September 18, 2021

GREEN AUDIT REPORT

Swami Keshvanand Institute of Technology, Management & Gramothan (SKIT Jaipur)

Ram Nagariya Rd, Shivam Nagar, Jagatpura, Jaipur, Rajasthan 302017

GSTIN : 08AAJFD9550B1ZH

Design2Occupancy Services LLP

D2O/EA/18092021 **Letter of Certification** Date: 18/09/2021

To,
The Director,
Swami Keshavanand Institute of Technology, Management & Gramothan
Ram Nagariya Rd, Shivam Nagar,
Jagatpura,
Jaipur, Rajasthan 302017

This letter is to certify that Swami Keshavanand Institute of Technology, Management & Gramothan has undergone Energy Audit, Green Audit and Environment Audit.

The audits have been performed by Design2Occupancy Services LLP, which is primarily a consulting firm which deals in Green energy, Energy Audits, Green Building Consultancy etc. We help clients in saving energy, operational costs while creating a sustainable environment.
Design2Occupancy Services LLP bears some of the most valued credentials in the industry such as LEED AP, IGBC AP, GRIHA trainer & evaluator, PQP Professional, ICP, and Certified Energy Auditors etc. and hold valuable experience in various areas like Green building facilitation, Energy Simulation and Analysis, Thermal & daylight modelling, CFD simulation, renewables, sustainability reporting, IAQ consulting, Energy audits & commissioning and several others. Our team's competence is our strength and our projects showcase our commitment towards a greener future.

This assignment is taken up for Swami Keshavanand Institute of Technology, Management & Gramothan, an environmentally responsible educational institution based out of Jaipur (Rajasthan) and embarking into this journey of sustainability. Therefore, we have independently conducted this entire assessment through step by step procedure prescribed for such practices. We have deployed our technical team to gather information and report the institution's effort towards sustainability in comprehensive manner.

We hereby submit these reports dated 18th September 2021. All assessments, results and reported facts are reliable, conservative and verifiable in all aspects.

for, Design2Occupancy Services LLP
Sai Balaji,
LEED AP and GEM Certified Professional
(Senior Counsellor)

Contents

Executive Summary

The Swami Keshvanand Institute of Technology, Management & Gramothan acknowledges the importance of Energy as an essential resource for successfully meeting its operational objectives. The Institute also realizes the need to use this resource in a responsible manner that is sustainable and complementary to its Environmental Management Policy.

This document explores how the Institute uses Energy, outlines its approach to managing Energy use and sets targets for Carbon footprint reduction. This strategy is intended to sit alongside the other strategies which together make up the Institute's overall sustainability strategy

The Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur (SKIT) is committed to improving sustainability. SKIT strives to sustain its local and global environment, organizational health and ability to create a positive, viable future. SKIT endeavors to include environmental sustainability principles and targets in all aspects of its decision-making. Through its research, teaching and learning, operations and community engagement, SKIT aims to:

Minimize the environmental impact of its operations and move towards restoring environmental integrity

- Promote social justice, equity and diversity
- contribute to human health and well-being
- Maintain its financial viability.

As part of its commitment to sustainability, SKIT developed a Sustainability Policy and Sustainability Strategy. SKIT is now developing a series of Sustainability Action Plans on energy and greenhouse, water, transport and waste to support implementation of the Policy and Strategy. This document deals with Green Audit of SKIT.

About the Institute

Swami Keshvanand Institute of Technology, Management & Gramothan (SKIT) inspired from the leanings of Swami Keshvanand, was established in the year 2000 by Technocrats and Managers Society for Advanced Learning. In order to carry the same, they leaped forward to establish MRM Public School in Nirwana village of Sri Ganganagar district of Rajasthan in the year 1992. Pursuing the vision of the Great Saint Swami Keshavanand, who devoted his life for the cause of education and the uplift of the rural folk, the promoters added "Gramothan" to the name of the institute not only to epitomize his vision but also to extend their efforts to explore the use of engineering education for innovations for improving the scenario for the rural community. Today the institute is recognized as one of the centers of academic excellence in Northern India.

The Institute is affiliated to Rajasthan Technical Institute, Kota for offering Postgraduate and Graduate Courses in Engineering and Management. Located in the Pink City Jaipur, which is a blend of traditional history and modern outlook, SKIT is putting in efforts for making industry ready engineers and managers through effective Industry –Institute Interface. Apart from Institute curriculum SKIT also pursues activities for research and development in various fields.

The green landscaping, aesthetic elegance of arches and the vibrant pursuit of knowledge by the young aspirants make the environment serene, pleasant and dynamic.

Students joining the institute share the box full of opportunities for professional and personal development through an environment of practical orientation, industrial interaction and student led activities which help the students to develop good communication skills, integrated personality and greater competitive spirit.

1. Introduction

Green Analysis can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyses environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Analysis.

2. Objectives of the Study

The main objective of the green analysis is to promote the Environment Management and Conservation in the Institute Campus. The purpose of the analysis 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 Analysis are:

1. To introduce and aware students to real concerns of environment and its Sustainability.
2. To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use of the campus.
3. To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requiring high cost.
4. To bring out a status report on environmental compliance.

