NETAJI SUBHAS UNIVERSITY
JAMSHEDPUR, JHARKHAND

GREEN AUDIT REPORT 2023

KORU FOUNDATION
JAMSHEDPUR

Executive Summary

Green auditing is the process of identifying and determining whether institutions' practices are eco-friendly and sustainable. The main objective to carry out a green audit is to check green practices followed by the university and to conduct a well-formulated audit report to understand where we stand on a scale of environmental soundness. The initiative taken by Netaji Subhas University to conduct a Green Audit of the university campus is a commendable sustainable goal. The strategies followed were the preparation of questionnaires and subsequent action plans to implement the project. Questionnaires prepared to conduct the green audit were based on the guidelines, rules, acts, and formats set by the Government of India, Ministry of Environment and Forest, New Delhi, and Central Pollution Control Board, New Delhi. Questionnaires were prepared for solid waste, energy, water, hazardous waste, and e-waste. For audit purposes, analysis of suitable data is required, for the same study area is grouped into various Blocks and Departments. The audit was carried out for solid waste, electricity and energy, water and wastewater, illumination, noise level, and green inventory. It also indicates the green initiatives taken by universities to save environmental resources. The "Green Audit" also presents the "Environmental Management Plan".

CERTIFICATE

PRESENTED TO

NETAJI SUBHAS UNIVERSITY

Pokhari, PO: Bhilai Pahari, PS: MGM, Dist:, Jamshedpur, Jharkhand 831012

Has been assessed by KORU FOUNDATION for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

GREEN AUDIT

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory,

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

SIGNATURE

02/03/23 - 05/04/23

Date of Audit

KORU FOUNDATION, H.NO 38605, HILL VIEW COLONY, DIMNA

www.thekorufoundation.org | thekorufoundation@gmail.com

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1.0 Introduction

1.1 Need for green audit

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity.

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 is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation.

The 'Green Audit' was carried to analyse environmental practices within the campus, which have an impact on the eco-friendly ambience of university. The primary goal of the green audit is to secure the best practices for environmental sustainability. It reduces the possibilities of health hazards and threats for the students of the campus. There are several norms and standards in the environmental management system, and the green audit helps to conform to the norms. The audit also helps identify the ideal protocols that develop a sustainable ecosystem on the campus.

The different steps under the green audit consist of – Water audit, waste disposal audit, energy audit, and environmental quality audit including illumination and noise level in the campus. With the green audit reports, the universities can also recognize cost-effective methods for waste management. It allows universities to set and promote an enhanced learning ecosystem and obtain the top grade. More than that, it helps in exhibiting a credible branding of the educational university.

1.2 Objectives of the audit

The main objective of green audit was to understand the current practices of sustainability with regard to the use of natural resources, energy utilisation, generation of wastes and management in environmentally friend way. Focus was on establishing a baseline of existing environmental conditions with focus on natural and physical environment. Creating awareness among students and staff concerning real issues of environment and its sustainability. To create a report that document baseline data of good practices and provide strategies and action plans towards improving environmental quality for future.

1.3 Green Audit Process -

- Understand the scope of audit
- Analyze the strengths and weaknesses of the internal environment.
- Conduct the audit
- Evaluate the observations of audit program.
- Prepare a report of the observations side by side.

1.4 Benefits of Green Audit:

- If Green Audit is enforced in an effective way then there are many advantages that could be adopted from it.
- Recognize the cost saving methods through waste minimizing and managing strategies.
- Point out prevailing and forthcoming complications.
- Empower the organizations to frame a better environmental performance.

- Enhance the alertness for environmental guidelines and duties

1.5 Methodology of Green Audit.

- Formation of core team for green audit and Kick-off meeting and discussions.
- Primary data collection of energy, water and solar plant details / monitoring of environmental parameters such as noise level and illumination.
- Analysis of data and representation of data analysis.

1.6 Audit Participants

On behalf of NSU

Sl No	Name	Designation/Departments
1	Prof. (Dr.) Acharya Rishi Ranjan	Pro-VC
2	Mr. Nagendra Kumar	Registrar
3	Mr. Ranjan Kumar Mishra	Dean IT, Head of IQAC cell
4	Mr. D. Shome	Dean Academics
5	Dr. Pramod Kumar Singh	Dean Research
6	Dr. Raj Kumar Nayak	Prof. Dept of Education
7	Dr. Jyoti Prakash Swain	Principal Education
8	Dr. Subhendu Mukherjee	Dean Management
9	Dr. Anumeha	HOD Diploma
10	Dr. Ishita Ghosh	HOD Physics, Asst Dean Research
11	Dr. Jaya Kumari	HOD Political science
12	Mr. J. Rajesh	Dean Administration
13	Dr. Vijay Kant Pandey	HOD Agriculture
14	Ms. Mousumi Murmu	HOD Geography
15	Dr. Madhumita Pandey	HOD Botany
16	Mr. Ravi Kant	HR Section officer

On behalf of Koru Foundation

Sl No	Name	Position	Qualifications/Experience
1	Ajit Kumar Singh	Lead Auditor	M.Sc, PGDEPCT, PGDEMS, Lead Auditor ISO 14001: 2015, 20 years' experience in EMS & Compliance.
2	Amit Sinha	Co-Auditor	Bachelor in marine Engineering, PG Operations Management
3	Madhulika Singh	Co-Auditor	Bachelor in political science, MSW
4	Dipak Soni	Co-Auditor	B.Sc (IT) Project Co-ordinator. Working in social and environment sector last 5 years .

1.7 Onsite Visit

Audit Stage Green Audit was done with the help of co-associates involving different student groups, teaching, and non-teaching staff. The green audit began with the kick-off meeting with core team on 17th December 2022 followed by teams walking through all the different facilities at the University, determining the different types of utility patters waste management, environmental parameters. The staff and learners were interviewed to get details of usage, frequency, or general characteristics of environmental parameters. Data collection was done in the sectors such as

Energy, Waste, Green Area, and Water use. University records and documents were verified several times to clarify the data received through surveys and discussions.

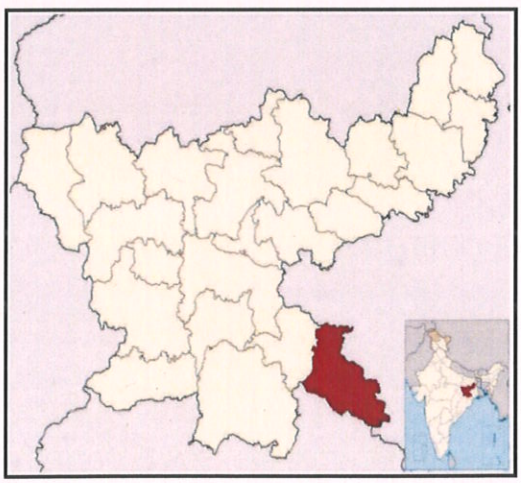
1.8 Focus Group Discussion

A pre-audit meeting provided an opportunity to reinforce the scope and objectives of the audit and pre-audit discussions were held on the basis of green initiatives taken and the current scenario of the University campus. This meeting is an important prerequisite for the green audit because it is the first opportunity to understand the concerns. It was held with the concerned person of the University regarding initiatives taken by the University and regarding the last NAAC Green Audit conducted by the University. The meeting was an opportunity to gather the information that the audit team can study before arriving on the site. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself. The pre-audit meeting was conducted successfully and necessary documents were collected directly from the University before the initiation of the audit processes. The actual planning of audit processes was discussed in the pre-audit meeting. An Audit team was also selected in this meeting with the help of staff and the University management. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself.

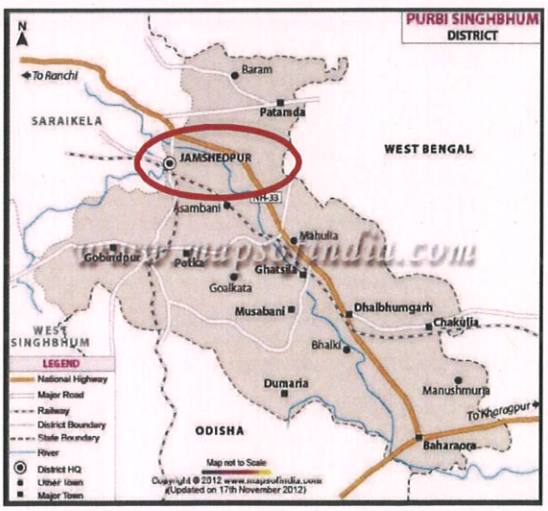
1.9 Management Commitment

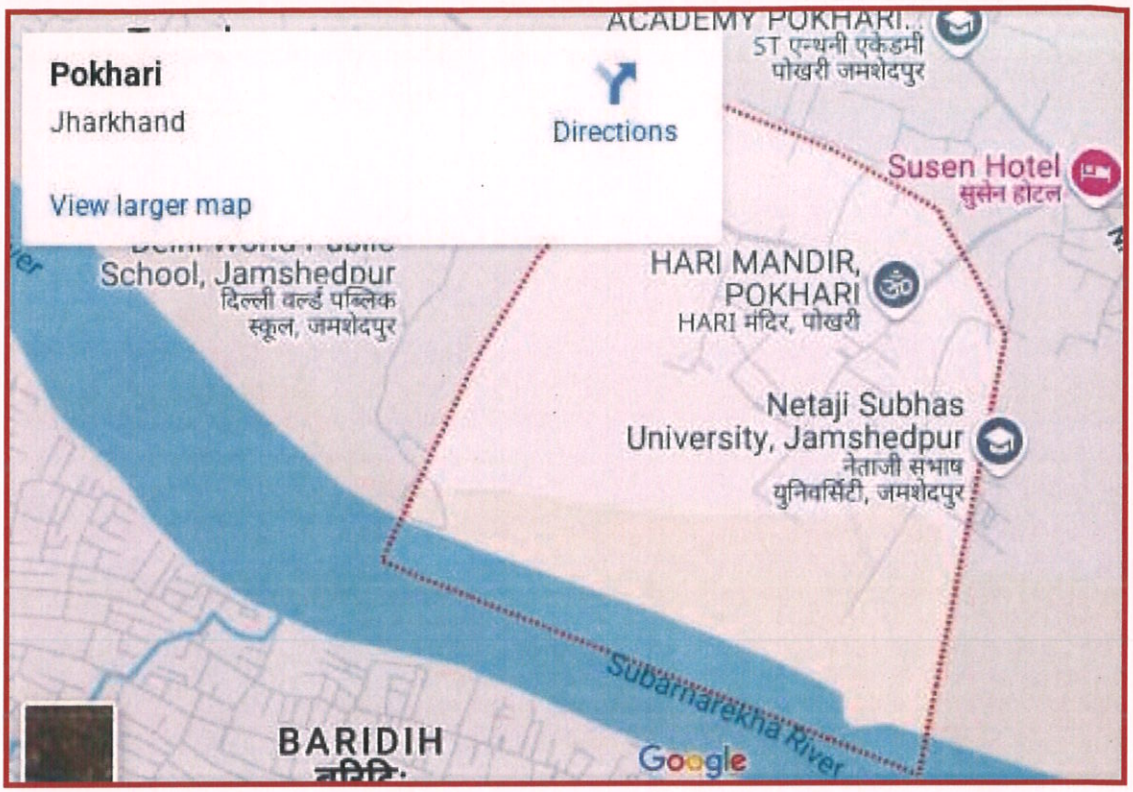
The Management of the University has shown a commitment towards green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environmentally friendly such as awareness programs on the environment, campus farming, planting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

