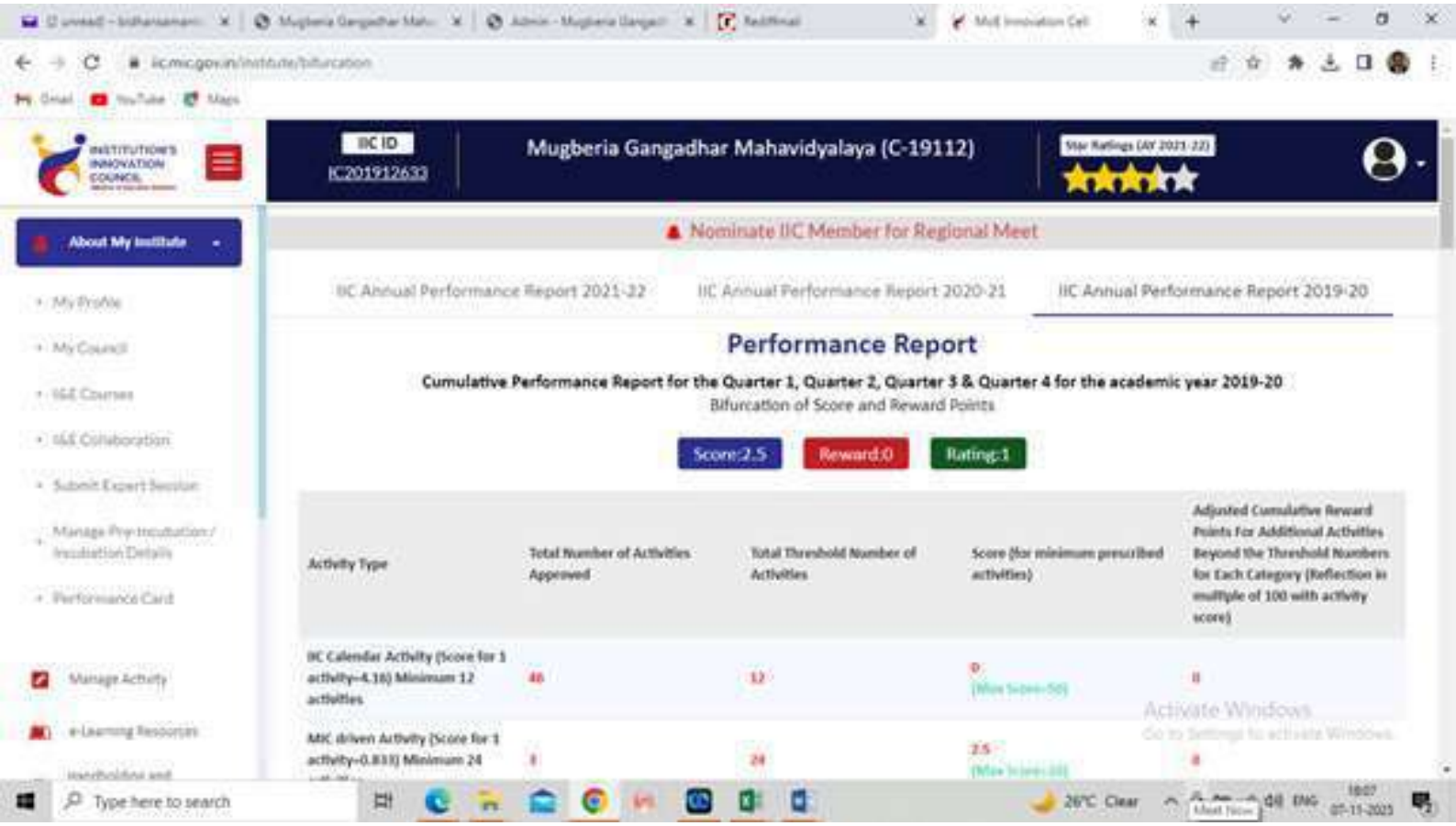
6.5.2. Quality assurance initiatives of the institution

DOCUMENTORY EVIDENCE FOR PARTICIPATION IN IIC 2.0 (2019-20)


