

GREEN AUDIT REPORT Of INTEGRAL UNIVERSITY



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DISCLAIMER

PARAMARSH Green Audit Team has prepared this report for Integral University based on input data submitted by the representatives of university complemented with the best judgment capacity of the expert team. All the details contained in this report have been compiled in good faith based on information gathered. All reasonable care has been taken in its preparation of report.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Report by:

Mr. Pankaj Kr, Srivastava

(Lead Auditor)

CONTEXT

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2016-17 onwards that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility (CSR) of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green Auditing, the Integral University decided to conduct an external Green Evaluation by a competent Green Auditor along with a Green Audit Assessment Team headed by Prof. (Dr.) Monowar Alam Khalid, Dean, Students' Welfare and Convener, Green Audit Committee, Integral University, Lucknow, UP. Green Audit or Environment Audit focuses on the Green Campus, Waste Management, Water Management, and Energy Management etc. being implemented by the University Management.



GREEN AUDIT

2020 – 2021

1.0 Introduction:

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco-friendly ambience. Green audit can be a useful tool for a college to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings.

It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green audit can be a useful tool for a college/University to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. Green auditing and the implementation of mitigation measures is a win-win situation for all the college, the learners and the planet. It can also create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. Green auditing promote financial savings through reduction of resource use. 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 college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming

an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

1.1 Objectives of Green Audit

In recent time, the Green Audit of an Institution/University is becoming an important criterion for self-assessment of the institution/University which reflects the role of the University in mitigating the present environmental problems. The University has been putting efforts to keep its environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

1. To verify whether the design of Environment Management Systems (EMS) at all departments meets the requirement of the international standards
2. To map the Geographical Location of the University
3. To verify whether the implementation of EMS to define organizational EMS procedures is in line with the Green Policy
4. To document the floral and faunal diversity of the University
5. To record the meteorological parameter of Lucknow where University is situated
6. To document the ambient environmental condition of weather, air, and water of the University
7. To document the waste disposal system
8. To estimate the Energy requirements of the University
9. To report the expenditure on green initiatives during the last five years

1.2 Audit Criteria

In this audit, verification of completeness, translation, adequacy and implementation of the Policy, documented procedures and compliance to the management system requirements was undertaken.

1.3 Green Auditing

An environmental audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though

a helpful benchmark, the audit almost immediately becomes outdated unless there is some mechanism in place to continue the effort of monitoring environmental compliance.

This is very first environmental audit of institute for NACC affiliation; QS Programme and doing their bid towards environmental protection and environmental awareness at local and global front. Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.

The University has adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO₂ emission, cut down energy and water use, while creating atmosphere where students can learn and be healthy

1.4 Methodology of Audit

The following methodology was adopted by auditors in auditing, to fulfill the above objectives:

- Opening meeting with various officials
- Inspection of University (through field visits)
- Meeting of selected personnel at different levels
- Taking photographs of non conformances & good practices, wherever possible
- Closing meeting with various officials

1.5 About the University

Integral University is a state private university in Lucknow, the capital of Uttar Pradesh, India, which originated as the Institute of Integral Technology, Lucknow. The Institute of Integral Technology, Lucknow was established in 1998. Integral University, the first enacted Minority University in the country, started functioning from 1 April 2004.

Integral University was accorded recognition by U.G.C. under section 2(f) of U.G.C. Act, 1956. The University was founded in 2004.

At present the University has 14 faculties and 32 departments of Science, Pharmacy, Education, Management Studies, Health & Medical Sciences, Agricultural Science & Technology, Humanities & Social Sciences, Computer Applications, Medical Sciences & Allied Health Sciences, and Law, with 2 schools each of Nursing and Pharmacy and a university Polytechnic providing courses at the diploma, undergraduate, graduate, postgraduate and doctoral levels. Integral University also includes the Techno-Academic School in the West Campus of University Law Campus which provides the Secondary and Senior Secondary education.

The university is divided into blocks: Academic blocks A, B,C,D,E,F and N, Administrative Block - M, Hospital Block - H, Boys Hostel Hall-1,2,3,&4, Central Library - Block C, Canteen , Department of Pharmacy Block -CW , Generator Room , Girls Hostel , Hospital Building , Playground , IIAST Block - BW , Laundry , Medical Gas Plant , Medicine Shop , Mess Girls Hostel , Nescafe , Nurses Hostel , Post Mortem/Mortuary , Residential Quarters Block -R, Rainbasera, Staff Residence , Techno Academic Inter College -Block DW , University Polytechnic -AW and Workshop Beside this a Punjab National Bank branch has been operating in the university. (Map of the campus and plans of individual buildings along with total number of rooms are attached in the annexure).

1.6 Overall initiatives need to include:

1. Physical Appearance and Overall Ambience
2. Adequacy of Toilets (Student/Toilet Ratio)
3. Gender Balance of Toilets (Male: Women) self certifiable
4. Disabled-Friendly Toilets
5. Water Taps and Sanitation Plumbing, Adequacy and Efficiency
6. Water Efficient Toilets
7. Dedicated Staff for Hygiene Maintenance
8. Dedicated Staff for Hygiene Inspection
9. Kitchen Staff Apparel and Hygiene

10. Canteen Hygiene
11. Kitchen Hygiene
12. Cutlery, Crockery and Utensils Hygiene
13. Dining Hall Hygiene
14. Cleaning Equipment and Consumables

1.7 Area of the Campus

The Area of the University is 511725 m² (126.45 Acre). Rich green vegetation and large open land provide good infiltration of the rainwater in the university campus.

Overall initiatives need to include:

To ensure minimum water consumption or to save more than 40% of the potable water by incorporating the following strategy Reduce Reuse Recycle.

We have implemented the following

1. Effective rainwater management system
2. Water efficient plumbing fixtures
3. Landscaping with native species of trees and plants to ensure minimum water consumption as much as possible.
4. Efficient irrigation systems
5. 100% of the waste water generated on-site is treated using STP and the treated water has been reused within the site itself for landscaping, flushing and other custodial purposes
6. Continuous monitoring to enhance the performance of the building through water meters

To reduce adverse health impacts for building occupants, the entire campus uses eco-friendly housekeeping chemicals. The campus adopts eco -friendly house keeping practices during maintenance / housekeeping activities by using bio-degradable chemicals, which address health, hygiene and well-being of maintenance staff & building occupants. Eco-friendly house keeping chemicals are used for cleaning of floors, walls, glazing surfaces, restrooms etc.

1.8 Population of Integral University

Integral University is fairly well-spread, student-centric institute, with more than 12000 student enrolled in a broad range of graduate, post graduate and doctorate programs including several professional school, and around 2400 students are residing in Girls and boys hostels. The main campus is spread over 126.45 acres. A total permanent staff is around 1600 and 250 Contractual or daily wages staffs are working. On average, a total of 644 peoples are staying in the faculty/staff residences where the average house hold size of 4 members was taken.

1.9 Audit Participants

On behalf of University, the composition of the Core Green Group is provided below:

Table 1.1: Audit Core Green Group

| Sl. No | Name | Department | Committee Designation |
|--------|---------------------------|-----------------------|-----------------------|
| 1. | Prof. Monowar Alam Khalid | Environmental Science | Convener |
| 2. | Prof. Indrani Chakraborti | Architecture | Co-Convener |
| 3. | Mr. Mohd. Kashif Khan | Civil Engineering | Member |
| 4. | Mr. Tariqul Islam | Architecture | Member |
| 5. | Dr. Neha Mumtaz | Civil Engineering | Member |
| 6. | Dr. Deepti Srivastava | Agriculture | Member |
| 7. | Mr. Sufian Abbasi | Procurement | Member |
| 8. | Er. M. Javed Siddiqui | Maintenance | Member |

Audit was conducted on behalf of PARAMARSH:

Table 1.2: Audit Team

| Sl. No | Name | Designation |
|--------|------------------------------|----------------|
| 1 | Dr. Surendra Vikram Ghavri | Sr. Consultant |
| 2 | Mr. Pankaj Kr. Srivastava | Lead Auditor |
| 3 | Mr Akash Kumar | Co-Auditor |
| 4 | Mr. Pramod Kumar Vishwakarma | Auditor |
| 5 | Mr. Rajkumar Gautam | Co-Teamer |
| 6 | Mr. Ravi Shankar | Co-Teamer |

1.10 Land Use Analysis

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

Remote sensing and GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning, and change in the local, regional as well as at global scales over time. Satellite imagery particularly is a valuable tool for generating land use map.

1.11 Data Processing and Analysis

Land use map preparation is executed through the following steps:

Acquisition of data (Location: 26°57'28.68"N, 81° 0'5.37"E), Geo-coding and Geo-referencing of satellite imageries by extracting the ground control points. Supervised classification was carried out with the aid of ground truth data collected during field survey. Scanning and digitization of maps and editing of all the Geo-referenced maps were done using GIS.