Map of Jharkhand



Map showing Jamshedpur

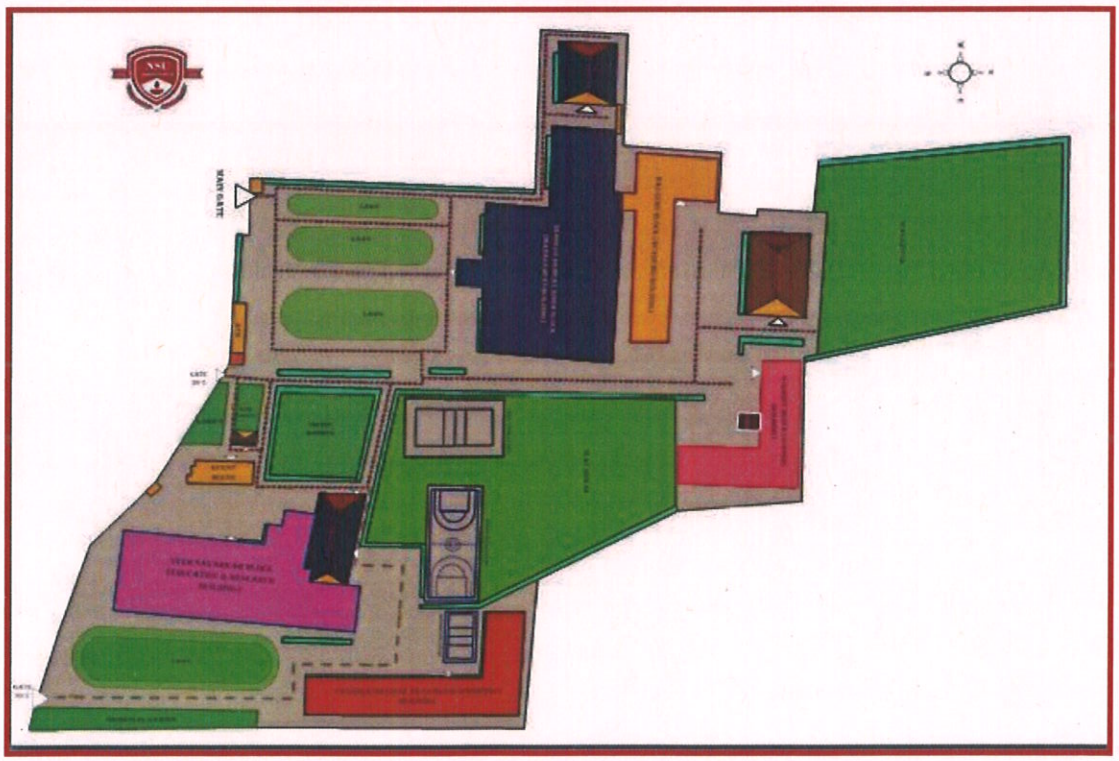




Map showing village Pokhari

Netaji Subhas University Pokhari, Jamshedpur

Entrance of Netaji Subhas University



The map of Netaji Subhas University

2.0 About Netaji Subhas University

Netaji Subhas University was established in 2018 which is the premier and one of the best University in Jharkhand, with a venerable legacy, highest academic standards, diverse educational programmes, distinguished faculty, illustrious alumni, varied co-curricular activities and modern infrastructure which stands as the pride of Jharkhand and Eastern India. This is also one of the best University in Jamshedpur which emerges as a symbol of excellence, integrity and openness of mansa (thought), vacha (speech) and karmana (action).

As a merit-based, equal-opportunity university, offering a world class education free from any discrimination, encourage and enhance the participation of students in the education through concerted and focused actions.

Build a high performance, nimble and students organisation while nurturing a culture of creativity and innovation that enables the university to respond proactively and with agility.

2.1 Vision & Mission Statement

2.1.1 Vision of NSU

To be the ultimate destination in Higher Education, Professional, and Technical Education in terms of accessibility, affordability, quality, equity, excellence and inclusion and to demonstrate our intellectual and spiritual presence at the National and International level.

2.1.2 Mission of NSU

We intend to provide multi-disciplinary, research-based knowledge, twenty first century skills, scientific, secular spiritual and humanistic values following learner centric approaches ensuring learner autonomy in a technology-enabled inclusive learning environment.

We assure our stakeholders to facilitate construction of knowledge through effective teaching and experiential learning, robust research and innovation, to disseminate such knowledge with the support of I.C.T and to apply our research based wisdom judiciously to the benefit of our students and knowledge society.

We take the responsibility for the learning outcomes demonstrated by our students with respect to cognition, volition and psycho-motor skills. We undertake quality assurance activities and remain in touch with the outside world of work so as to find out appropriate placement of our students.

We are committed to our students, institution, human values and excellence for which we keep on learning ourselves through different continuous professional development programmes in the direction of lifelong learning.

2.1.3 Environmental Policy of NSU

NSU has well defined environmental policy which is committed for environmental conservations and sustainability.

University established Go-Green committee for that hold responsibility for the enactment, enforcement and review of the Environmental Policy.

Go- Green Committee is the source of advice and guidance to staff and students on how to implement environmental Policy.

2.2 Geographical Location

The college has a sprawling pollution-free campus spread over 25.42 acres of land in out skirts of Jamshedpur city at Pokhari village. The built-up area approx. 364862.13 sq. ft.

2.2.1 Buildings/blocks

Name of Buildings blocks/Departments			
Sl No	**Buildings Names**	**Departments**	**Programs**
1	Chandrashekhar Azad Block	Pharmacy	B Pharma, D Pharma
2	Veer Sawarkar Block	B Ed& Research cell	B Ed, M Ed, B Sc
3	Sukhdev Block	Nursing	-
4	Rajguru Block	Hotel Management	-
5	Bhagat Singh Block	Main Building	BBA, MBA, MCA, BCA,

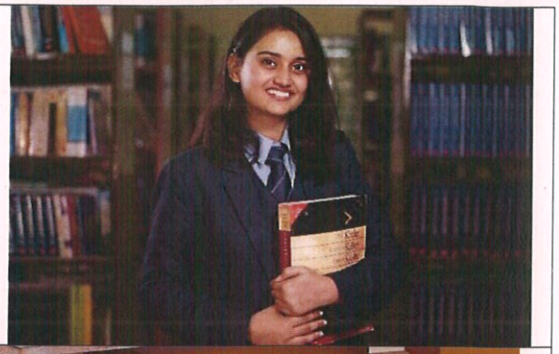
2.2.2 Facilities available in university.

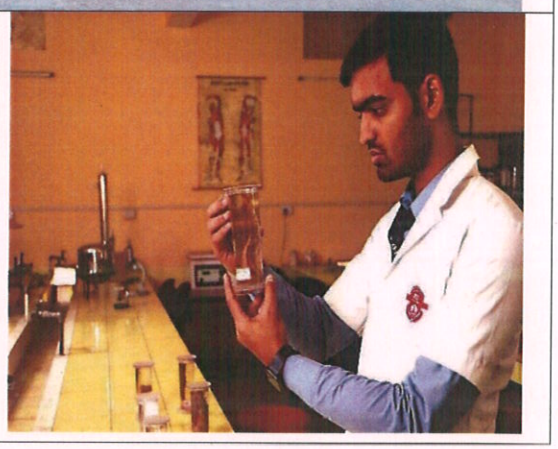
Netaji Subhas University (NSU), Jamshedpur provides state-of-the-art infrastructure to its students. These facilities go a long way ensuring a productive campus life and providing a perfect backdrop for academic pursuits.

NSU, Jamshedpur's residential campus at Pokhari, provides a serene atmosphere to the students, away from the din and bustle of the city. The sprawling premises also houses the NSU office, central library, auditorium, conference hall, canteen, area for recreational activities as well as teaching & non-teaching staff housing.

Students are required to make adequate and proper use of these facilities.

The students of NSU, Jamshedpur have access to the Central Library which has a splendid reference and lending facilities for borrowing books, reports, journals, periodicals, CDs and videos, Moreover the Library has an impressive subscription to International and National Case Studies including Online Databases like EBSCO, Emerald, Scopus, JSTOR, Frost and Sullivan, EMIS etc.

3.0 Green Audit

3.1 Questionnaires

Sl No	Audit Questions	Answers/Remarks
1.1	**General information**	
1	Does any Green Audit conducted earlier?	No
2	What is the total strength (people count) of the Institute?	1822
3	What is the total number of working days of your campus in a year?	200
4	Where is the campus located?	Village - Pokhari P.S-Mango, Jamshedpur
5	Municipal dump yard Not in vicinity of institute Garbage heap? Public convenience public convenience is available	NO.

	Sewer line Stagnant water? Open drainage	NO. NO
1.2	**WASTE MINIMIZATION AND RECYCLING**	
1	Does your institute generate any waste? If so, what are they?	Yes, Solid waste, Canteen waste, paper, plastic, electronic waste etc.
2	What is the approximate amount of waste generated per day? (in KG approx.)	120 Kg
3	How is the waste generated in the institute managed? By Composting, Recycling, Reusing, Others (specify)	Single use plastic is banned on the campus. Composting is done for horticulture waste management. Solid waste (Both dry and wet) is managed by segregation in recycle. Paper waste is sent to scrap vendor periodically. NSU signed MOU with e-waste recycler.
4	Do you use recycled paper in institute?	Yes, NSU collaborates with third party recycle vendor.
5	How would you spread the message of recycling to others in the community?	Seminars and webinars for students and faculty Nukkar-Natak by Students to increasing awareness. Various campaigns for awareness are organised by NSS team.
1.3	**GREENING THE CAMPUS**	
1	Is there a garden in your institute?	Yes
2	Total number of Plants in Campus?	Full Grown Trees Small Trees Hedge Plants Garden
3	How many Tree Plantation Drives organized by campus per annum?	No. of plantation drives - 5 in last years.
4	Is there any Plant Distribution Program for Students and Community?	Yes
1.4	**WATER AND WASTEWATER MANAGEMENT**	
1	Sources of water	Ground water bore wells
2	Campus wise water usage details in KL /month	Drinking, Gardening Kitchen & Toilets, Hostel Total - 1200 KL/month
3	How does your institute store water? Are there any water saving techniques followed in your institute?	Water tanks
4	Locate the point of entry of water and point of exit	Entry - NSU uses

	of waste water in your institute.	ground water and have borewells as a secondary source of water Exit – From Canteen, Toilets, bathrooms and Hostels through covered drainage which is connected to septic tanks and soak pits.
5	Write down ways that could reduce the amount of water used in your institute	Basic ways: Close the taps after usage Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage The NSU ensures that the faucets in the washrooms and water filtration units are checked regularly and do not have any leakages.

3.2 Data analysis and final report preparation

Proper analysis and presentation of data produced from work is a vital element. In the case of a green audit, the filled questionnaires of the survey from each group were tabulated as per their modules, in Excel spreadsheets. The tabulated data is then used for further analysis. For a better understanding of the results and to avoid complications, averages, and percentages of the tables were calculated. A graphical representation of these results was made to give a quick idea of the status. Interpretation of the overall outcomes was made which incorporates all the primary and secondary data, references, and interrelations within. Final report preparation was done using this interpretation

The study covered the following areas to summarize the present status of environment management in the campus:

As part of green audit of campus, the Green Audit Assessment Team has carried out the environmental monitoring of campus. This includes Illumination, Noise level of the class rooms. It was observed that illumination and ventilation is adequate considering natural light and air velocity present. Noise level in the campus is well below the limit.

3.2.1 Air Quality:

The ambient air quality of NSU quality shows that there are very less polluted particles in ambient air; AQI for SO2 & NOX parameters are within the range of Indian living standards, there are a number of factors responsible for this cleanliness, calmness and serenity in this area. In this area more trees have been planted as the area belongs to gram panchayat area. Furthermore, no air polluting industry is established near here.

Satisfactory air quality index (OVERALL= 99), Current Air Quality Index in Mango, Jamshedpur, Jharkhand, India on 03rd April 2023. Source: SAFAR - India, Rakhiyal Ahmedabad

3.2.2 Illumination level

In order to improve education environment, classrooms need a good lighting. A good lighting makes the students feel safe, improves learning. In addition to this strengthen the schools brand value. In many studies stated that there is a close relation between lighting and the performance of the students.