IIC ID
IC201912633
Mugberia Gangadhar Mahavidyalaya (C-19112)
Star Ratings (AY 2021-22)
Nominate IIC Member for Regional Meet
About My Institute
My Profile
My Council
I&E Courses
I&E Collaboration
Submit Expert Session
Manage Pre-Incubation/ Incubation Details
Performance Card
Manage Activity
e-Learning Resources
IIC Annual Performance Report 2021-22
IIC Annual Performance Report 2020-21
IIC Annual Performance Report 2019-20
Performance Report
Cumulative Performance Report for the Quarter 1, Quarter 2, Quarter 3 & Quarter 4 for the academic year 2019-20
Bifurcation of Score and Reward Points
Score:2.5
Reward:0
Rating:1
Activity Type
Total Number of Activities Approved
Total Threshold Number of Activities
Score (for minimum prescribed activities)
Adjusted Cumulative Reward Points For Additional Activities Beyond the Threshold Numbers for Each Category (Reflection in multiple of 100 with activity score)
IIC Calendar Activity (Score for 1 activity=4.16) Minimum 12 activities
46
12
0
0
MIC driven Activity (Score for 1 activity=0.833) Minimum 24
3
24
2.5
0
Activate Windows
Type here to search
26°C Clear
ENG
18:07
07-11-2023

MUGBERIA GANGADHAR MAHAVIDYALAYA

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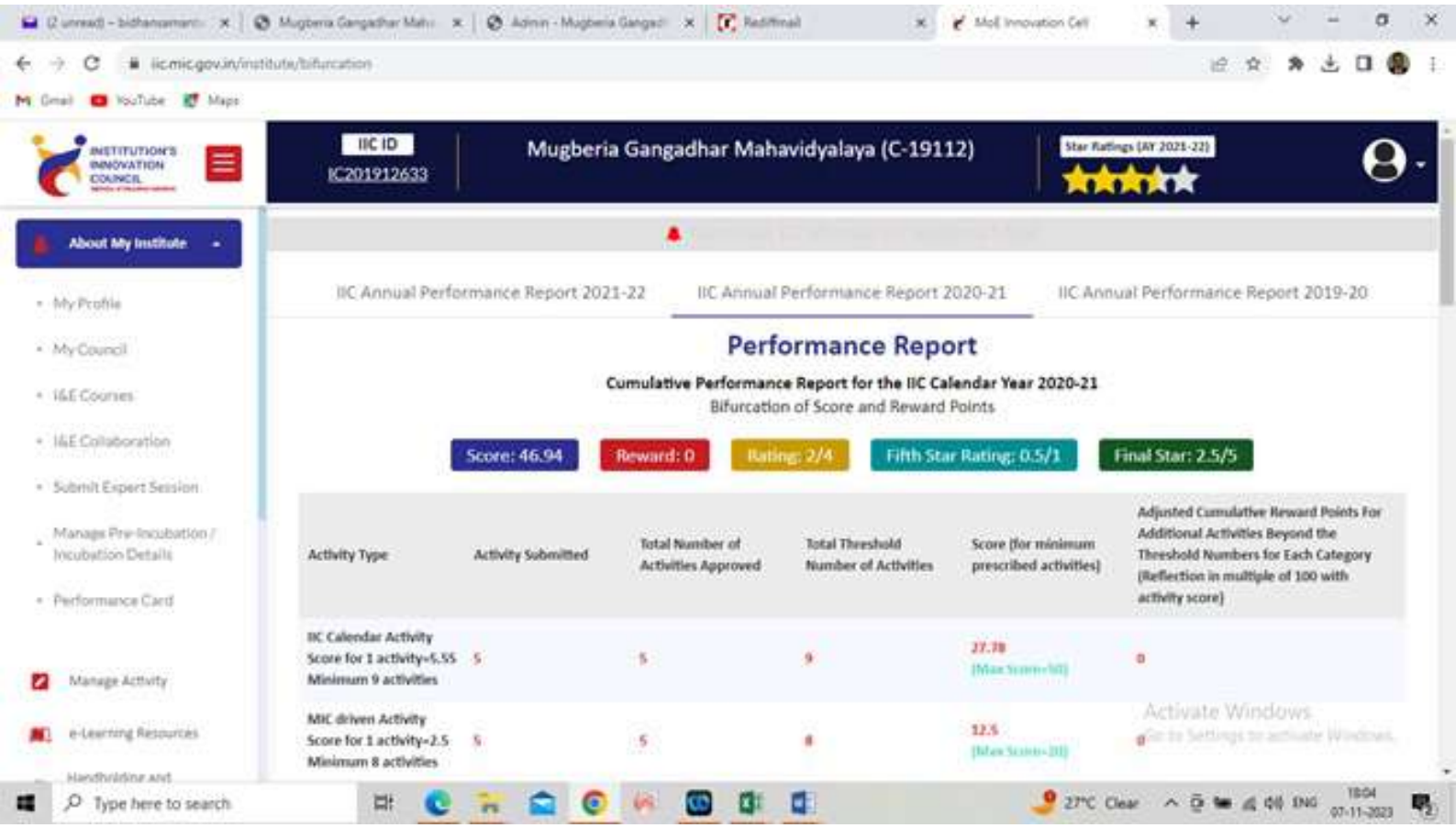
DOCUMENTORY EVIDENCE FOR PARTICIPATION IN IIC 3.0 (2020-21)