Data manipulation and analysis and linking the spatial data with the attribute data for creation of topology was carried out using GIS software. Creation of GIS output in the form of land use map showing various land use have been prepared. Therefore, attempt has been made in this study to map land use for Integral University with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

1.12 Land use of Integral University, Lucknow

The total area of Integral University, Lucknow is 511725 m² (126.45 Acre) out of which the built up area is 40% (204690 m²) and open area is 20%. The same is illustrated in Figure 2 respectively:

Table 1.3: Land use in Integral University

| Particulars | Area (sq.m) | Percentage (%) |
|------------------------|---------------|----------------|
| Total Land Area | 511725 | 100 |
| 1. Build Up area | 204690 | 40 |
| 2. Road/paved area | 51172 | 10 |
| 3. Open area | 102345 | 20 |
| 4. Green belt | 153518 | 30 |

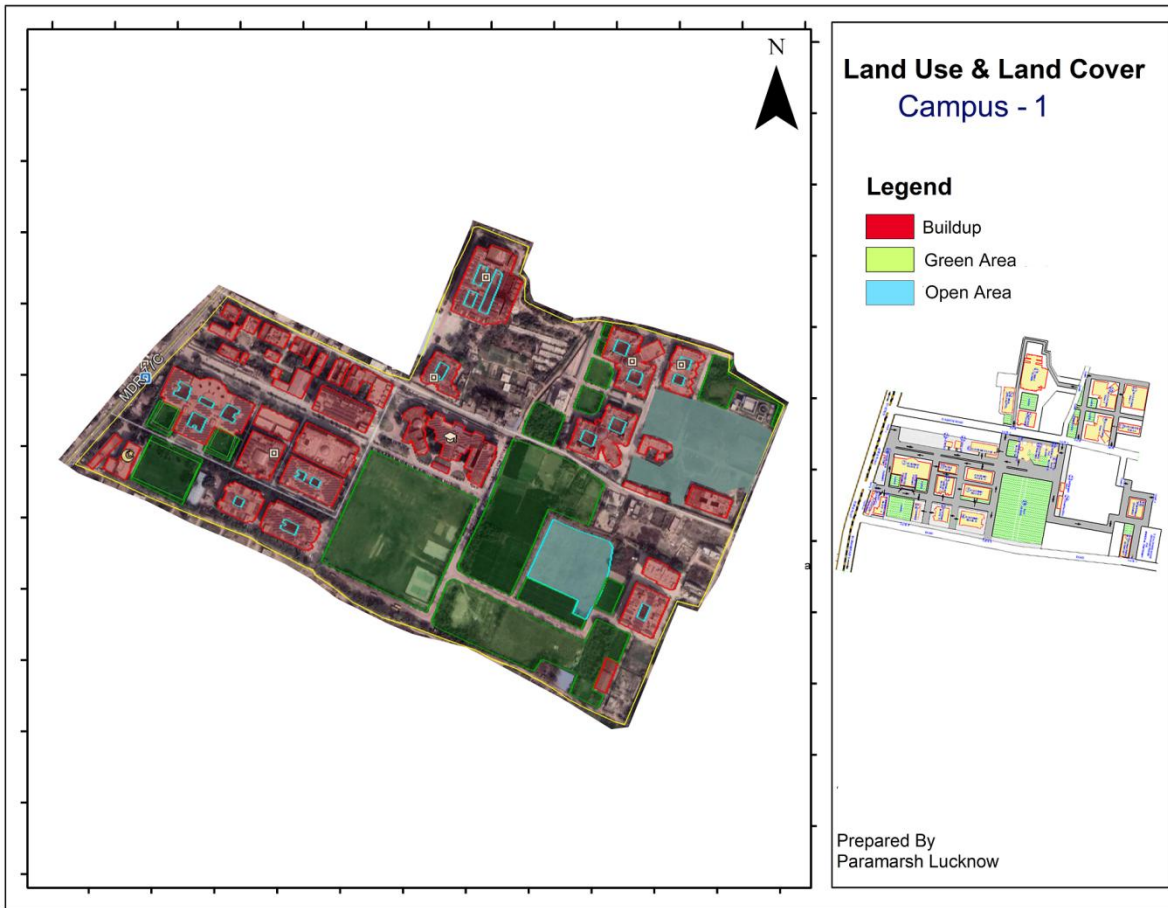


Figure 1.1: Land Use pattern of Integral University (Campus - 1)

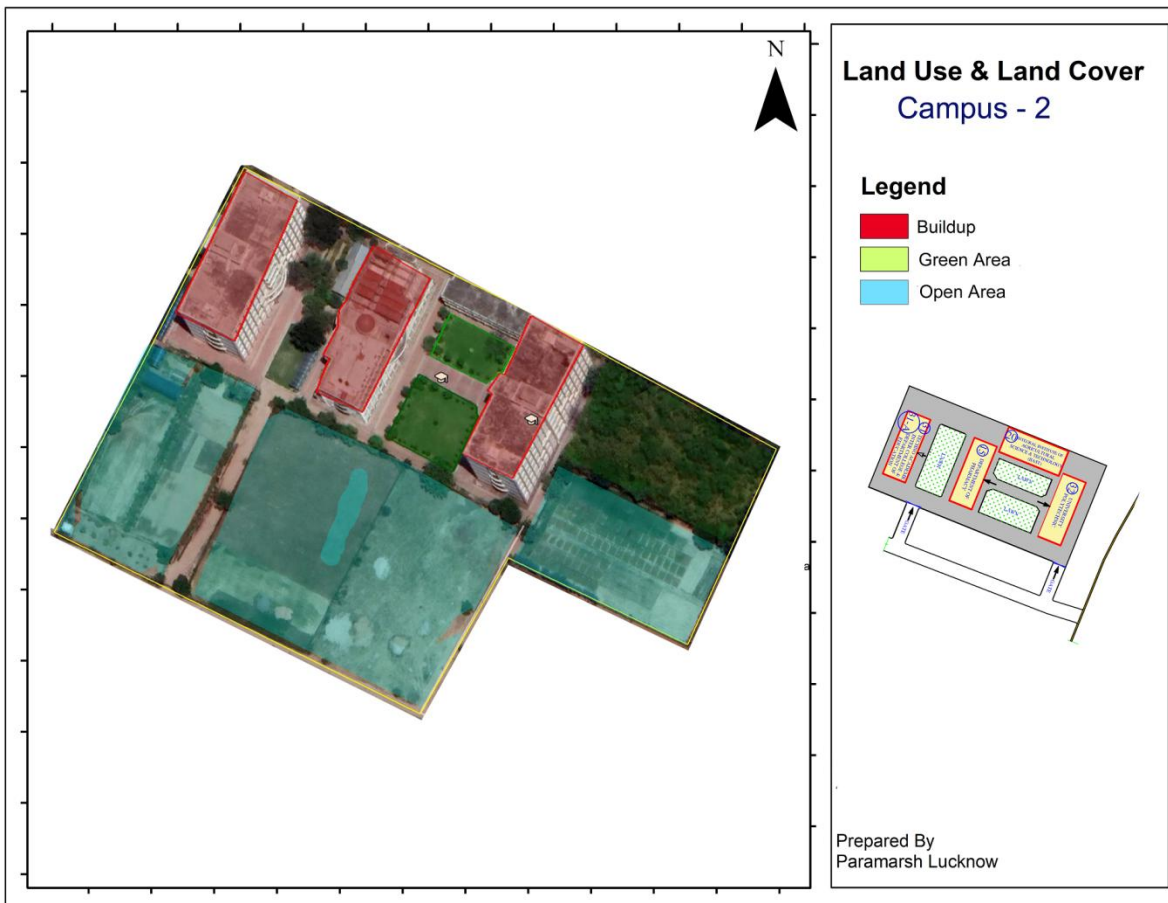


Figure 1.2: Land Use pattern of Integral University (Campus - 2)