Generally, about 30% of electricity consumption in university is caused by lighting. It is important to establish good learning conditions rather than energy saving. Because a good lighting in classrooms helps the students learn more.

250 lux light level is sufficient in classroom where students spend most of their times and focus on learning. In order to draw attention to the area where the teacher is located, to contribute to the students' concentration of 750 lux light level can be done here. An illumination study was carried in different class rooms with value of 255-280 lux.

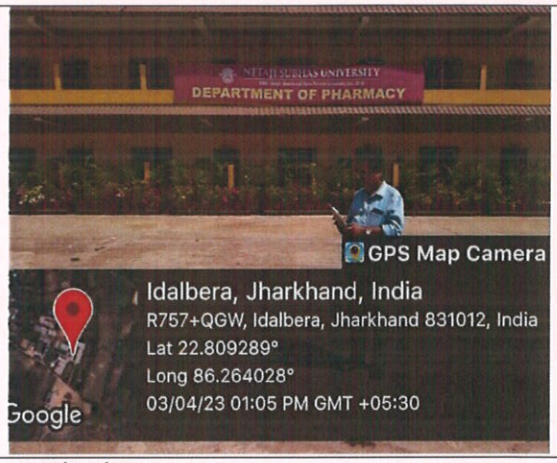
Illumination study carried in Classroom at Chandrashekhar Azad block.

3.2.3 Noise Level

The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound: Loudness and Frequency.
Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels. Awhisper about 20 dB, library place 30 dB, normal conversation about 35-60 dB, heavy street traffic 60-0 dB, boiler factories 120 dB, jet planes during take-off is about 150 dB, rocket engine about 180 dB. The loudest sound a person can stand without much discomfort is about 80 dB. Sounds beyond 80 dB can be safely regarded as Pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city. For international standards a noise level up to 65 dB is considered tolerate. Loudness is also expressed in sones. One sone equals the loudness of 40 dB sound pressure at 1000 Hz. Frequency is defined as the number of vibrations per second. It is denoted as Hertz(Hz).

Noise level meter Lutron was used to measure the noise level at different locations in the university campus.

Sl No	Locations	Sound level (dB)	Remarks
1	Chandrashekhar Azad block (Pharmacy)	54.5 dB	In court yard.
2	Sukhdev Thapar block (B.Ed block)	53.6 dB	In front of Entry
3	Shivram Raj guru Block (School bulding)	53.2 dB	In playground area
4	Khudiram Bose Block (Hotel Management)	51.3 dB	At Entry of Building
5	Bhagat Singh block (Admin Building)	54.4 dB	In front of building in lawn



Noise level monitoring

3.2.4 Water management

Water is one of the most important elements in our environment. The main uses of water in university are for drinking, cleaning, gardening, food preparation, recreational purposes, in laboratories, and for bathroom.

Water quality testing is important because it identifies contaminants and prevents water borne diseases. Drinking or using contaminated water can result in severe illness or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease. The parameters for water quality are determined by the intended use. Work in the area of water quality tends to be focused on water that is treated for human consumption, or in the environment.

At NSU the source of water is borewells. The raw water being stored in overhead tanks and supplied for different purposes. Since, buildings are situated at separate locations the storage tanks are installed at different building. Approx 20 Nos of tanks are installed with capacity of 2000 litres each.

3.2.5 Drinking water

The water used for drinking purposes is clean and well-maintained. Total 06 numbers of RO units are Installed in the campus and available on all floors of the university to provide safe drinking water.

To identify and measure the chemical constituents and properties of water samples, water chemistry analyses are performed. The goal of the analysis and the intended use of the water will determine the type and sensitivity of the analysis. The analysis findings give information.

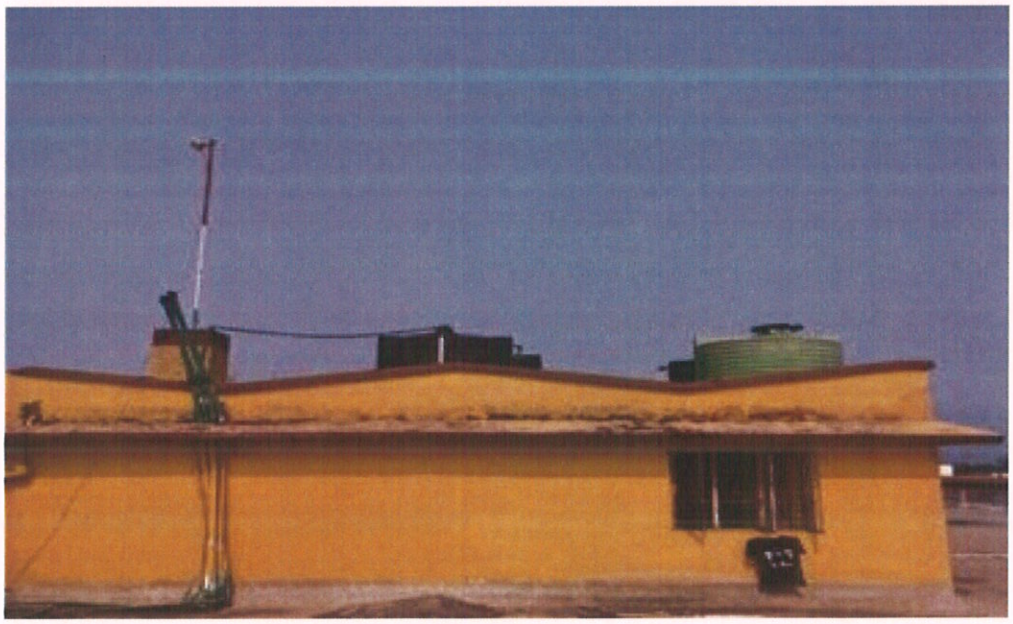
Rain Water Harvesting in the campus of NSU

Borewell in the Chandrashekhar Block

Borewell in Sukhdev Block

Borewell in the Chandrasekhar Block

Borewell in the Garden Area



Tanks for water storage in Ladies Hostel

Water tanks in Chandrasekhar block

Water tank in Sukhdev Block

Water distribution system in the buildings of NSU

Water filter in the Boys´ Hostel

Water Filter in the corridor

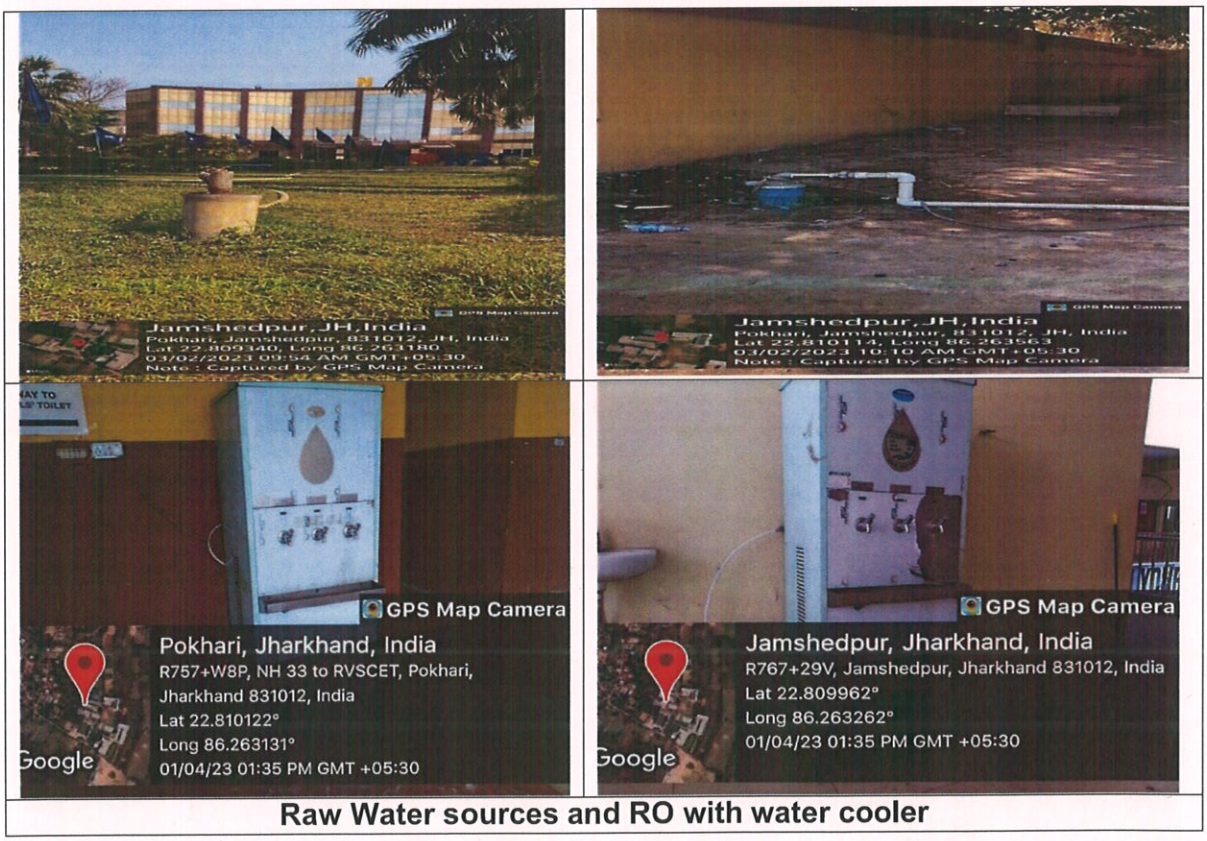
Water Quality Assessment Water samples from the NSU were collected and analysed for its quality parameters. The major parameters analysed include colour, pH, Total dissolved solids, and total suspended solids.

Microbial analysis Worldwide, water-borne infections are a major contributor to illness and fatalities. The protection of the public's health depends on routine microbiological testing of drinking water sources, recreational waters, and environmental waters. The primary goal of this microbiological analysis experiment was to identify various bacteria and fungi.

Table: Water Analysis report

Sl No	Parameters	Ground water (Borewell)	R. O Water
1	pH	6.70	7.0
2	TSS (mg/l)	1500	0.0
3	TDS (mg/l)	800	400
4	Microbial growth on agar plate.	++++	Nil

Ref: Report was published WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES (Volume 12, Issue 2, 1127-1131)



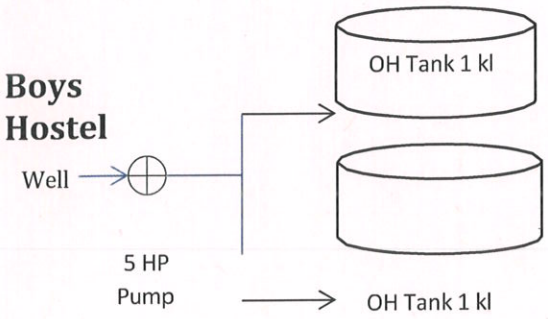
Raw Water sources and RO with water cooler

In this section, the single line diagrams of water are given which provides an overview of flow in the building.