IIC ID
IC201912633
Mugberia Gangadhar Mahavidyalaya (C-19112)
Star Ratings (AY 2021-22)
About My Institute
My Profile
My Council
I&E Courses
I&E Collaboration
Submit Expert Session
Manage Pre-Incubation / Incubation Details
Performance Card
Manage Activity
e-Learning Resources
IIC Annual Performance Report 2021-22
IIC Annual Performance Report 2020-21
IIC Annual Performance Report 2019-20
Performance Report
Cumulative Performance Report for the IIC Calendar Year 2020-21
Bifurcation of Score and Reward Points
Score: 46.94
Reward: 0
Rating: 2/4
Fifth Star Rating: 0.5/1
Final Star: 2.5/5
Activity Type
Activity Submitted
Total Number of Activities Approved
Total Threshold Number of Activities
Score (for minimum prescribed activities)
Adjusted Cumulative Reward Points For Additional Activities Beyond the Threshold Numbers for Each Category (Reflection in multiple of 100 with activity score)
IIC Calendar Activity
Score for 1 activity=5.55
Minimum 9 activities
5
5
9
27.78
0
MIC driven Activity
Score for 1 activity=2.5
Minimum 8 activities
5
5
8
12.5
0
Activate Windows
Type here to search
27°C Clear
ENG
18:04
07-11-2023