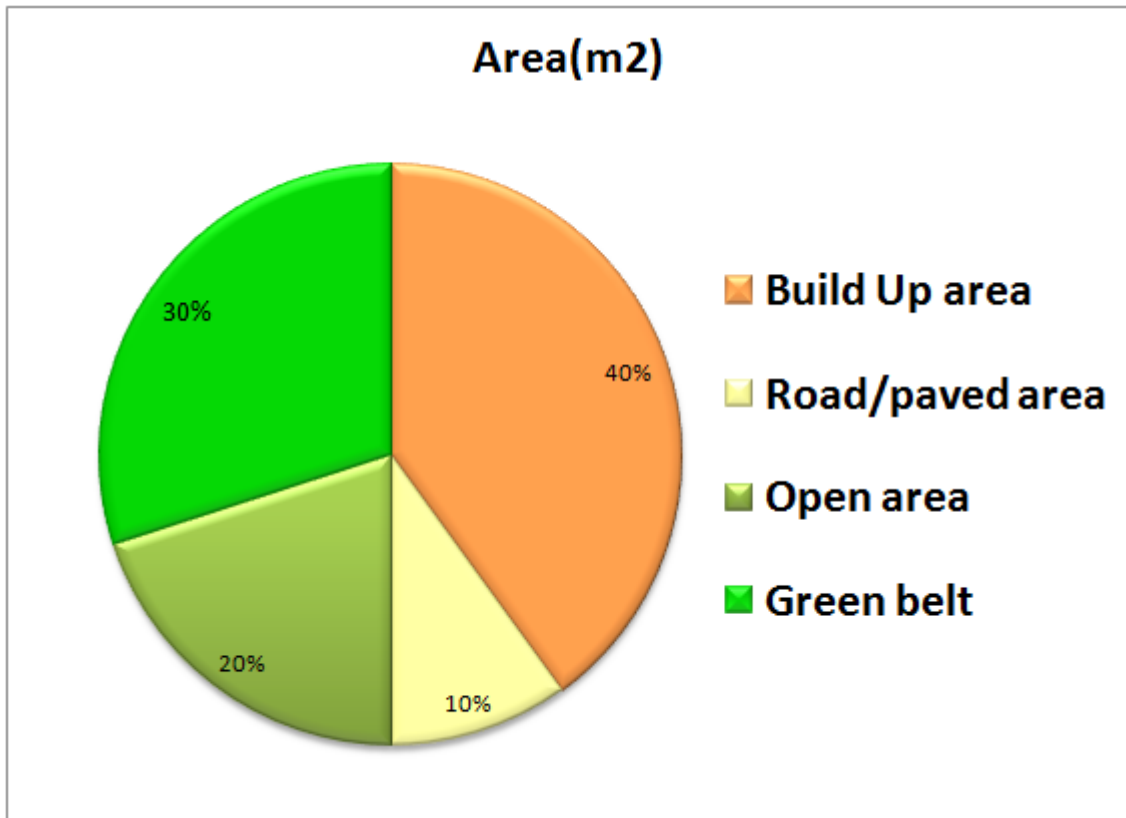


Figure 1.3: Land use pattern in Integral University

Table 1.4: Area occupied by various building at Integral University

| S.No | Particulars | S.No | Particulars |
|------|------------------------|------|--|
| 1 | Admin Block A | 18 | Hospital Building |
| 2 | Academic Block B | 19 | Play Ground |
| 3 | Academic Block D | 20 | Integral Institute of Agriculture Science and Technology (IIAST) |
| 4 | Academic Block E | 21 | Laundry |
| 5 | Academic Block F | 22 | Medical Gas Plant |
| 6 | Academic Block N | 23 | Medicine Shop |
| 7 | Admin Block M | 24 | Mess Girls Hostel |
| 8 | Blood Bank Block H | 25 | Nescafe |
| 9 | Boys Hostel Hall -1 | 26 | Nurses Hostel |
| 10 | Boys Hostel Hall - 2 | 27 | Postmortem/Mortuary |
| 11 | Boys Hostel Hall - 3 | 28 | Residential Quarter Block - R |
| 12 | Boys Hostel Hall - 4 | 29 | Rainbasera |
| 13 | Central Library C | 30 | Staff Residence |
| 14 | Canteen | 31 | Techno Academic Inter College |
| 15 | Department of Pharmacy | 31A | Department of Education |
| 16 | Generator Room | 32 | University of Polytechnic |
| 17 | Girls Hostel | 33 | Work Shop |

INTEGRAL UNIVERSITY, LUCKNOW CAMPUS LAYOUT

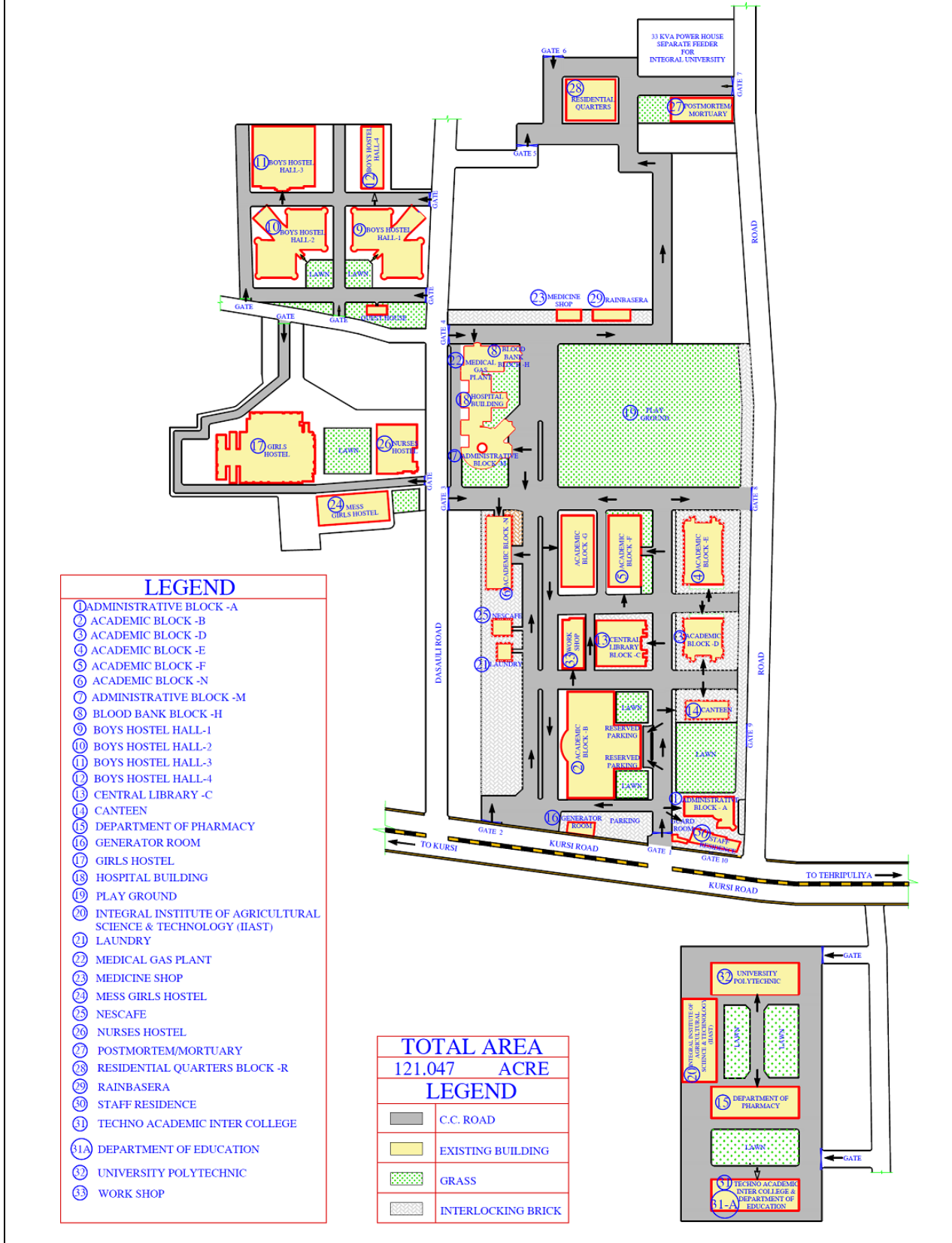


Figure 1.4: Layout plan of Integral University

1.13 Green initiatives

Green area means an area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment. It plays a very vital role in boosting the mental health of the student. It seems obvious that a place where people are able to make connections, meet new friends and participate in recreational activities is also good for the locals' mental health. After all, physical health and strong relationships are important to maintaining mental well being. Yet the mental health benefits of green space go beyond the obvious. Direct exposure to nature has its own benefits on mental health, reducing stress and increasing happiness and these effects take place almost immediately.

- The entire plantation executed in the past is maintained by the section through regular trimming, pruning, turf management and maintenance of pots etc.
- Maintenance and beautification of all University buildings and gardens viz., Hostels/Schools/Administrative/Guest house/ Auditorium.
- Section maintains a small nursery for fulfilling basic requirement like decoration during cultural activities