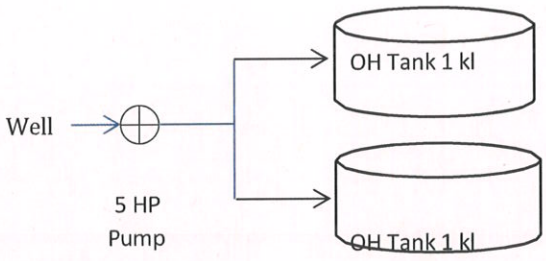
SINGLE LINE DIAGRAM – WATER

The water flow diagram of the college given below:

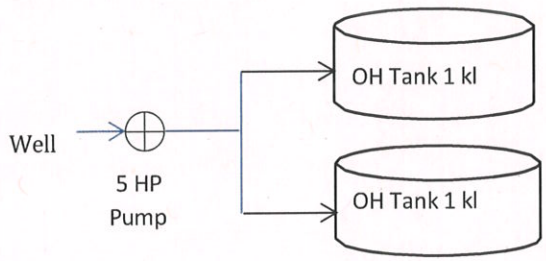
Boys Hostel



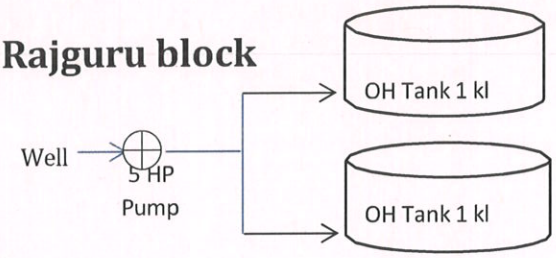
Ladies Hostel



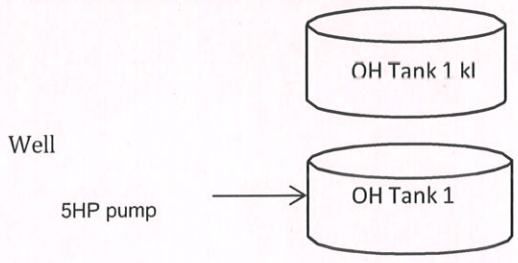
Chandrasekhar Azad Block



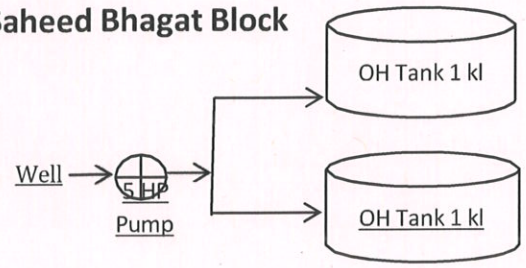
Rajguru block



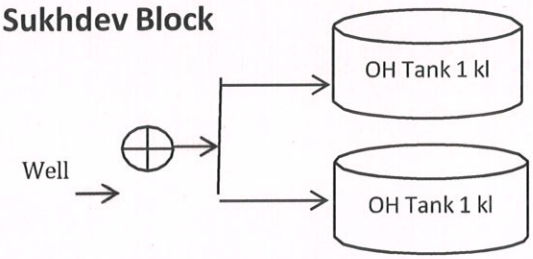
Veer Sawarkar Block

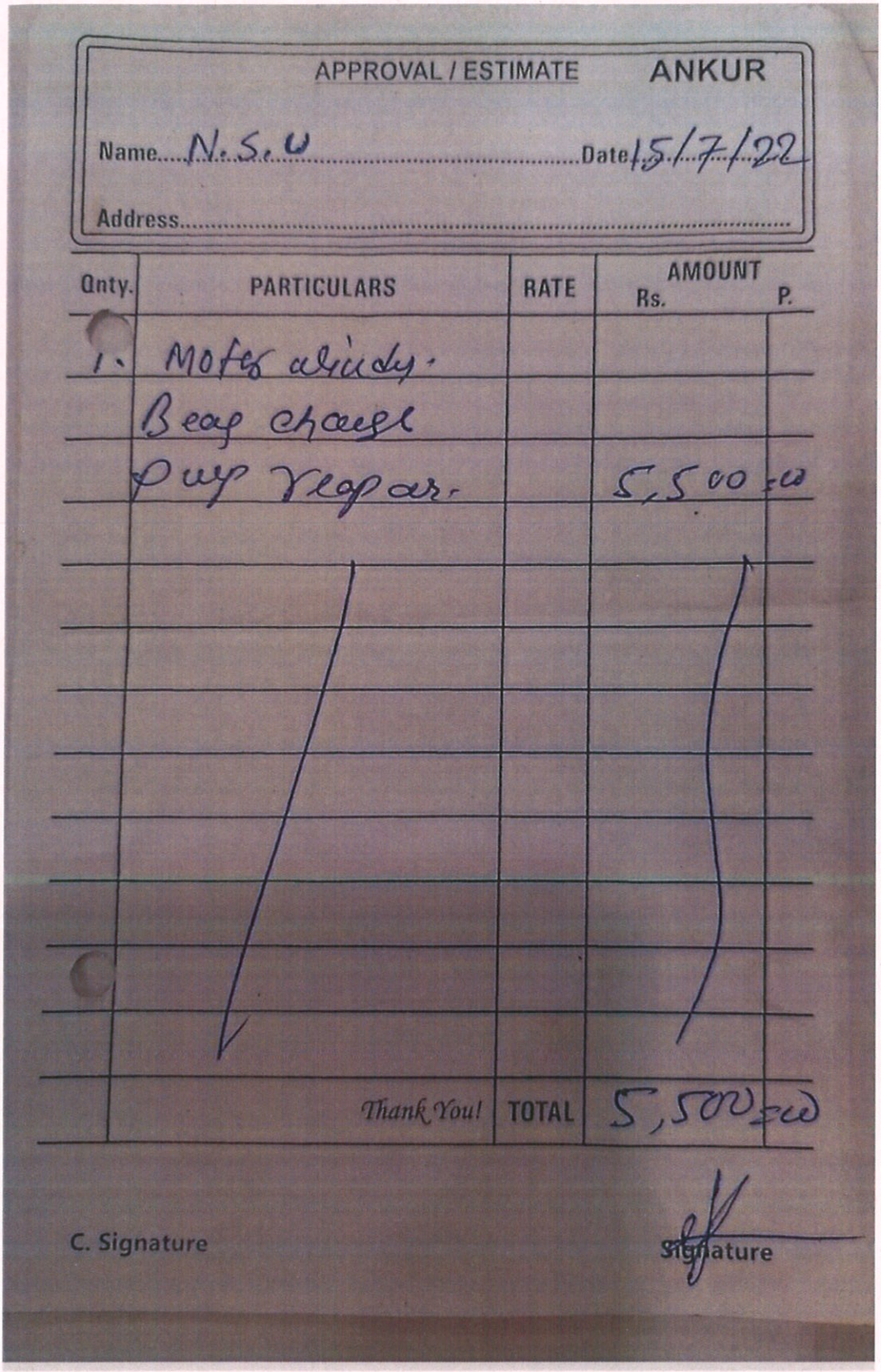


Saheed Bhagat Block



Sukhdev Block





APPROVAL / ESTIMATE ANKUR

Name N.S.U Date 15/7/22

Address

Qnty.	PARTICULARS	RATE	AMOUNT Rs.	P.
1.	Motor wiring.			
	Bearing change			
	Pump repair.		5,500	-00
	Thank You!	TOTAL	5,500	-00

C. Signature

Signature

Supporting Bills

BILL

Mobile No. 09334638767
GSTIN No. : 20AUHPM 4428R 1ZA
TISCO Code No. :
ESI Code No. : 60 - 15429 - 101

PAN No. : AUHPM 4428R
Labour Licence No. : 2351
P.F. Code No. : JH / JP / 14246

PRAKASH LOGISTICS

TATA KANDRA MAIN ROAD, USHA MORE, PO: GAMHARIA,
JAMSHEDPUR - 832 108. DIST: SARAIKELA KHARSAWAN (JHARKHAND)

Bill No.: PL - 03,A/ 22-23
Order No.:
Challan No.

Date : -14 -11 -22
Date :
Date :

To

Netaji Subash Univercity,Pakhari
JAMSHEDPUR . DIST.: EAST SINGHBHUM.

Sl. No.	PARTICULARS	QUANTITY	RATE	AMOUNT (Rs.)
1	Mechanized Cleaning of the Water Tank Sintex	14.00 Nos	800.00	11,200.00
		SUB - TOTAL : -		11,200.00
		TOTAL AMOUNT		11,200.00

Rupees: Eleven Thousand Two Hundred Only.

PRAKASH LOGISTICS * USHA MORE MAIN ROAD GAMHARIA JAMSHEDPUR

For PRAKASH LOGISTICS

Mechanized cleaning of water tank

3.2.6 Rain Water harvesting system

The Rainwater harvesting system with Recharge pits well inside the campus Rain water harvesting units are also functioning for recharging ground water level. There are soaking pits available widespread all over the campus. The collected rooftop water is collected in the recharge wells.

Rain water system and gardening

3.2.7 Energy Conservation

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. The study carried out also analysed the use of alternate energy resources that are eco-friendly.

Observations The energy is utilized in the Campus for lighting, space heating and running of laboratory instruments, appliances, ground water pumping, cooking and gardening. The source of energy for all the buildings within the campus is through electricity only.

The campus contains Lights and fans in use. The entire campus including common facility centres are equipped with LED lamps and LED tube lights, except at few locations. Computers are set to automatic power saving mode when not in use. Also, campus administration runs on switch-off drill on regular basis.

Total annual energy consumption 262067 KWh.

Month	Energy consumption				
	BP467	PKH151	PKH152	PKH71	TOTAL
MARCH'22	5668	12460	1606	-	19734
APRIL'22	7679	1906	1906	-	11491
MAY'22	9971	12112	2886	39102	64071
JUNE'22	1672	10368	3027	14711	29778
JULY'22	2353	10805	2507	7041	22706
AUGUST'22	3229	14581	5238	12094	35142
SEPTEMBER'22	1036	12143	4801	8886	26866
OCTOBER'22	1050	7810	2804	4894	16558
NOVEMBER'22	873	4064	2072	3466	10475
DECEMBER'22	377	3267	1918	3082	8644
JANUARY'23	350	3234	1842	2531	7957
FEBRUARY'23	369	3196	2096	2984	8645

Department / Building	Appliance	Ground Floor	1st Floor	2nd Floor	3rd Floor	4th Floor	Total	Watts	Total Watts
Chandrashekhar Azad Block	Ceiling fan	20	13	23	-	-	56	60	3360
(Pharmacy)	LED Tube	15	21	20	19	-	75	24	1800
	Conventional Tube	23	14	-	-	-	37	40	1480
	LED Bulb	4	5	-	-	-	9	9	81
	Exhaust Fan	5	5	4	-	-	14	40	560
	White Board	5		-	-	-	5	220	1100
	Fridge	1	1	-	-	-	2	500	1000
	Wall Fan	2	2	23	24	-	51	50	2550
	Computer	1	3	5	6	-	15	50	750
	Water cooler / dispenser	1	1	2	-	-	4	750	3000
	Water pump	1			-	-		1100	1100
	LED Panel	2	6	227	228	-	463	12	5556
	Centrifuge MC	1	2	-	-	-	3	110	330
	Vaccum pump	2	1	-	-	-	3	10	30
	Heating Mantle	3	1	4	-	-	8	500	4000
	Weighing Balance	3	2	2	-	-	7	10	70
	Microscope	1	-		-	--	1	50	50
	Projector	2	-	4	6	-	12	100	1200
	Split Air Conditioner	6	-	10	9	-	25	3000	75000
	Sound System	1	-	3	3	-	7	40	280
	BOD Incubator	1	-	-	-	-	1	200	200
	UV Spectroscopy	1	-	-	-	-	1	100	100
	Colony Counter	1	-	-	-	-	1	40	40
	Magnetic Stirrer	2	1	-	-	-	3	8.5	25.5
	Distillation	1	1	-	-	-	2	1200	2400