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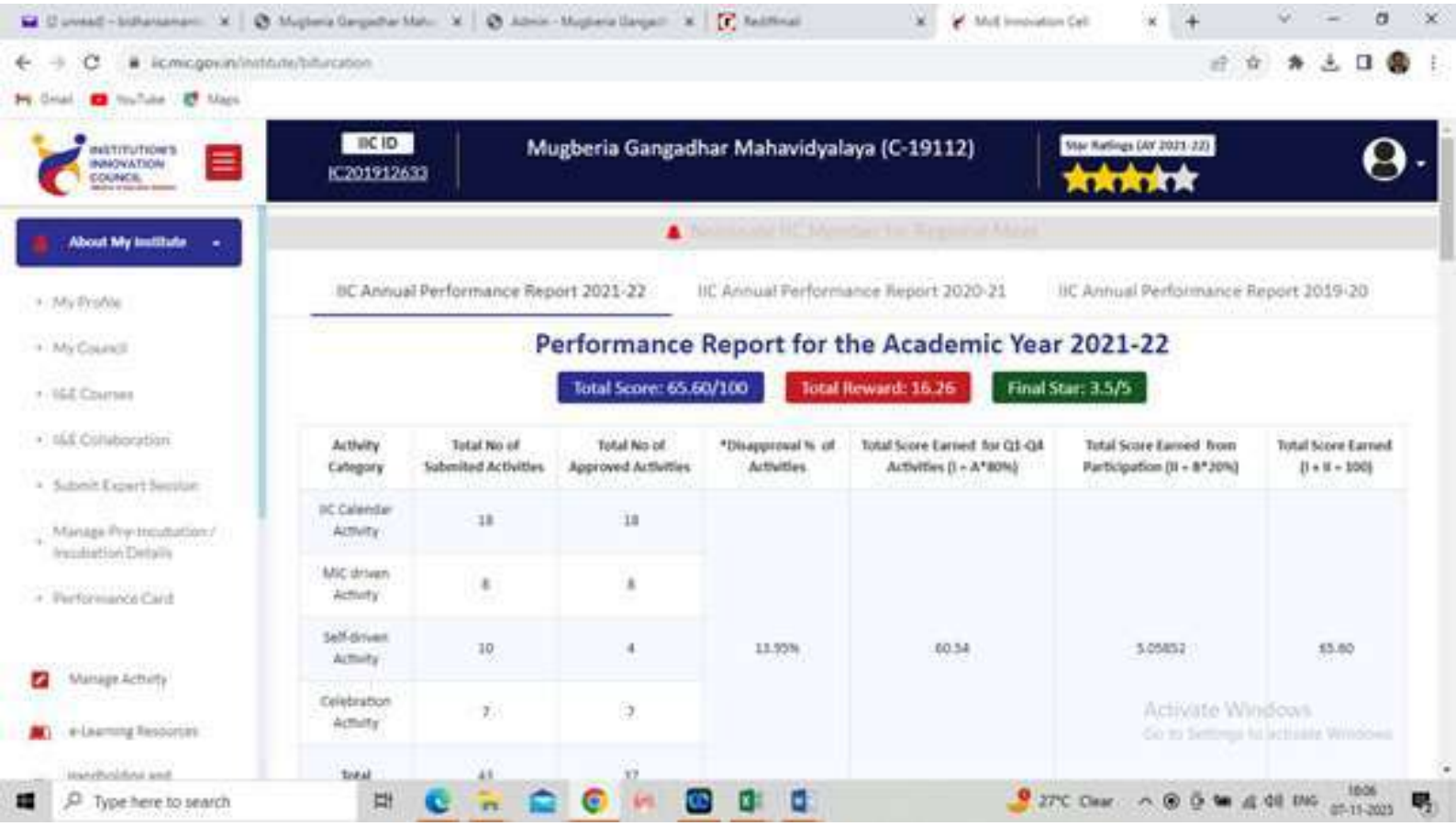
DOCUMENTORY EVIDENCE FOR PARTICIPATION IN IIC 4.0 (2021-22)


IIC ID
IC201912633
Mugberia Gangadhar Mahavidyalaya (C-19112)
Star Ratings (AY 2021-22)
About My Institute
My Profile
My Council
I&E Courses
I&E Collaboration
Submit Expert Session
Manage Pre-Incubation / Incubation Details
Performance Card
Manage Activity
e-Learning Resources
IIC Annual Performance Report 2021-22
IIC Annual Performance Report 2020-21
IIC Annual Performance Report 2019-20
Performance Report for the Academic Year 2021-22
Total Score: 65.60/100
Total Reward: 16.26
Final Star: 3.5/5
Activity Category
Total No of Submited Activities
Total No of Approved Activities
*Disapproval % of Activities
Total Score Earned for Q1-Q4 Activities (I = A*80%)
Total Score Earned from Participation (II = B*20%)
Total Score Earned (I + II = 100)
IIC Calendar Activity
18
18
MIC driven Activity
8
8
Self-driven Activity
10
4
13.95%
60.54
5.05852
65.60
Celebration Activity
7
7
Total
43
37
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Clear
ENG
18:06
07-11-2023