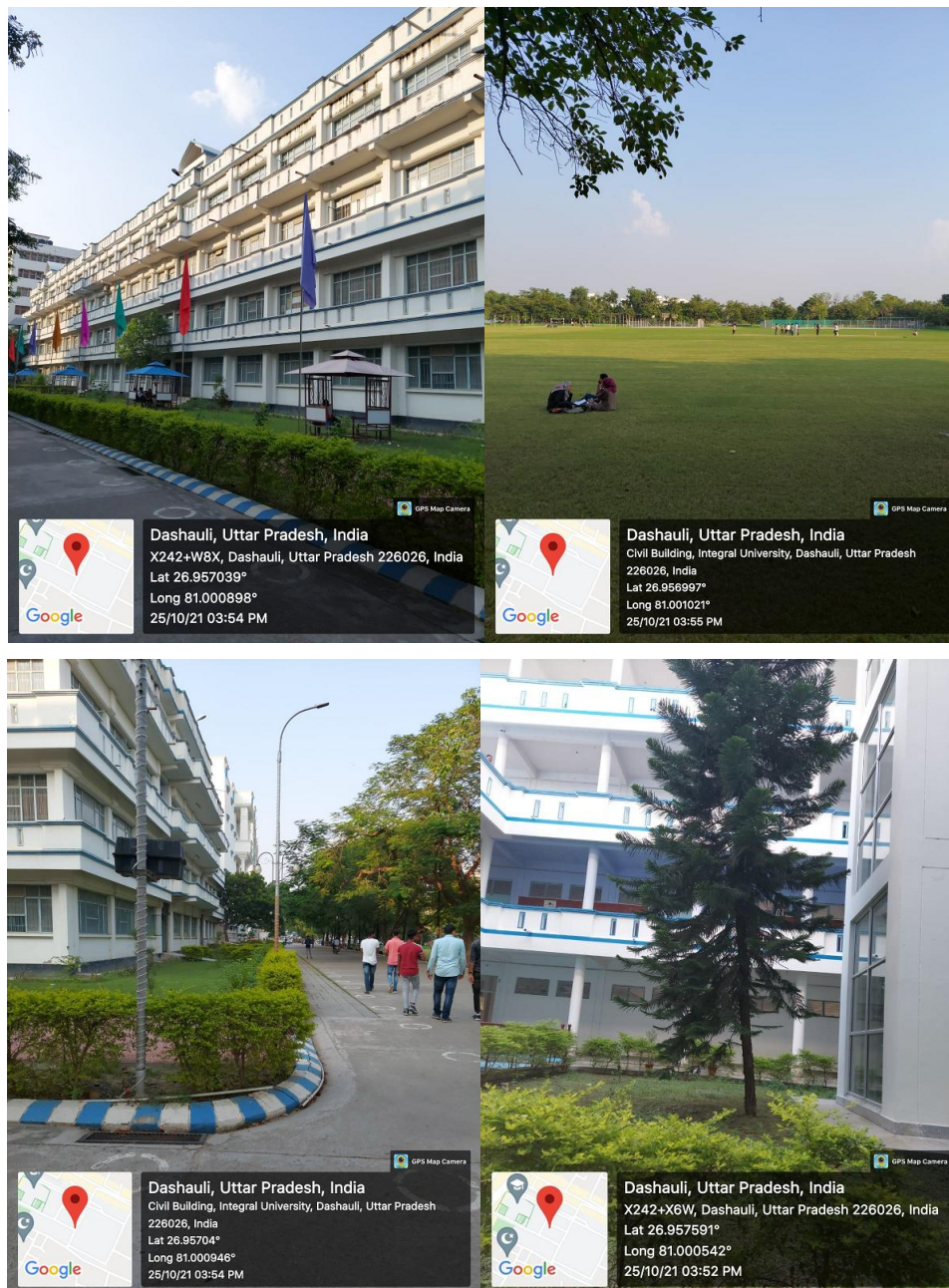


Figure 1.5: Gardening & Beautification activities in Integral University

1.14 Avifaunal Diversity of Integral University Campus

The campus showed a rich and diverse presence of nearly 83 species of birds in its varied habitats (Singh and Khalid, 2020). Various authors have confirmed that birds are ecological indicators (Padoa-Schioppa et al, 2006; Gregory et al, 2003) of ecosystem and green spaces in the urban areas have immense importance in conservation of biodiversity (Khera et al, 2009; Mason, 2006; Alvey, 2006 etc). In that context, Integral University campus provides safe and excellent habitats to the avifauna as evident from its rich species diversity. Some of the common bird species are Crow, Maina, Pigeon, Parrot, Cheel etc. are found in the campus.

1.15 Floral diversity in Integral University

Integral University is within the geo-position between Lat 26.9585° N & Long 80.9992° E in Lucknow, Uttar Pradesh India. It encompasses an area of about 120 Acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the university. A thick belt of large shady trees in the periphery of the university have found to be bringing down noise and cut down dust and storms. Thus, the university has been playing a significant role in maintaining the environment of the entire campus and its surrounding areas.

Table 1.5: List of Tree species of Integral University campus

| S. No | Local & Common Name of Trees | Family | Scientific Name of Trees |
|-------|------------------------------|----------------------|---------------------------------|
| 1 | Semi cassia | <i>Fabaceae</i> | <i>Cassia Sp</i> |
| 2 | Morpankhi | <i>Cupressaceae</i> | <i>Thuja orientalis</i> |
| 3 | Ashok seta | <i>Fabaceae</i> | <i>Saraca indica</i> |
| 4 | Ashok | <i>Annonaceae</i> | <i>Polyalthia longifolia</i> |
| 5 | Araucaria | <i>Araucariaceae</i> | <i>Araucaria heterophylla</i> |
| 6 | Kaner | <i>Apocynaceae</i> | <i>Nerium oleander</i> |
| 7 | Amrood | <i>Myrtaceae</i> | <i>Psidium guajava</i> |
| 8 | Sharifa | <i>Annonaceae</i> | <i>Annona reticulate</i> |
| 9 | Rubber Plant | <i>Euphorbiaceae</i> | <i>Hevea brasiliensis</i> |
| 10 | Sahjan | <i>Moringaceae</i> | <i>Moringa oleifera</i> |
| 11 | Amaltas | <i>Fabaceae</i> | <i>Cassia fistula</i> |
| 12 | Semal | <i>Bombeceae</i> | <i>Bombax ceiba</i> |
| 13 | Anar | <i>Puniaceae</i> | <i>Punica granatum</i> |
| 14 | Sheesham | <i>Fabaceae</i> | <i>Dalbergia sissoo</i> |
| 15 | Subabool | <i>Fabaceae</i> | <i>Leucaena leucocephala</i> |
| 16 | Hersingar/Parijat | <i>Oleacea</i> | <i>Nyctanthes arbor-tristis</i> |
| 17 | Rendi/Caster oil | <i>Burseraceae</i> | <i>Commiphora wightii</i> |
| 18 | Aam | <i>Anacardiaceae</i> | <i>Mangifera Indica</i> |
| 19 | Jamun | <i>Myrtaceae</i> | <i>Syzygium cumini</i> |
| 20 | Paked | <i>Moraceae</i> | <i>Ficus virens</i> |
| 21 | Sagaun/teak | <i>Lamiaceae</i> | <i>Tectona grandis</i> |
| 22 | Shami | <i>Moraceae</i> | <i>Morus nigra</i> |
| 23 | Gooler | <i>Moraceae</i> | <i>Ficus racemosa</i> |
| 24 | Meethee Neem | <i>Rutaceae</i> | <i>Murraya koenigii</i> |
| 25 | Neem | <i>Meliaceae</i> | <i>Azadirachta indica</i> |
| 26 | Bottle Palm | <i>Arecease</i> | <i>Hyophorbe lagenicaulis</i> |
| 27 | Gulmohar | <i>Fabaceae</i> | <i>Delonix regia</i> |
| 28 | Kadam | <i>Rutaceae</i> | <i>Neolamarckia cadamba</i> |

Source: Biodiversity at Integral University, 2021




| | | |
|---|---|--|
|   |   |   |
| <p>Neem</p> | <p>Bottle Palm</p> | <p>Aam</p> |
|   |   |   |
| <p>Sagaun</p> | <p>Gulmohar</p> | <p>Neem</p> |
|   |   | |
| <p>Ashok</p> | <p>Pakad</p> | |

Table 1.6: List of Shrubs of Integral University campus

| S. no | Botanical Name | Common name | Family |
|-------|--------------------------------|-------------|-------------|
| 1. | <i>Rosa domestica</i> | Gulab | Rosaceae |
| 2. | <i>Nerium oleander</i> | Kaner | Apocynaceae |
| 3. | <i>Murraya paniculata</i> | Kamini | Rutaceae |
| 4. | <i>Tabernaemontana plum L.</i> | Chandini | Apocynaceae |
| 5. | <i>Ixora coccinea</i> | Ixora | Rubiaceae |
| 6. | <i>Citrus maxima</i> | Pumello | Rutaceae |

Source: Biodiversity at Integral University, 2020

Table 1.7: List of herbs of Integral University campus

| S. no | Botanical Name | Common name | Family |
|-------|------------------------------|-----------------|----------------|
| 1. | <i>Calotropis procera</i> | Madar | Asclepiadaceae |
| 2. | <i>Typha L.</i> | Typha | Typhaceae |
| 3. | <i>Saccharum spontaneum</i> | Kans Grass | Poaceae |
| 4. | <i>Trifolium dubium</i> | Suckling clover | Fabaceae |
| 5. | <i>Catharanthus roseus</i> | Sadabahar | Apocynaceae |
| 6. | <i>Hydrangea arborescens</i> | Wild hydrangea | Hydrangeacea |

Source: Biodiversity at Integral University, 2020

Table 1.8: Faunal diversity in Integral campus

| S.No. | Zoological Name | Common Name | Family | Status In WPA 1972 | Status In IUCN Category |
|-------------------|---------------------|-------------|-------------------|--------------------|-------------------------|
| MAMMALS | | | | | |
| 1 | <i>Funambulus</i> | Gilhari | <i>Sciuridae</i> | Schedule IV | Least Concern |
| Reptiles | | | | | |
| 12 | <i>Hemidactylus</i> | Chipkali | <i>Gekkonidae</i> | Not Enlisted | Not Evaluated |
| 13 | <i>Chamaleo</i> | Chameleon | <i>Gekkonidae</i> | Not Enlisted | Not Evaluated |
| 14 | <i>Hemidactylus</i> | Rock Gaeko | <i>Gekkonidae</i> | Not Enlisted | Not Evaluated |
| Amphibians | | | | | |
| 15 | <i>Rana tigrina</i> | Common Frog | <i>Ranidae</i> | Schedule IV | Least Concern |
| 16 | <i>Bufo bufo</i> | Toad | <i>Bufoideae</i> | Not Enlisted | Not Evaluated |

Source: Biodiversity at Integral University, 2020

1.16 Findings

Integral University, which was established in the year 2004, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that more than 40% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.



ENVIRONMENT AUDIT

2020 – 2021

2.0 Introduction:

An environmental audit is a type of evaluation intended to identify environmental compliance and management system implementation gaps, along with related corrective actions.

Environmental audit is defined as basic management tool which comprises a systematic, documented, periodic and objective evaluation of how well organization, management systems and equipments are performing.

A good environment management policy requires that there should be a constant effort to analyze and monitor various industrial working system and processes to generate and transmit this information for the inspecting authority such as exercise which generates necessary information on analysis of pollution being generated or will be generated and completion of annual estimate has been termed as environmental audit.

2.1 Objectives of Environment Audit

There are three main types of audits which are environmental compliance audits, environmental management audits to verify whether an organization meets its stated objectives, and, functional environmental audits such as for water and electricity.