	Apparatus								
	Calorimeter	1	1	-	-	-	2	5	10
	Conductivity meter	1	-	-	-	-	1	180	180
	Digital Potentiometer	1	-	-	-	-	1	0.3	0.3
	PH meter	1	-	-	-	-	1	2.5	2.5
	Ultrasonic cleaner	1	-	-	-	-	1	100	100
	Spectroscopy	1	--	-	-	-	1		1
	Turbidimeter	1	-	-	-	-	1	24	24
Rajguru Block	Ceiling FAN	26	30	-	21	-	77	60	4620
(Hotel Management)	LED Tube	18	17	-	20	-	55	24	1320
	Conventional Tube	13	17	-	-	-	30	40	1200
	LED Bulb		2	-			2	9	18
	Exhaust Fan	2	2				4	40	160
	Fridge		2				2	500	1000
	Wall Fan	5					5	50	250
	Computer	5	4		6		15	50	750
	Water pump				1		1	1100	1100
	LED Panel	34			150		184	12	2208
	Air Conditioner	4	5		9		18	3000	54000
	Autoclave	1					1		
	UPS 10 KV	1					1	8500	8500
	Motor 1.5 HP	1					1	1100	1100
	Battery	20					20	1200	24000
	Television	1	3				4	60	240
	Projector		1		5		6	100	600
Veer sawarkar Block	Ceiling FAN	34	51	86			171	60	10260
(Bed&Research cell)	LED Tube	17	35	83			135	24	3240
	Conventional Tube	9	12	6			27	40	1080
	LED Bulb	3		1			4	9	36
	Exhaust Fan	3	1	1			5	40	200
	Computer	4	30	3			37	50	1850
	Water cooler / dispenser	1	2				3	750	2250
	Panel light	8	3		3		14	12	168
	Air Conditioner		6				6	3000	18000
	Halogen	1					1	300	300
	Router			1			1	20	20
	Fridge	1					1	500	500
	TV	2	2	2			6	60	360
	Battery	2					2	1200	2400
Sukhdev Block	Penal light	7	6	7			20	12	240
(Nursing building)	Ceiling FAN	37	38	1	90	18	184	60	11040
	Water pump	1		1	1		3	1100	3300
	LED Tube	11	1o		107	21	139	24	3336
	Conventional tube		16	1			17	40	680
	Bell		1				1	100	100
	Halogen			1			1	200	200
	washing machine			2	2	4	8	1400	11200
	led bulb				34	16	50	9	450
	Exhaust fan				8	5	13	40	520

	LED tube				3		3	24	72
	Battery [solar]					20	20		
	20 KVA Solar ups					1	1		
Saheed Bhagat Block	Ceiling fan	51	47	25	23		146	60	8760
(Main building)	LED Tube	52	55	20	23		150	24	3600
	LED Bulb	6	1		23		30	9	270
	LED Halogen	1		3	5		9	70	630
	LED Panel	139	22	200	12		373	12	4476
	Water Cooler	1					1	750	750
	TV	2	2				4	60	240
	Wall Fan	22	23	31			76	50	3800
	Biometric	2					2		
	AC	20	21	20			61	3000	183000
	Computer	129	107	1			237	50	11850
	Stand Lamp	2					2	200	400
	Xerox / printer scanner	13	12	22	2		49	50	2450
	Router	2	3	1	4		10	20	200
	Exhaust fan	2	2	3	6		13	50	650
	Water dispencies		1	1	1		3	750	2250
	Park Light			6			6	3	18

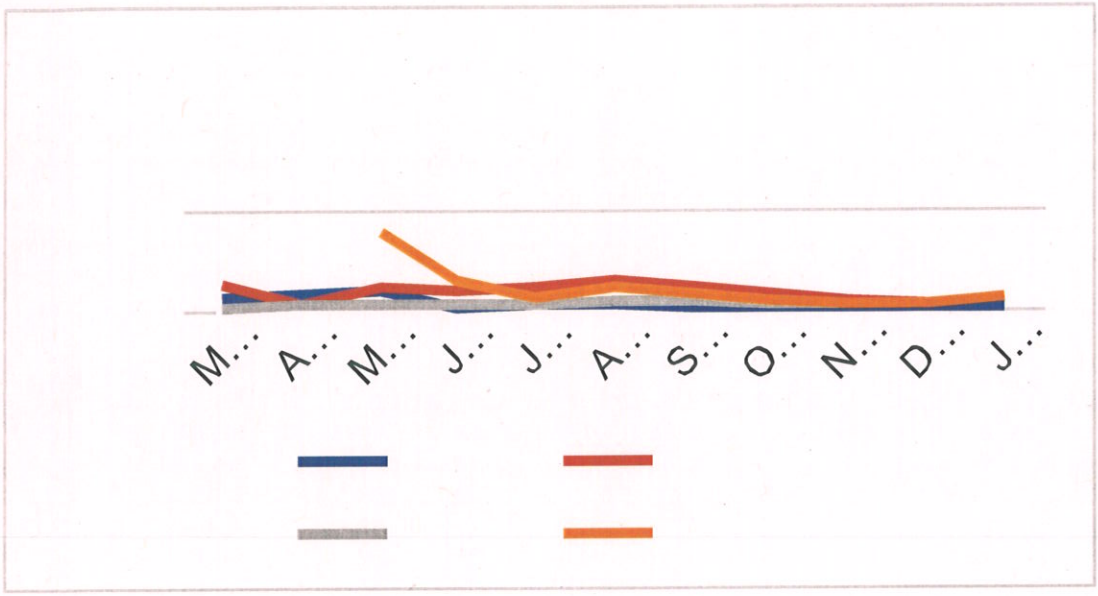
Monthly Energy Utilization by Different appliances in the campus

Item	Total Energy in KWh
FAN	9129.6
LED Tube	3191.04
Conventional Tube	1065.6
LED Bulb	205.2
Exhaust Fan	501.6
Smart board	264
Fridge	600
Wall Fan	1584
Computer	900
Water cooler / dispenser	1800
Water pump	792
LED Panel	784.8
Battery 120A	6336
Television	201.6

Projector	216
Halogen	30
LED Halogen	75.6
Printer scanner	1176
Park Light	6.48
Router	79.2
Stand Lamp	96
Bell	0.3
Sound System	42
Centrifuge MC	79.2
Vaccum pump	7.2
Heating Mantle	180
Weighing Balance	4.2
Microscope	12
BOD Incubator	48
UV Spectroscopy	6
Colony Counter	9.6
Magnetic Stirrer	6.12
Distillation Apparatus	144
Calorimeter	0.3
Conductivity meter	5.4
Digital Potentiometer	0.018

Power generation by Generator:

63 KVA Kirloskar (1 No.), 125 KVA Jackson (1 No.),250KVA Jackson (1 NO.), 20 KVA Statecon Energiaa solar UPS (1 No.) and 10 KVA(3 No.s)



1. *ENERGY PERFORMANCE INDEX (EPI)*

EPI based on the energy consumption in Apr 2022-Mar 2023. The projected energy consumption after the implementation of energy saving proposals given in the table below.

TABLE 3: ENERGY PERFORMANCE INDEX

Energy Performance and climate impact	Unit	Baseline	Projection	% of reduction - annum
Annual Electricity Consumption	kWh	262067	207489	6.13
	TOE	16.72	15.70	
	CO_2 emission (Tons)	139.99	131.41	
Annual diesel consumption	Lit.	2935	2935	-
	TOE	2.84	2.84	
	CO_2 emission (Tons)	7.40	7.40	
Building area	m2	32177	32177	-
Specific Electricity consumption	kWh/m^2	8.14	7.14	6.13
	TOE/ m^2	0.00145	0.00135	6.13
Energy performance index	TOE/ m^2	0.00180	0.00171	5.24
Annual energy cost	Rs in Lakhs/annum	13.33	12.52	6.08
Carbon footprint – net (all energy input)	CO_2 emission (Tons)	146.40	137.81	5.83
Specific carbon footprint	CO_2 emission (Tons)/ m^2	0.013	0.012	5.83

Note: Unit conversions:

TOE = 10 million kCal (BEE energy audit manual)
MWh of electricity = 0.79 Ton of CO_2 (www.cea.gov.in)
Ton of LPG = 2.99 Ton of CO_2 (www.cea.gov.in)
Ton of Wood = 1.54 Ton of CO_2 (www.cea.gov.in
kWh of electricity = 860 kCal (BEE energy audit manual)

Kilogram of LPG = *10500 kCal (BEE energy audit manual)*

Kilogram of Wood = *3500 kCal (BEE energy audit manual)*

ENERGY & UTILITY DESCRIPTION

In this section, the single line diagrams of electricity is given which provides an overview of the energy flow in the building.

I. SINGLE LINE DIAGRAM – ELECTRICAL

The electrical single line diagram of the college given below:

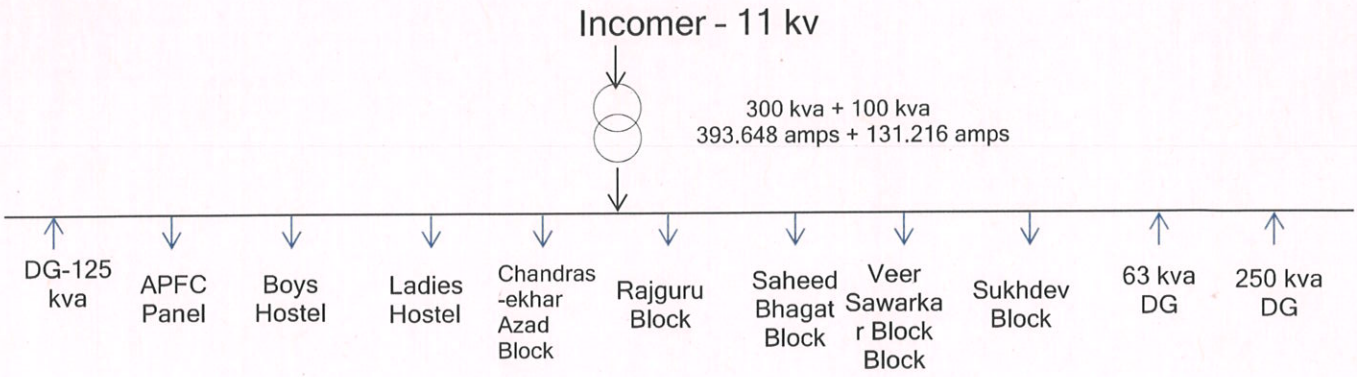


FIGURE 4: SINGLE LINE DIAGRAM – ELECTRICAL

VI. SPECIFIC ELECTRICITY CONSUMPTION (KWH/SQ.MTR) Specific electricity consumption is calculated based on the electricity consumption against the buildup area. The calculated specific electricity consumption in the college is provided in the following table.

SPECIFIC ELECTRICITY CONSUMPTION (kWh/Sq.m)

Month	Unit Consumption kWh	Build up area Sq.m	Specific Electricity Consumption.(kWh/m)
Apr-22	19734	32,177	0.613295211
May-22	11491	32,177	0.357118439
Jun-22	64071	32,177	1.991204898
Jul-22	29778	32,177	0.92544364
Aug-22	22706	32,177	0.705659322
Sep-22	35142	32,177	1.092146564
Oct-22	26866	32,177	0.834944215
Nov-22	16558	32,177	0.514591168
Dec-22	10475	32,177	0.32554309
Jan-23	8644	32,177	0.26863909
Feb-23	7957	32,177	0.247288436
Mar-23	8645	32,177	0.268670168
TOTAL	**21838.91667**	32,177	0.67871202
Annual Specific Electricity Consumption kWh/Sq.m			8.14454424
Annual Energy Consumption –kWh			262067

DIESEL GENERATOR

College has three diesel generators of rating 125 kVA & 200 kVA used to cater the loads in case of main supply failure. The rated details of the generator are shown in the table below.

TABLE 8: DG DETAILS

Sl no	*Rated power (kVA)*	*Engine*	*Engine SR No*	*Alternator Sr. No*
1	125	Cummins	85371236	N17C103887
2	200	Cummins	84552182	N23G227585
3	63	Krilosker		

DIESEL CONSUMPTION ANALYSIS

The details of the diesel consumption of the generators in the collegegiven in the table below.