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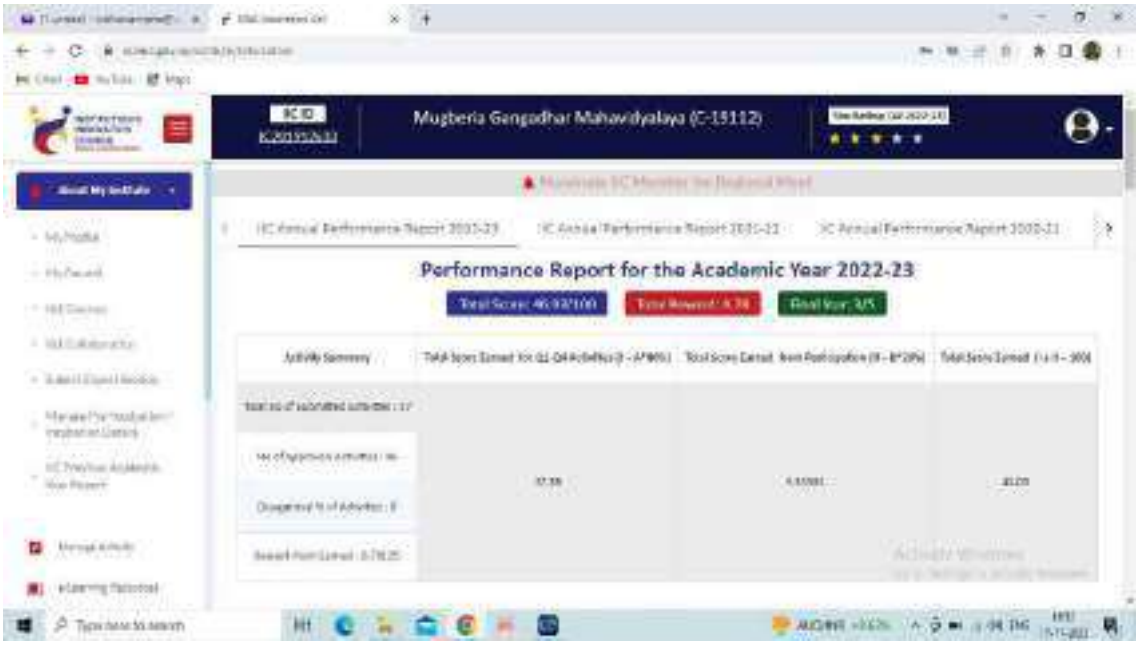
DOCUMENTORY EVIDENCE FOR PARTICIPATION IN IIC 5.0 (2022-23)


IIC ID
Mugberia Gangadhar Mahavidyalaya (C-15112)
IIC Annual Performance Report 2021-22
IIC Annual Performance Report 2020-21
Performance Report for the Academic Year 2022-23

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6.5.2. Quality assurance initiatives of the institution

DOCUMENTORY EVIDENCE FOR PARTICIPATION IN ARIIA 2019

Government of India
Ministry of Human Resource Development

ARIIA

ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS

RANKING 2019

MUNBERIA GANGADHAR MAHAVIDYALAYA, PURBA MEDINIPUR

participated in ARIIA ranking.

Dr. Anil D. Sahasrabudhe
Chairman, AICTE

Shri R. Subrahmanyam
Secretary (Higher Education), MHRD

Dr. Abhay Jere
Chief Innovation Officer, MIC, MHRD

MUGBERIA GANGADHAR MAHAVIDYALAYA

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DOCUMENTORY EVIDENCE FOR PARTICIPATION IN ARIIA 2020

MIC

MHRD

AICTE

ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS

Certificate of Participation

This is to certify that

Mugberia Gangadhar Mahavidyalaya, Bhupati Nagar

has participated for the category of '**Institutes & Colleges (Govt. and Govt. aided)**' in Atal Ranking of Institutions on Innovation Achievement (ARIIA) 2020 announced on 18th Aug 2020.

Dr. Anil D Sahasrabudhe
Chairman, AICTE

Sh. Amit Khare
Secretary (HE), MHRD

Dr. Abhay Jere
Chief Innovation Officer
MHRD's Innovation Cell

MUGBERIA GANGADHAR MAHAVIDYALAYA

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DBT Star College Scheme Award Recipient

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6.5.2. Quality assurance initiatives of the institution

DOCUMENTORY EVIDENCE FOR PARTICIPATION IN ARIIA 2021

INNOVATION CELL
(Government of India)

Ministry of Education
(Government of India)

ATAL RANKING OF INSTITUTIONS
ON INNOVATION ACHIEVEMENTS

Certificate of Recognition

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MUGBERIA GANGADHAR MAHAVIDYALAYA

is recognised in the band "PERFORMER" under the category

"General (Non-Technical)"

in Atal Ranking of Institutions on Innovation Achievement(ARIIA) 2021,

a flagship program of the Ministry of Education, Government of India.

29th December 2021.

Dr. Anil D Sahasrabudhe
Chairman, AICTE

Shri K Sanjay Murthy
Secretary (HE), MoE

Dr. Abhay Jere
Chief Innovation Officer
MoE's Innovation Cell

MUGBERIA GANGADHAR MAHAVIDYALAYA

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Date: 16.02.2024

16.02.2024
Principal
Mugberia Gangadhar Mahavidyalaya

Mugberia Gangadhar Mahavidyalaya
ESTD.-1964
Purba Medinipur