The key objectives of an environmental audit therefore are to: determine how well the environmental management systems and equipment are performing, verify compliance with the relevant national, local or other laws and regulations, minimize human exposure to risks from environmental, health and safety problems.

The specific objectives of Environment audit are:

- Improve the environment preserving measures and methods
- It helps in pollution control, improves production safety and health conservations of nocturnal resources by the way of ensuring waste prevention and reduction, assessing compliance with regulatory requirement, placing environmental information to the public
- Verify the steps adopted for environment management in the campus
- Spot the inefficient or inadequate practices, if any
- Formulate feasible steps and measures to be adopted in the campus
- Provide an up to date environmental data to the inspecting authority

2.2 Water Auditing

The total water requirement of the university is 1035 m³/day, which is met by the groundwater sources, abstracted through deep tube wells located within the campus (Table given). The groundwater is lifted to the overhead tank (OHT) of different capacity in the University.

Table 2.1: Population detail at Integral University

| S. No | Particulars | Nos. | lpcd | Water requirement (liter) |
|-------|--|-------|------|---------------------------|
| 1 | Student (Day Scholar) | 12000 | 45 | 540000 |
| 2 | Student (Hosteller) | 2400 | 135 | 324000 |
| 3 | Staff | 1600 | 45 | 72000 |
| 4 | Daily wages staff/contractual | 250 | 45 | 11250 |
| 5 | People staying in faculty/staff residence | 644 | 135 | 86940 |
| | Total | | | 1034190 |
| | Total water requirement (m³) | | | 1035 m³ |

Source: Water requirement as per NBC 2016 norms

In the campus of Integral University total 31 bore well of different capacity has been installed for fulfill the water requirement.

Table 2.2: Detail of Tube well/Bore well in Integral University Campus

| S. No | Location of Bore well |
|-------|---|
| | Campus - 1 |
| 01 | Near Main Gate -1 |
| 02 | Main Lawn |
| 03 | Cafeteria |
| 04 | Beside BNLT Near the Boundary |
| 05 | In the east between the Central Library and workshop, Behind Civil, Electrical and B.Ed education |
| 06 | Behind Academic Block - G (OPD) From Gate 2 (Right Side) |
| 07 | Beside NESCAFE |
| 08 | Gate No 3 Hospital Gate Entry Point |
| 09 | Between Block G and Main Ground |
| 10 | Near Blood Bank (Inside Ground Corner) |
| 11 | Near blood Bank |
| 12 | Residential Colony (Family)In front of Colony (Doctor residence) |
| 13 | Residential Colony (In front of residential quarters (IIMS&R) |
| 14 | Near Resident Hostel (IIMS&R) |
| 15 | Beside Hall -1 (Boys Hostel Hall - 1) |
| 16 | Beside Hall -2 (Boys Hostel Hall - 2) |
| 17 | In front of MBBS Boys Hostel Near Mess |
| 18 | Behind Hall -3 (Boys Hostel Hall - 3) |

| | |
|----|--|
| 19 | Near Last Gate (Behind Hall -4) Near Under Construction Building |
| 20 | Behind Hall 4 (Near Toilet) |
| 21 | Behind Hall 1 (Near DG Set) |
| 22 | Nurses Hostel Bore well |
| 23 | In front of Girls Hostel |
| 24 | Left Side of girls Hostel Mess |
| 25 | In Basket Ball Court (Left Corner) |
| 26 | Behind Girls Hostel Mess (Left Corner) |
| 27 | Behind Girls Hostel (Agricultural Field) |
| | Campus - 2 |
| 01 | Gate No - 2 (Behind University Polytechnic) |
| 02 | Gate No 2 (Beside University Polytechnic) |
| 03 | Near Gate - 1 (Unit- 1) |
| 04 | Near Gate 1 (Main Gate) |

2.3 Drinking Water

Water is a precious resource, and although it flows freely from the tap, it's not infinite. Green campus lawns, clean cafeteria plates, and even air conditioned dorms don't happen without using lots of water. College campuses are home to some of the most innovative ideas for water conservation, implementing water management technology, smart conservation policies and more. The university campus consist of rain water harvesting that collects and store the rain water as well as the surface water into the tanks. Sprinklers have been installed into the garden areas and regular pipes are checked for unnecessary leakage



Figure 2.1: Drinking water tank around the campus with different capacity

2.4 Rain Water Harvesting:

The underground water table is decreasing day by day & minute by minute. The reason is that no sincere attempt is made to replenish the ground water table with rainwater during the monsoon & other rainy days.

The Rainwater harvesting is the simple collection or storing of water through scientific techniques from the areas where the rain falls. It involves utilization of rain water for the domestic or the agricultural purpose. The method of rain water harvesting has been into practice since ancient times. It is as far the best possible way to conserve water and awaken the society towards the importance of water. The method is simple and cost effective too. It is especially beneficial in the areas, which faces the scarcity of water. We can see that the People usually make complaints about the lack of water. During the monsoons lots of water goes waste into the gutters. And this is when Rain water Harvesting proves to be the most effective way to conserve water. We can collect the rain water into the tanks and prevent it from flowing into drains and being wasted. It is practiced on the large scale in the metropolitan cities. Rain water harvesting comprises of storage of water and water recharging through the technical process.

It was found that Integral University is practicing the Rain water harvesting in the campus.



Figure 2.2: Location of Rainwater Harvesting

2.5 Meteorological Conditions of Integral University and Lucknow

Station: Amausi Airport

Location: 26°45'49.21"N 80°53'1.55"E

The campus has a subtropical climate with maximum temperature ranging from 20.7°C to 26.6°C in summer (April to June) and the minimum temperature ranging from 7.9°C to 13.2°C during winters and relative humidity (RH) is 50-77% in different season of year i.e. hot dry summer and cold winter. It receives an average rain fall of 917.3 mm annually distributed over a period about 100days most of which is received from July to mid September, with the peak period between July- August. It also receives scattered showers during winter.

Table 2.3: Meteorological condition of Integral University

| Month | Min Temp | Max. Temp | Rainfall | No of rainy days |
|---------------|----------|-----------|----------|------------------|
| Jan | 7.9 | 22.1 | 16.7 | 1.3 |
| Feb | 10.7 | 26.2 | 16.1 | 1.4 |
| March | 15.2 | 32.3 | 8.6 | 0.9 |
| Apr | 20.7 | 38.2 | 5.6 | 0.6 |
| May | 24.7 | 39.6 | 24.4 | 2.0 |
| June | 26.6 | 38.3 | 107.9 | 5.2 |
| July | 26.1 | 34.1 | 255.3 | 11.8 |
| Aug | 25.7 | 33.5 | 213.7 | 10.6 |
| Sep | 24.3 | 33.3 | 205.6 | 8.4 |
| Oct | 19.4 | 32.8 | 44.8 | 1.7 |
| Nov | 13.2 | 29.1 | 6.4 | 0.6 |
| Dec | 9.1 | 2 | 24.4 | 12.3 |
| Annual | 18.6 | 32.0 | 917.3 | 45.4 |

Source: IMD, 2020.



WASTE MANAGEMENT AUDIT

2020 – 2021

3.0 Solid Waste Audit

The solid waste management is in order with the installation of dust bins and their daily cleaning. The University has its own collection facility that collects the solid wastes daily from Residential complex, Hostels and Departments. This helps in maintaining the cleanliness by providing an efficient, safe and regulated management of solid wastes in the Campus.

3.1 Waste disposal of Integral University Campus

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

The waste from all around the university is separated daily as wet and dry waste in different bags which are disposed separately. Dry waste includes paper, cardboard, glass tin cans etc. on the other hand; wet waste refers to organic waste such as vegetable peds, left-over food etc. Separation of waste is essential as the amount of waste being generated today causes immense problem. The material was composted and evaluated as a fertilizing material. Disposal of these waste results in the production of good quality organic manure that can be used as soil amendments and source of plant nutrients.

With smart initiatives like **“Think Green Campus Model”**, waste management is helping colleges and universities to achieve a higher level of environmental performance. By reusing or recycling we are contributing to the conservation of natural resources, saving energy, helping to protect the environment, reducing landfill. We will also reduce our impact on the environment by minimizing the carbon emissions associated with both disposing of old products and obtaining new ones.

Integral University adopts environment friendly practices and takes necessary actions such as - energy conservation, waste recycling, carbon neutral etc. The following waste management practices are adopted in the Integral University.

3.2 Waste Generation

The weight or volume of materials and products that enter the waste stream before recycling, composting, land filling, or combustion takes place. Also can represent the amount of waste generated by a given source or category of sources.

Solid waste generation and composition analysis is a critical first step towards developing successful and effective planning of waste management service and strategies across university campus. This indicator addresses waste production and disposal of different wastes like paper , food, plastic, glass, dust etc.