TABLE 9: DIESEL CONSUMPTION

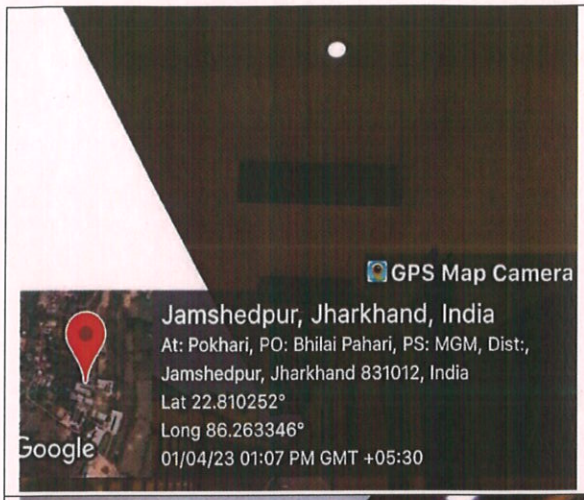
Netaji Subhas University

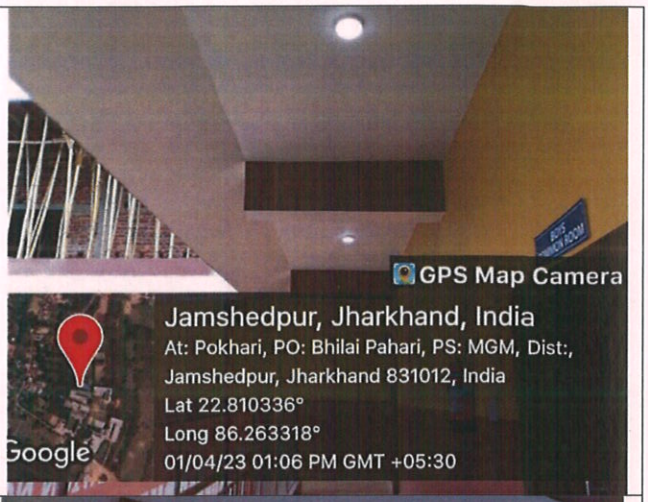
Sl.No.	Year	Month	Amount of Diesel Consumption (FY22-23) in Liters
1	2022	April	200
2		May	300
3		June	75
4		July	400
5		August	200
6		September	110
7		October	200
8		November	200
9		December	300
10	2023	January	200
11		February	400
12		March	350
13		**Total**	**2935**

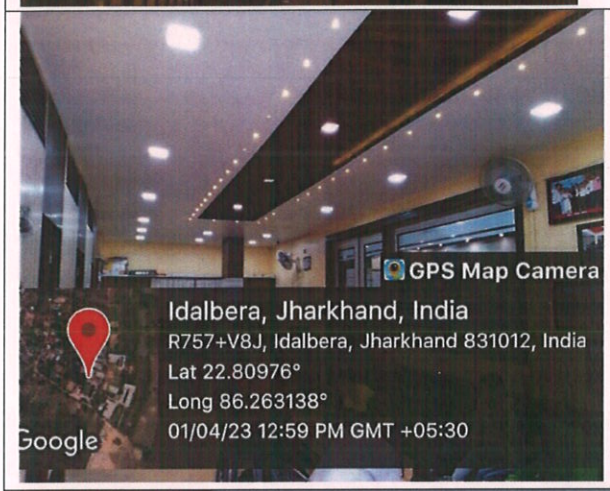
Inference & Suggestions

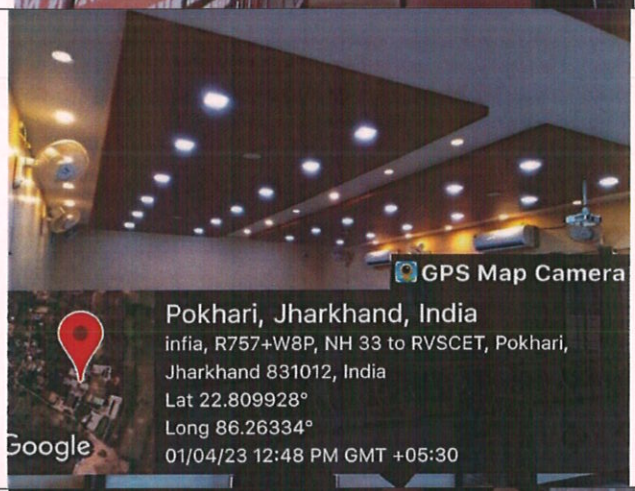
i. *A logbook to monitor the diesel consumption generated units shall be maintained and record it. The diesel consumption (litres) for the diesel generator (DG) was diligently monitored.*

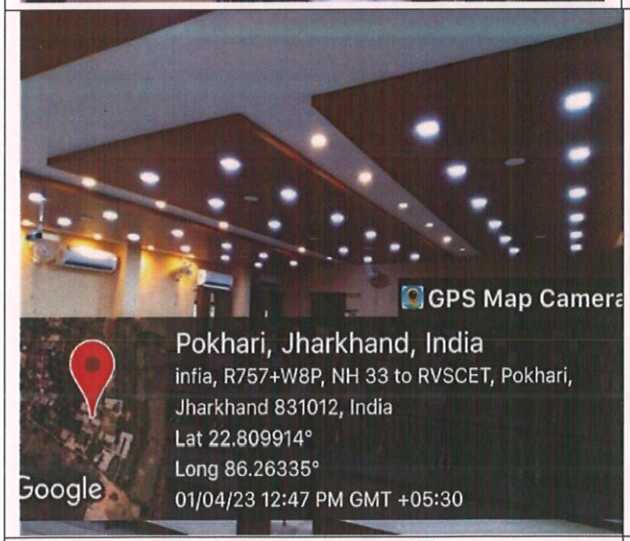
ii. *Provide a comprehensive monitoring system along with a logbook to record the usage of diesel-generated units (kWh).*

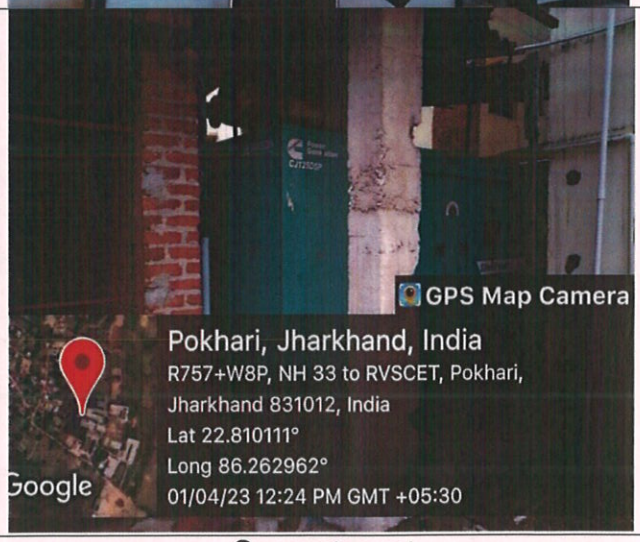








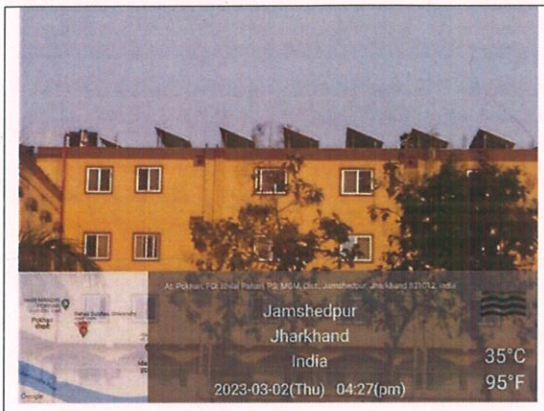




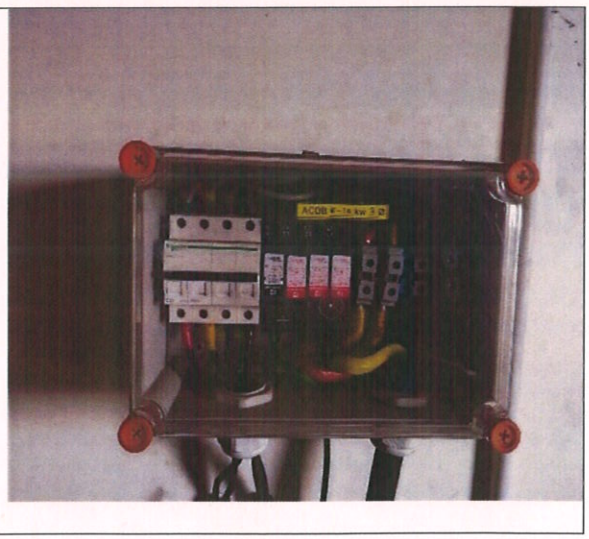
LED lights lecture gallery	Generator set

3.2.8 Solar Energy

NSU has installed solar panels having capacity 20 KVA with 60.60 Amp. On roof top of Raj guru block. The energy from this solar installation is helping university for dependency of supplied power.



Solar Panels at roof top | Control room



3.2.9 Waste Management

NSU is aware of the fact that proper waste management is one of the key necessities for a well-defined ecosystem. It is one of the important pillars for proper campus development. The University works on the mission of "Clean and Green Campus" which involves proper management of solid waste, liquid waste, Biomedical and E-Waste management. The University is working in collaboration with various NGOs as well which provides a road way and new initiatives are lined up to keep the momentum and the mission energized. Various ingenuities underway inside the campus are:

Various waste collection storage containers are installed at some points inside the campus and the students are encouraged to identity and dispose off the wastes at the appropriate places.

With the collaboration of **KORU FOUNDATION,** a **"Recycle station**" is installed with a concept of ***"Waste management: Waste is not waste until we waste it".***

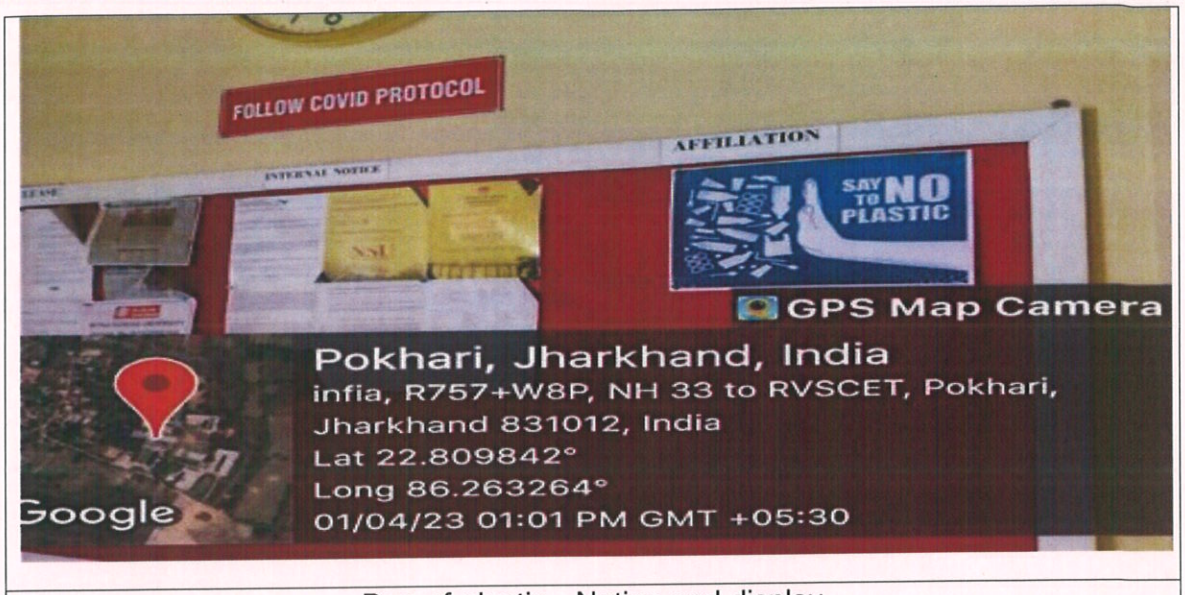
Concept of Recycle station: To reverse our habits and redirect it in to saving our resources and our only home Planet home we are introducing the concept of seeing waste as 'Recyclables' through **RECYCLE STATION.**

A group of utility men are engaged in the campus who are well trained with the basics of waste segregation and management.