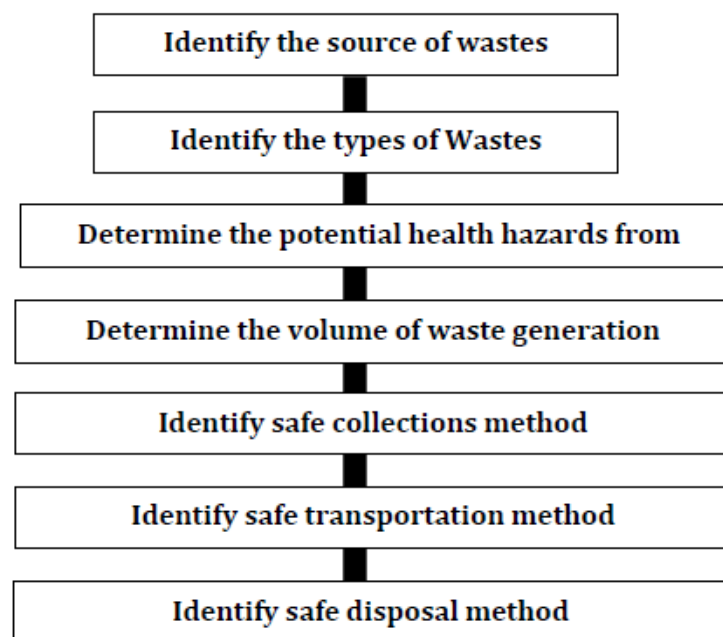


FIGURE: Process for Solid Waste Management

Solid wastes may contain:

- Human pathogens - diapers , handkerchiefs , contaminated food and surgical dressings
- Animal pathogens - waste from pets
- Soil persons - garden waste

By reusing or recycling we are: Contributing to the conservation of natural resources, saving energy, helping to protect the environment and reducing landfill. We will also reduce our impact on the environment by minimizing the carbon emissions associated with both disposing of old products and obtaining new ones. The campus consist of numbers of dust bins along with the color coding such as - green for bio-degradable waste and blue for plastic and metal waste.



Figure 3.1: Color Codes have been used; green- bio degradable waste and blue - plastic and metal waste



Figure 3.2: Photo of Bio-Waste Transferring



Figure 3.3: Sewage Treatment Plant

3.3 Hazardous Waste Management - Proper waste management techniques have been adopted for all types of wastes. The University is a zero-effluent organization. In the University hospital and health service, color coded dustbins are delineated for specific type of waste. Need to be MoU with TSDF for the hazardous waste.

3.4 E-waste management -

For e-waste management Integral University has initiated the process of establishing an e-waste management system to ensure that e-waste is properly stored and given to agency for the disposal. As Lucknow capital of Uttar Pradesh is an educational/Information Technology hub, the University is surrounded by schools and colleges. In some instances, photocopying machines and other office peripherals are replaced under buy-back schemes.

E-waste comprises of wastes generated from used electronic devices and household appliances which are not fit for their original intended use and are destined for recovery, recycling or disposal. Such wastes encompasses wide range of electrical and electronic devices such as computers, hand held cellular phones, personal stereos, including large household appliances such as refrigerators, air conditioners etc. Electronic waste or e-waste or e-scrap or waste electrical and electronic equipment (WEEE) can be defined as the discarded waste computers, office electronic equipments entertainment device electronics, mobile phones, television sets and the refrigerators. The term E-waste is loosely applied to consumer and business electronic equipment that is near or at the end of it's useful life. It is a waste consisting of any broken or unwanted electrical or electronic appliance.

Waste generated from the following electronic equipments is generally referred to as the E-waste:

- IT and Telecom equipments like computers, laptops, tablets and the systems used in the BPO call centers.
- Medical devices like CT scan machine, X-Ray machine, etc .
- Monitoring and control devices
- Small household appliances like PC's, mobile phones, MP3 players, I-Pods, Tablets etc
- Consumer and lighting equipments like bulbs , CFL ,fluorescent tube lights



Figure 3.4: The E -Waste room stores all the damaged electronic gadgets and their parts

3.5 Biomedical Waste Management:

At Integral University a 560 bedded hospital, as part of the Medical College, with state of the art medical facilities and more than 200 doctors are available to make the country progressive and prosperous in all walks of life.

Integral Institute of Medical Sciences and Research (IIMS&R) which is a hi-tech 560 bedded hospital, fully furnished with advanced facilities and managed by highly qualified medical staff. It has 18 departments besides Emergency & Trauma Care Unit. IIMS&R, have 23 departments to provide training and patient care. There are numbers of PG and UG courses are running and imparting medical education and dedicated social services to the local and off course regional human kind too at very nominal cost.

3.6 Biomedical waste generation:

The quantum of waste generated in India is estimated to be 1-2 kg per bed per day in a hospital and 600 gm per day per bed in a clinic. 85% of the hospital waste is non-hazardous, 15% is infectious/hazardous. Mixing of hazardous results in to contamination and makes the entire waste hazardous. Hence there is necessity to

segregate and treat. Improper disposal increases risk of infection; encourages recycling of prohibited disposables and disposed drugs; and develops resistant microorganisms. Approximate 550kg/day hospital waste generated in Integral University and for the disposal of waste MoU between Transport Disposal and Storage Facility (TSDF) has been made.

Earlier waste management study has been conducted in 2016 and it is found that approximately 120 kg/day waste is generated from the Employee residential area, 300 kg. From mess activities, 250 kg from hostel and 130 kg from academic region and on average 110kg/day from regular Street sweeping which contribute to the total 910 kg solid waste per day. Waste generated in IIMS&R, University Polytechnic and Pharmacy blocks are not included in this case study

Source: Pandey Uma Prasad, Banerjee, Mumtaz Neha and Izhar Tabish (2016), International Journal of Emerging Technologies in Engineering Research (IJETER) Volume 4, Issue 5, May (2016)



ENERGY AUDIT

2020 – 2021

4.0 Introduction

Energy Audit needs to be done to Identify Energy saving Opportunities in a facility or areas with excess use of Energy compared with set up standards. Energy audit is an effective tool of energy management to use Energy effectively and efficiently. Energy today has become a key factor in deciding the product cost at micro level as well as in dictating the inflation and the debt burden at the macro level.

Energy cost is a significant factor in economic activity at par with factors of production like capital, land and labour. The imperatives of an energy shortage situation calls for energy conservation measure, which essentially mean using less energy for the same level of activity. Energy Audit attempts to balance the total energy inputs with its use and serves to identify all the energy streams in the systems and quantifies energy usages according to its discrete function. Energy Audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating & maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation equipment's, instrumentation's and technology

4.1 Objectives of Energy Audit

An energy audit is an inspection survey and analysis of energy flows for energy conservation in a building and in an organization. It may include a process or system to reduce the amount of energy input into the system without negatively affecting the output.

The specific objectives of Energy audit are:

- Verify the steps adopted for energy management in the campus
- Spot the inefficient or inadequate practices, if any
- Improve the energy preserving measures and methods
- Identify potential energy saving opportunities
- Formulate feasible steps and measures to be adopted in the campus

A Preliminary Audit uses existing data to look extensively at the existing energy consumption patterns and identifies the areas for improvement, sets "reference points", and identifies areas for more in-depth study.

A Detailed Audit is more comprehensive and is carried out in phases, evaluating all major energy using systems. It estimates energy savings and cost, and accounts for the energy use of all major equipments.

4.2 Electrical Power Consumption at Integral University

Integral University is located in district Lucknow of Uttar Pradesh, consumes on an average 350000kW of electricity throughout the year.

The authority keeps on replacing the old filament bulbs, CFL bulbs and tube lights by low energy consuming LED bulbs and LED tubes and bulky high-power consuming fans by energy efficient fans in order to keep the electricity consumption of the university as low as possible.

Table showing the electricity consumption pattern in Integral University. This table indicates consumption of solar units and consumption from grid for the financial year 2019 - 2021, which contributed towards energy saving.

Table 4.1: Electricity Consumption Chart 2018 - 2019

| Month | Solar Unit consumed (KW) | Unit consumed from Grid (KW) | Total Unit Consumed (KW) | Share of Solar (%) |
|--------|--------------------------|------------------------------|--------------------------|--------------------|
| Aug-19 | 129503 | 399975 | 529478 | 24 |
| Sep-19 | 120268 | 570485 | 690753 | 17 |
| Oct-19 | 146879 | 247745 | 394624 | 37 |
| Nov-19 | 179588 | 365365 | 544953 | 33 |
| Dec-19 | 160886 | 326850 | 487736 | 33 |
| Jan-18 | 142102 | 192415 | 334517 | 42 |
| Feb-18 | 101422 | 252585 | 354007 | 29 |
| Mar-18 | 102925 | 294425 | 397350 | 26 |
| Apr-18 | 104974 | 255525 | 360499 | 29 |
| May-18 | 106890 | 163180 | 270070 | 40 |
| Jun-18 | 156142 | 284790 | 440932 | 35 |
| Jul-18 | 125459 | 366020 | 491479 | 26 |
| Sum | 1577038 | 3719360 | 5296398 | 30 |

Source: Electrical Maintenance Department, Integral University

Table 4.2: Electricity consumption chart 2020

| Month | Solar Unit consumed (KW) | Unit consumed from Grid (KW) | Total Unit Consumed (KW) | Share of Solar (%) |
|--------------|--------------------------|------------------------------|--------------------------|--------------------|
| January | 91413 | 252980 | 344393 | 27 |
| February | 123522 | 219740 | 343262 | 36 |
| March | 152100 | 139640 | 291740 | 52 |
| April | 140034 | 26835 | 166869 | 84 |
| May | 157773 | 141885 | 299658 | 53 |
| June | 123334 | 192825 | 316159 | 39 |
| July | 121428 | 198385 | 319813 | 38 |
| August | 124855 | 206990 | 331845 | 38 |
| September | 125443 | 244235 | 369678 | 34 |
| October | 130176 | 168305 | 298481 | 44 |
| November | 107610 | 150170 | 257780 | 42 |
| December | 98572 | 191985 | 290557 | 34 |
| Total | 1496260 | 2133975 | 3630235 | 41 |