Waste management awareness drives are organized at regular intervals amongst the students of the university.

The nearby villages are also made conscious of the waste management basics and are encouraged to act accordingly.

The management of waste generated in the campus is in lines with the basic waste management strategy of 3R's: **Reduce, Reuse and Recycle** i.e., Reduce the amount of waste generated, Reuse everything to its maximum after proper segregation and cleaning and keeping things which can be Recycled aside and are thereafter handed over to appropriate agencies.



Ban of plastic - Notice and display

3.2.10 Solid waste management:

Solid wastes include both the biodegradable and non-biodegradable items. The biodegradable wastes generated in the campus are vegetable peels, dry leaves, food wastes etc. These are segregated and serve as excellent bio-fertilizers for the beautiful garden in the campus. Minimal or no use of polythene bags in the campus is practised to ensure plastic free campus. To promote no use of single use plastic NSU had issued notification and displayed at strategic locations.

Use and throw plastic cups and plates in the Campus café are replaced by either steel plates or earthen cups to reduce wastes. Glass and metal wastes are segregated at " **"Recycle Station"** situated in front of student canteen where collection being done in well-marked dedicated bins and sold to the recyclers.

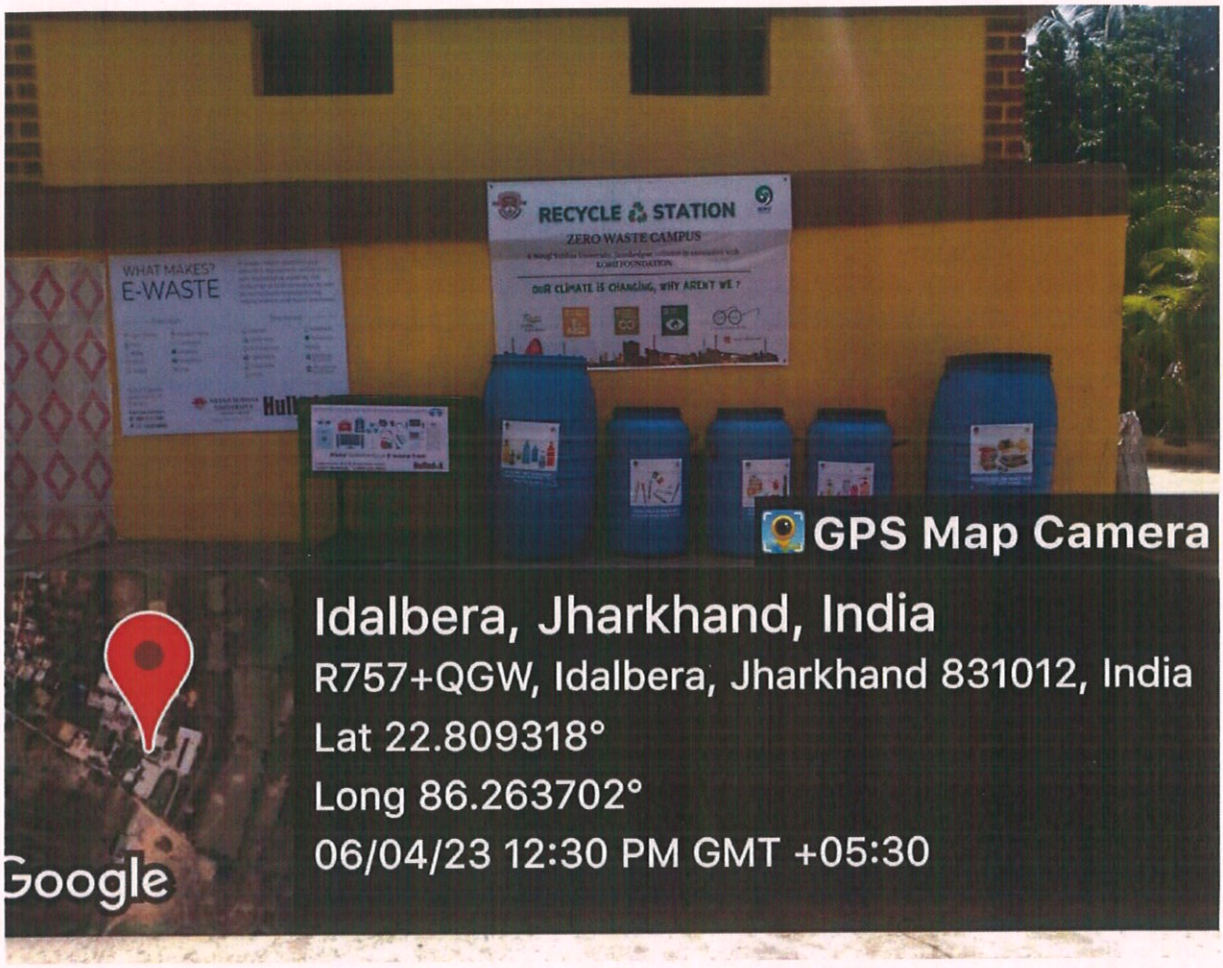
The food wastes and non-biodegradable waste are also separated in separated in separate bins marked for the purpose. The biodegradable wastes undergo composting into a pit of dimensions 2m X 2m X 2m so that they can be converted into organic wastes for further utilization.

Waste generated from tree droppings and lawn management are major solid wastes generated in the campus. Separate dustbins are provided for Bio-degradable and Plastic waste in order to segregate them at the source itself. Metal waste and wooden waste is stored and sent to authorize scrap agents for further processing. Glass bottles are reused in the laboratories. The NSU has separate bins to collect biodegradable and non-biodegradable waste generated in the campus. Regular meetings are conducted with ground staff regarding the cleanliness of the campus and proper disposal of waste.

Soild waste management - waste segregation and Recycle station.

3.2.11 E-waste management

E-waste is generated when the electronic devices are discarded after they are out of service and their life time is exhausted. The E-waste generated in the campus are mainly the out of use electronic devices like computer systems, keyboards, electronic kits, battery cells, calculators, CDs etc. They are systematically collected and sold out to for appropriate disposal. An MoU has been signed with **M/S. HULLADEK Recycling Pvt Ltd** on **8th October 2022** for smooth and proper disposal of waste generated in the University. The purpose of this partnership in compliance with E- Waste Management) Rules, 2016. The partnership was made to pick, transport, carry and recycle/ dispose of the E-Waste as per norms prescribed by the government authorities from time to time.



E-waste bin installed by M/S. Hulladek

Hulladek Recycling Private Limited
5, Deshpran Sashmal Road, Kolkata 700033
1800-212-7880 | 9903028800
www.hulladek.in | help@hulladek.re

Hulladek®
Hungry for Waste

MEMORANDUM OF UNDERSTANDING

BETWEEN

Hulladek Recycling Pvt. Ltd.
&
Netaji Subhas University

This Memorandum of Understanding (MOU) sets for the terms and understanding between Netaji Subhas University and Hulladek Recycling Pvt. Ltd. to provide for management of Electronic Waste.

PURPOSE

The shared objective of this partnership, in compliance with E Waste (Management) Rules, 2016 and amendments thereafter, is to provide solutions for effective collection and channelization of Electronic Waste procured in the city by the society at large and is signed on this 8th October 2022.

The above goals will be accomplished by undertaking the following activities:

DELIVERABLES FROM HULLADEK RECYCLING PVT. LTD.:

1. To pick up, transport, carry and recycle/dispose of the E-Waste from Netaji Subhas University as per the norms prescribed by the Government Authorities from time to time.
2. To make available Utilization Certificate confirming that E-Waste provided has been recycled/ disposed of as per the norms prescribed by the Government Authorities within 60 days of the pick up the E-Waste.
3. To dispose of such equipment and specifically agreed that they will pay/charge towards the disposal of E-Waste. The pickups confirmed by the Second Party will be carried out on a priority basis within Seven days from the date of request.
4. To share records & data of the e-waste material procured.
5. To install 1 (one) "E-Waste Collection Bin" at Netaji Subhas University as Pokhari Bhilai Pahari, Mango, Jamshedpur, or any other location as prescribed by Hulladek Recycling Pvt. Ltd. from time to time, and if need arises, additional bin(s) would be placed in the facility on prior notification.
6. To conduct 'Awareness Session' at the premises of the client for generating awareness about the benefits of and process of e-waste recycling.

DELIVERABLES FROM NETAJI SUBHAS UNIVERSITY:

1. To sign required documents to acknowledge that E-Waste has been handed over to the Hulladek Recycling.
2. The Agreement shall be in force for a period of Three (03) Years (8.10.2022 – 7.10.2025) from the date of execution of this agreement and can be renewed at the end of every period by mutual consent.
3. Netaji Subhas University has agreed to pay an 'agreement fee' to the first party of Rs. 13,000/- +GST as fee of 3 years contract. The fee shall be paid in advance of 3 years.
4. To handover the E-Waste on "as is where is basis". The second party is expected to generate 500 Kgs or more of E-Waste annually during each contractual term.

Hulladek Recycling Pvt. Ltd.
Director

NETAJI SUBHAS UNIVERSITY
Jamshedpur

GSTIN: 19AADCH4384E1ZI
CPCB REGISTRATION NO.: B-29016(12)/(PRO)/18/WM-III Division

RECYCLED PAPER

MoU With Hulladek

ladek Recycling Private Limited
Deshpran Sashmal Road, Kolkata 700033
1800-212-7880 | 9903028800
www.hulladek.in | help@hulladek.re

Hulladek®
Hungry for Waste

Annexure

EEE Code	Description	UOM	Rate Paid by Hulladek (Rs. Per Kg) (+ive Item)	Rate paid by Second Party (Rs. Per Kg) (-ive Item) (Taxes Extra as applicable)
ITEW 1	IT Mainframes & Telecommunication Equipment including its parts & spares.	KG	₹ 22.00	
ITEW 2	IT Mainframes & Telecommunication Equipment including its parts & spares.	KG		
ITEW 3	Laptops, Notebooks and notepad computers including its parts and spares	KG	₹ 77.00	
ITEW 4	Laptops, Notebooks and notepad computers including its parts and spares	KG		
ITEW 5	Laptops, Notebooks and notepad computers including its parts and spares	KG		
ITEW 6	Printing & Copying equipment including its parts and spares	KG	₹ 12.00	
ITEW 7	Printing & Copying equipment including its parts and spares	KG		
ITEW 8	Printing & Copying equipment including its parts and spares	KG		
ITEW 10	Printing & Copying equipment including its parts and spares	KG		
ITEW 9	Communication equipment and its parts and spares	KG	₹ 12.00	
ITEW 11	Communication equipment and its parts and spares	KG		
ITEW 12	Communication equipment and its parts and spares	KG		
ITEW 13	Communication equipment and its parts and spares	KG		
ITEW 14	Communication equipment and its parts and spares	KG		
ITEW 16	Communication equipment and its parts and spares	KG		
ITEW 15	Cellular Phones and its parts and spares	KG	₹ 85.00	
CEEW1	Television Set (including LCD & LED)	KG	₹ 10.00	
CEEW2	Refrigerator	KG	₹ 12.00	
CEEW3	Washing Machines	KG	₹ 12.00	

Hulladek Recycling Pvt. Ltd.