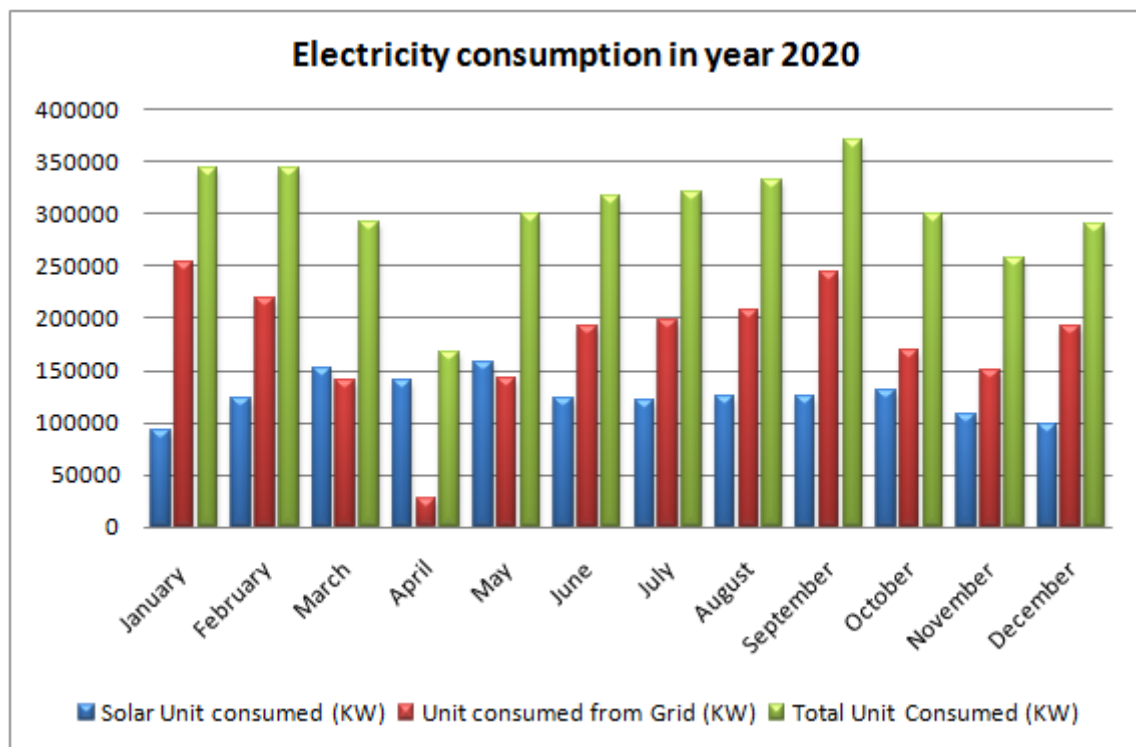


Figure 4.1: Electricity consumption graph in year 2020

Table 4.3: Electricity consumption chart 2021

| Month | Solar Unit consumed (KW) | Unit consumed from Grid (KW) | Total Unit Consumed (KW) | Share of Solar (%) |
|--------------|--------------------------|------------------------------|--------------------------|--------------------|
| January | 82115 | 293300 | 375415 | 22 |
| February | 116550 | 173290 | 289840 | 40 |
| March | 143713 | 226545 | 370258 | 39 |
| April | 170696 | 144640 | 315336 | 54 |
| May | 141596 | 169640 | 311236 | 45 |
| June | 120519 | 195575 | 316094 | 38 |
| July | 122519 | 359680 | 482199 | 25 |
| August | 100815 | 354290 | 455105 | 22 |
| September | 115127 | 407570 | 522697 | 22 |
| Total | 1113650 | 2324530 | 3438180 | 32 |

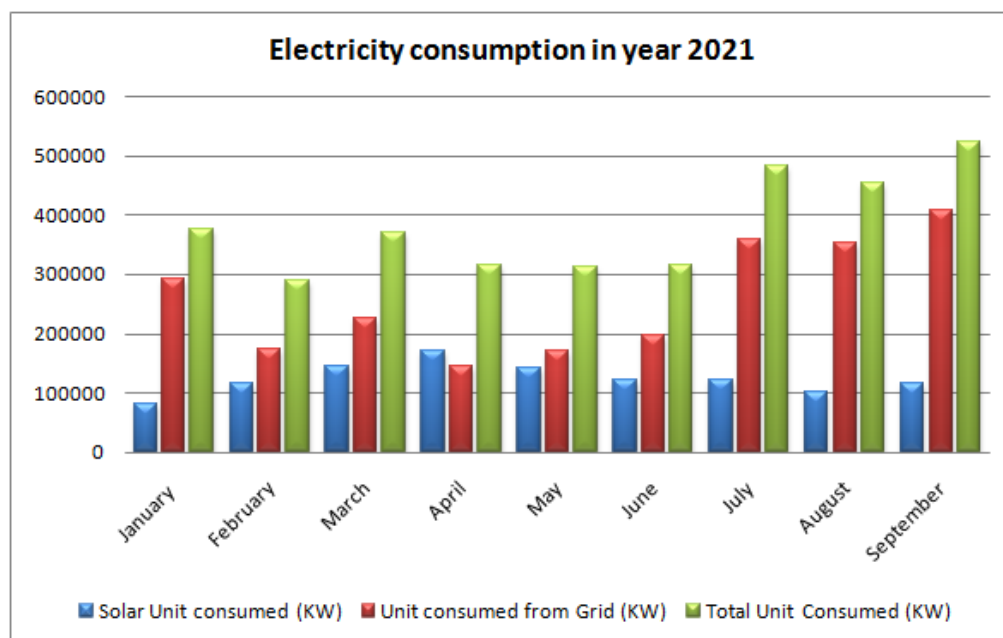


Figure 4.2: Electricity consumption graph in year 2021

4.3 Renewable Energy

Conservation is the process of reducing demand on a limited supply and enabling that supply to begin to rebuild itself. Many times the best way of doing this is to replace the energy used with an alternate. Without energy conservation, the world will deplete its natural resources. While some people don't see that as an issue because it will take many decades to happen and they foresee that by the time the natural resource is gone there will be an alternative; the depletion also comes at the cost of creating an enormous destructive waste product that then impacts the rest of life. The goal with energy conservation techniques is reduce demand, protect and replenish supplies, develop and use alternative energy sources, and to clean up the damage from the prior energy processes.

Integral University being one of the most exemplary university of Lucknow consumes an average unit 350000 kW per year in average. The average solar unit consumed per year is 13000 kW through the installed solar LED lights and other appliances. The authority keep on replacing the old filament bulbs, CFL bulbs and tube lights by low energy consuming LED bulbs and LED tubes and bulky high power consuming fans by energy efficient fans in order to keep the electricity consumption of the University as low as possible.

4.4 Installed Solar Panels

Installation of solar panels on the terrace of the department is being done and is in use for the street lights inside the campus. Integral University has adopted SPV Technology to reduce its reliance on conventional power. For SPV grid interactive system, available roof area on the building is used for setting up solar PV plants. The electricity generated here is fed to transmission grid. Rooftop solar PV systems are easy to install & maintain, have long life and are modular in nature.

In tune with the international trend, Integral University has installed 1MWp Rooftop Grid Interactive Solar Power Plant as per Solar Energy Corporation of India (SECI) guidelines & specifications. Apart from 30%-40% revenue saving, the plant abates around 1400 tons of Carbon dioxide annually and reduces emissions from grid power and backup diesel generators.

Table 4.4: 1MWp SOLAR PHOTOVOLTAIC PLANT (Grid Interactive & Rooftop).

| Location | Capacity (kWp) | Modules (320 Wp) | Inverters |
|-------------------|----------------|------------------|---|
| Academic Block | 200 | 720 | 66kVA (3 Nos.) |
| New Girls Hostel | 150 | 460 | 50 kVA (3 Nos.) |
| Civil Block | 110 | 417 | 66kVA (1No.), 25kVA (1 No.), 20kVA (1No.) |
| Medical Phase II | 110 | 343 | 50kVA (2Nos.) |
| Medical Phase - I | 100 | 400 | 25kVA (4 Nos.) |
| BNLT Block | 90 | 340 | 66kVA (1 No.), 25kVA (1 No.) |
| Residential Block | 80 | 240 | 50 kVA (1 No.), 30kVA (1No.) |
| Library | 70 | 220 | 50 kVA (1 No.), 20kVA (1No.) |
| Old Girls Hostel | 60 | 180 | 66kVA (1No.) |
| NLT A Block | 40 | 120 | 50kVA (1No.) |



Figure 4.3: Solar light installation on the terrace of Departments.