Director

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Hungry for Waste

5. To accumulate all E-Waste and inform to Hulladek Recycling once reasonable volume has accumulated.
6. To ensure that all the E-waste procured by or in the possession of them will be exclusively given to Hulladek Recycling Pvt. Ltd.
7. To share branding collaterals during seminars and events to maximize reach and promote the collaboration.
8. To handover all duly filled documents to Hulladek at a set frequency, within a time frame of four weeks.

REPORTING

The MOU and its undertakings will be reported and seen into by the under signed of this MOU.

COMMERCIALS

The Second Party shall handover the E-waste items to the First Party. The First Party shall dispose off such waste as specifically agreed that they will charge the Second Party towards the handing over of E-waste as mentioned in ANNEXURE.

DURATION

This MOU is valid till September 2025 and may be modified by mutual consent of authorized officials from Netaji Subhas University and Hulladek Recycling Pvt. Ltd. This MOU shall become effective upon signature by the authorized and will remain in effect until modified or terminated by mutual consent.

NETAJI SUBHAS UNIVERSITY Jamshedpur

AUTHORISED SIGNATORY
(Mr. Nagendra Kumar, Registrar)

Hulladek Recycling Pvt. Ltd.

AUTHORISED SIGNATORY
(Mr. Nandan Mall, Founder & MD)

adek Recycling Private Limited
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Hulladek
Hungry for Waste

CEEW4	Air Conditioners	KG	₹ 35.00	
CEEW5	Fluorescent and other mercury containing lamps/pencil batteries	KG		₹ 40.00
OTH1	Heavy Industrial waste (pump, motors etc)	KG	₹ 40.00	
OTH1	Household appliances		₹ 12.00	
OTH1	Miscellaneous (wires, spares, parts of equipment etc.)		₹ 12.00	

NETAJI SUBHAS UNIVERSITY Jamshedpur

AUTHORISED SIGNATORY
(Mr. Nagendra Kumar, Registrar)

Hulladek Recycling Pvt. Ltd.
Director

AUTHORISED SIGNATORY
(Mr. Nandan Mall, Founder & MD)

J. Rajesh
Witness 1
J. Rajesh

Witness 1
Rajkamal Singh

RECYCLED

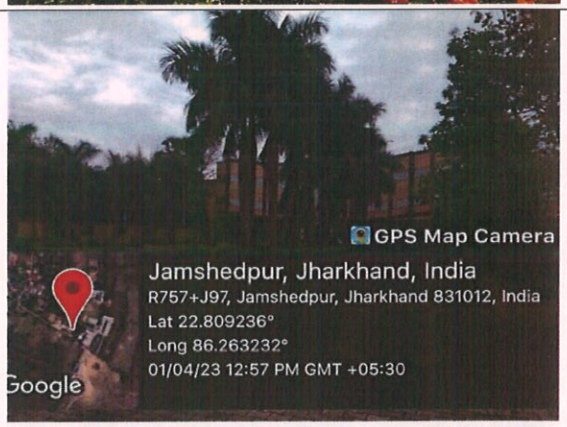
3.2.12 Green area management

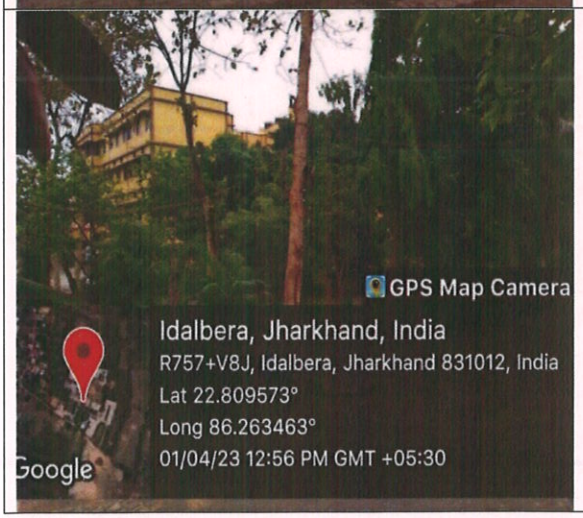
The NSU spread an area of about 25.42 Acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organised by the university and have become an integral part of the university. The trees of the university have increased the quality of life, not only the university fraternity but also the people around of the university in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many spices of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf – covered branches keep many animals, such as birds, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day. A thick belt of large shady trees in the periphery of the college 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 its surrounding areas.

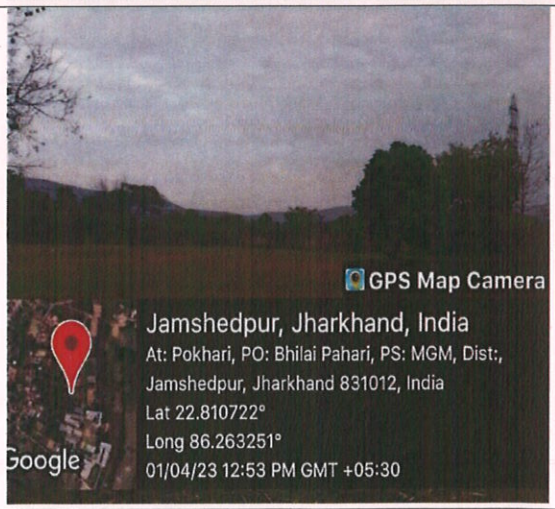
Table: List of tree species.

Sl No	Common Name	Botanical Name	Uses	Numbers
1	Coconut tree	Cocus nucifera	Anti-microbial	10
2	Mango tree	Mangifera indica	Anti-bacterial, Anti-Fungal	15
3	Ashoka Tree	Saraca asoca	Blood Disorder Tumor	3
4	Acacia Tree	Acacia Nilotica	Throat Infection Wound healing	4
5	Teak Tree	Tictona Grandis	Skin disease Reducing fat	12
6	Rubber Tree	Ficus Elastica	Manufacturing Rubber	1
7	Champak Tree	Magnolia Champaca	Timber	2
8	Bottle palm	Hyophorbe Lagercaulis	Anaemia	20
9	Guava Tree	Psidium Guajava	Diabetes	5
10	Hoop Pine	Araucaria Cunningham	Flooring	2
11	Arica Palm	Dypsis Lutescens	Air purifier	4
12	Peace Lily	Spathiphyllum	Ornamental	2
13	Arebian Jasmine	Jasmine sambac	Liver Disease	3
14	Shami Tree	Prosopis Cineraria	Constipation	3
15	China Rose	Hibiscus Rosa Sinesis	Skincare	3
16	Juhi	Jasmium Auriculation	Perfumes	8
17	Croton	Codiacum Variegatum	Biofuel	2
18	Belly Flower Plant	Jasminum Sombac	infections	7
19	Kamini Flower	Muraya Paniculata	Cough	2
20	Rose	Rosaceae	Anxiety	15
21	Lemon	Citrus Limon	Anti-cancer Anti-Oxidant	1
22	Mussaenda Plant	Mussaenda Erythrophylla	Jaundice Ulcer	3
23	Gulmohar Tree	Royal Poinciana	Bee farming malaria	3
24	Kaner Ka Phool	Merium Oleander	Deprosy Inflammation	1
25	Bael	Aegle marmelos	Dysentery	1
26	kathal	Artocorpus Heterophyllus	Anti-Fungal	1

27	Sheesham Tree	Dalbergis Sissoo	Blood problem Skin Disease	3
28	Gulmohar	Delonix regia	Cardio protective	3
29	Palash	Butea Monosperma	Dyes	2
30	Shimul Red	Bombax Ceiba	Gynaecological and urogenital disease	1
31	Shatavari	Asparagus Racemosum	Hormonal Balancing	2
32	Golden Ficus	Ficus Microcarpa Golden	Air purifier	1
33	Tagar	Tebemontena	Sleep inducing	2
34	Laung (Clove)	Syzygium Aeromalicum	Boosts Immunity	1
35	Cardamom	Elettaria Cardamomum	Digestion	1
36	Dalchini	Cinnamonium Verum	Vomiting, Headache Dental care	1
37	Bay Leaf	Laurus Nobilis	Skin Rashes, Rheumatism	1
38	Amla	Phyllonthus Amblica	Better Digestion	1
39	Hadjor	Cissus Quadrangularis	Swelling Pain Healing fractures	1
40	Henna	Lawsonia Inermis	Intestinal Ulcers	1
41	Coffee	Coffee Arabica	Mental Alertness	1







3.2.13 Use of Bicycles:

At NSU The students and non- teaching staff in and around the campus commute to university by bicycles. The university has constructed a cycle shed to safeguard their vehicles. This transport pooling is a greening initiative by college to avoid environmental pollution and reduce Carbon foot printing Levels. The pathways in college are laid with provision paver block for rainwater to seep through easily. This enables the easy recharge of ground water.

3.2.14 E - communication

All the Departments of the university, Examination cell, and laboratories are very well connected with a good and efficient LAN network. Hence all the inter office correspondence is done through email. This reduces the usage of papers. The e-governance is implemented in 2019. Institution implements e-governance covering following areas of operation

Particulars(e-governance)	Year of implementation	Vendor name
Administration	2019	NSU
Finance and accounts	2019	NSU
Student Admission and support	2019	NSU

4.0 Conclusion

This audit involved discussions, questionnaire with all the teams, interactions with key personnel on wider range of issues related to Environmental aspects. The University is considering the environmental impacts of most of its actions and makes an intensive effort to act in an environmentally responsible manner.
Some of findings are -

- Regarding renewable energy - solar panels are installed.
- LED lights/tubes are fitted in class rooms/lecture halls and many strategic locations.
- Solid waste being segregated and collected at Recycle station and accordingly recycling/disposal being done.
- Rain water harvesting system is at main administrative buildings.
- Generators are fitted with acoustic chambers.
- Good greenery and land scaping done inside university campus.

Few things that are important to initiate includes checking of water flow of taps and installation of water meters. We also highly recommend for water audit/balancing. Reuse of treated water for gardening is recommended.

5.0 Recommendations

- There is a need for monitoring and controlling overflow and periodically supervision drills should be arranged.
- Ensure that all cleaning products used by university staff have a minimal detrimental impact on the environment.
- Gardens should be watered by using drip/sprinkler irrigation system to minimize water use.
- Waste water treatment plant should be installed to recycle and reuse the water used for domestic purposes.
- There is a need for monitoring and controlling overflow and periodically supervision drills should be arranged.
- Ensure that all cleaning products used by university staff have a minimal detrimental impact on the environment.
- Gardens should be watered by using drip/sprinkler irrigation system to minimize water use.
- Waste water treatment plant should be installed to recycle and reuse the water used for domestic purposes.
- Provision of installation of biogas unit should be introduced where the biodegradable wastes and food waste should be used. Further various waste recycling plans for different types of waste should be introduced.
- Paper waste like answer sheets, old bills, and confidential reports should be sent for shredding, pulping, and recycling after completion of their preservation period.
- The management should support more for renewable and carbon-neutral electricity options on any energy- purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- More LED lights should be installed to reduce power consumed for lighting.
- The campus administration should run switch-off drill on regular basis.

- In campus premises electricity should be shut down from main building supply after occupancy time, to prevent power loss due to eddy current.
- 5-star rated Air Conditioners, Fans and CFLs should be used.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it.
- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records.
- Indoor plantation to inculcate interest in students, Bonsai can be planted in corridor to bond a relation with nature.

6.0 References:

- The Environment [Protection] Act - 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- Energy Conservation Act 2010.
- The Water [Prevention & Control of Pollution] Act - 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control of Pollution] Act - 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- Relevant Indian Standard Code practices

7.0 Transparency of Green Audit Report

Green audit report is one of the useful means of demonstrating an organization's commitment to openness and transparency. The Organisation believes it has nothing to hide from its stakeholders.