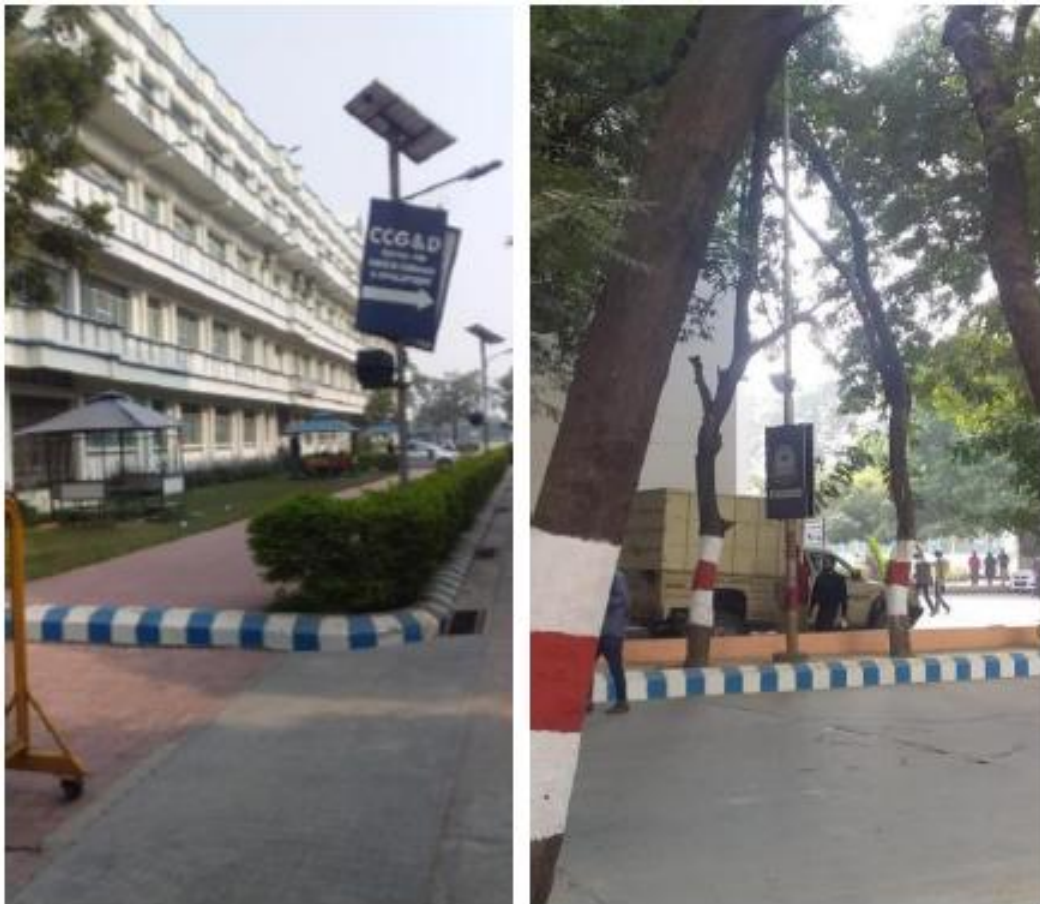


Figure 4.4: Solar light installation within the campus

4.5 D. G. Set detail in University Campus

| S. No | Location | Capacity |
|-------|---|---------------------|
| 1 | Behind Hall 1 (Near Road) | 500 kVA |
| 2 | Phase 2 Academic Block - N (Behind NESCAFE) | 320kVA, 500 × 2 kVA |
| 3 | Other Campus (Beside Techno Inter College) | 160 kVA |



Figure 4.5: D. G. Set for power backup at university

4.6 Fuel Consumption detail (Approx):

| | |
|---------|--------------|
| 500 kVA | 90 - 100 l/h |
| 320 kVA | 70 l/h |
| 160 kVA | 40 l/h |

4.7 Recommendations

- Updating of technologies in laboratory equipments.
- Replacing old electrical cables and pipelines
- Replacing incandescent bulbs with LEDs.
- Ensuring even lighting facilities in rooms.
- Replacing old gadgets with new advance electronic gadgets.
- Encouraging students and staff to switch off electrical gadgets and turn off the water taps when not in use.
- Replace old pipelines with new ones, and latest motors for pumping water.
- New buildings to be constructed should follow the pattern and assure natural light and air passage, to reduce loss of energy.
- Replace old electrical cables with new ones



ACTION PLAN FOR GREEN AUDIT REPORT
2020 – 2021

5.1 Preparation of Action Plan

Management's policies referring to University and approach towards the use of resources need to be considered in purview of green audit report. An environmental policy should be formulated by the management of the university. The university should have a policy on green awareness raising or training programmers for students and staff, green awareness policy right from kitchen staff to procurement policy by the management. Based on the policies, university should have an action plan. The green auditing report will be a base line for the action plan to be evolved

5.2 Follow up Action and Plans

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

Audit follow up is part of the wider process of continuous improvement. Without follow up, the audit becomes an isolated event which soon becomes forgotten in the pressures of organizational priorities and the passing of time.

5.3 Environmental Education

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

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

- Display of environmental awareness board such as – Save water, save electricity, No wastage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.,
- Give priority to environmental clubs and its programmes
- Set up model rainwater harvesting system, vegetable garden, medicinal plant garden, butterfly garden etc,

- Conduct exhibition on throw away plastic danger, recyclable products etc
- Display various slogans and pictures to protect environment
- Implement chemical treatment system for waste water from the laboratories and incinerators,
- Different coloured waste bins to segregate waste and its easy collection

5.4 Consolidation of Audit Findings

Green Audit will create a greater appreciation and understanding of the impact of university actions on the environment. Integral University has successfully been able to identify the impacts on the environment through the various auditing exercises. The green auditing exercises has brainstormed and provide insights on practical ways to reduce negative impact on the environment. Participating in this green auditing procedure has gained knowledge about the need of sustainability of the university campus. It will create awareness around the use of the Earth's resources in your home, university, local community and beyond. Integral University should adopt an Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.

White good producing companies are rapidly developing in the area of energy efficiency. Many computer hardware and electrical supply companies now cooperate with customers to reclaim old or damaged parts. Although over twice as expensive upfront, LED monitors are estimated to use 40-60% less energy overall than LCD. All computers purchased by the Integral University have an Energy Star rating, which is beginning to be a standard requirement for computers.

5.5 Conclusion and recommendations

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can "add value" to the management approaches being taken by the university and is a way of identifying, evaluating and managing environmental risks (known and unknown).

Integral University has set out standards to ensure that sustainability is a critical part the standard operating procedures and is fully integrated into the working, research, teaching, social and cultural spheres of the campus. There is scope for further improvement, particularly in relation to waste, energy and water management. The university in recent years considers the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the University does perform fairly well, the recommendations in this report highlight many ways in which the management can work to improve its actions and become a more sustainable institution.

5.6 Suggestions

Some of the very important suggestions are:-

- Adopt the proposed Environmentally Responsible Purchasing Policy, and work towards creating and implementing a strategy to reduce the environmental impact of its purchasing decisions.
 - Increase recycling education on campus.
 - Increase Awareness of Environmentally Sustainable Development- Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future.
 - Educate for Environmentally Responsible Citizenship- Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.
 - Practice Institutional Ecology- Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.
 - Involve All Stakeholders- Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organizations to assist in finding solutions to environmental problems.
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- Collaborate for Interdisciplinary Approaches- Convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.
- Increase reduce, reuse, and recycle education on campus

5.7 Recommendations

- Installing motion sensors in buildings so that when rooms or hallways are vacant the lights shut off on their own. By this we need not to practice the switch off drills and can save energy efficiently.
- Making sure that all computers in computer labs are turned completely off during unoccupied hours. Mostly there are limited hours for students to practice the computers, in order to save energy, the computers should be turned off in such timings so that the energy could be saved.
- For efficient water use, water meters should be installed. As we know water scarcity is increasing day by day & minute by minute. The neat and clean water has become a dream, so the college must monitor the water usage which can be achieved by installing the water meters.
- The college has its own Sewage Treatment Plant (STP). By doing so there will be a great reduction in water usage, as the water after treatment can be used for various purposes in the college.
- To adopt switch off drills throughout college, that is during day time the lights should be switched off to save electricity. We have seen that most of the classroom of Integral University does not need to put on lights during day time.
- The noise was monitored in the college; the college noise has exceeded the limits given by MOEF (Ministry of Environment and Forests) & CPCB (Central pollution Control Board). It is recommended to control the noise within the campus.
- Particulate matter was also monitored at various locations. The PM in Indoor was found under the limits but the PM in ambient air was found exceeding the limits mainly at front gate. It is probably because the institution is situated on NH2, but still it is recommended to keep a continuous vigil on the PM concentrations in the college.

- Composting, Recycling, Reusing & Other processes should be positively incorporated in college campus to utilize or using as alternate.
- The College should motivate or educate every local human by activities, poster and
- College should apply energy saving method in campus for reducing the use of energy.
- The college should use the rain water for gardening.
- The College should follow the Environmental aware laws for different aspect of Environmental management.
- The College should make the rule & poster the slogan in campus for protecting the environment.
- The College should make an internal panel to check the laboratory quality.

5.8 Commitments after Green Auditing

In the light of green audit the University should, adopt some additions in the vision and mission Statements promoting compliance with environmental laws and regulations for sustainable existence of the University.

5.9 Vision Statement

The University is committed to becoming an innovative leader among academic institutions in the areas of environmental education and research and in the practice of environmental management and stewardship. The University is obliged to the principle of sustainable development, and will use its resources in a manner that does not compromise the ability of future generations of the university and global communities to meet their needs.

5.10 Mission Statement

To promote the environment management and conservation in the University and integrate sustainability across all levels in the campus by engaging students, staff, faculty, alumni, and partners with the purpose to identify, quantify, describe and prioritize framework of environment sustainability in compliance with the applicable regulations, policies and standards.

DECLARATION

I, hereby certify that I was a part of the Audit team that developed the Green Audit Report for Integral University, Lucknow.

Name: Mr. Akash Kumar

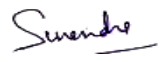





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Audit was conducted on behalf of PARAMARSH:

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