3. Audit Inclusions

- Green Audit and Remediation
- Landscape use and Applicability

Green Audit and Conservation

Definition

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyses environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly

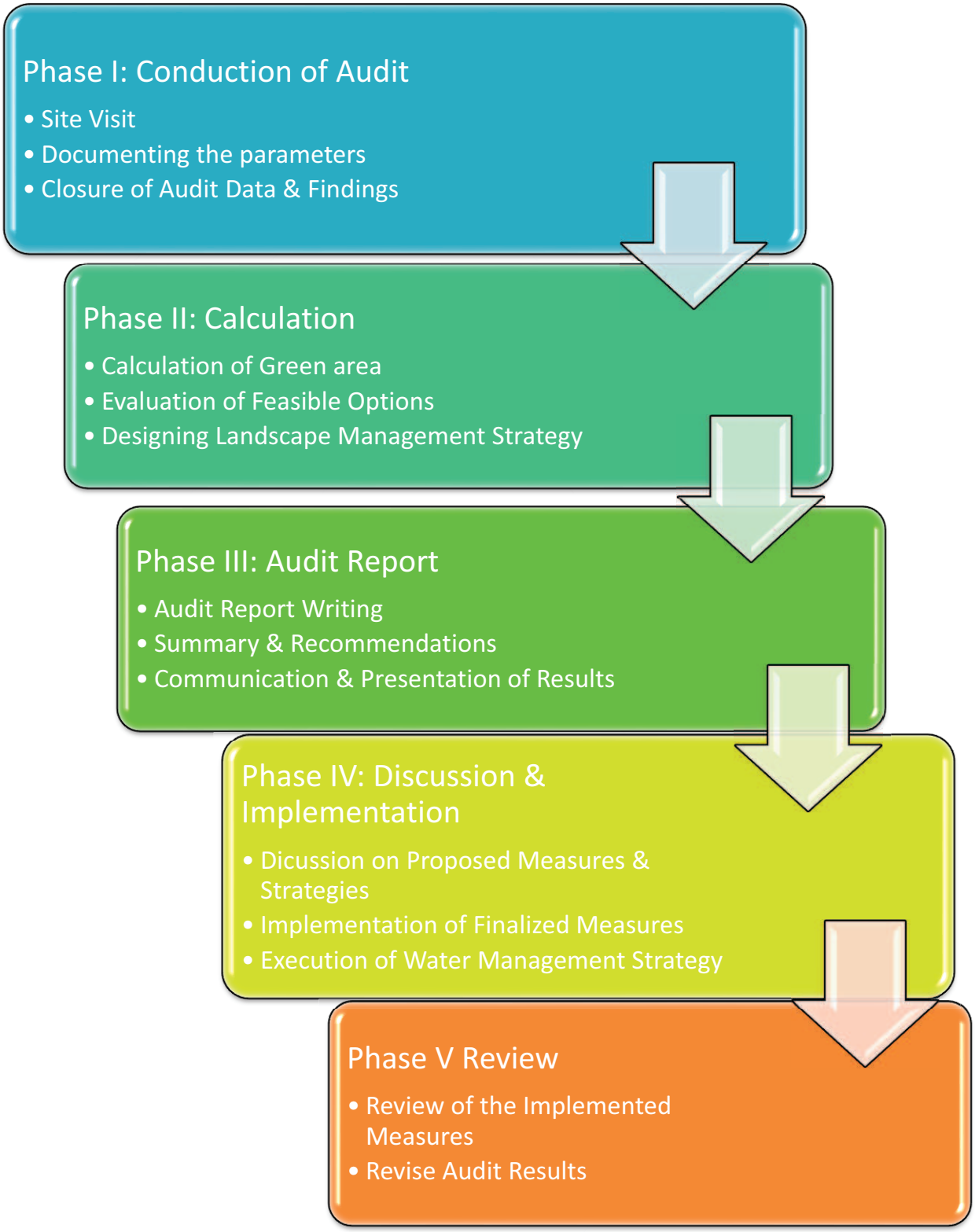
atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and 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

Objective of the Audit

The main objectives of carrying out Green Audit are:

1. To map the Geographical Location of the college.
2. To document the floral and faunal diversity of the college.
3. To record the meteorological parameter of Jaipur where college is situated.
4. To report the expenditure on green initiatives during the last five years.

Procedure


Phase I: Conduction of Audit
• Site Visit
• Documenting the parameters
• Closure of Audit Data & Findings
Phase II: Calculation
• Calculation of Green area
• Evaluation of Feasible Options
• Designing Landscape Management Strategy
Phase III: Audit Report
• Audit Report Writing
• Summary & Recommendations
• Communication & Presentation of Results
Phase IV: Discussion & Implementation
• Dicussion on Proposed Measures & Strategies
• Implementation of Finalized Measures
• Execution of Water Management Strategy
Phase V Review
• Review of the Implemented Measures
• Revise Audit Results

Phase I: Conduction of Audit

At the beginning of green audit, it is must to observe the supply, storing & consuming facilities are provided on the site. The Green audit team commits to:

Conduct site visit to locate the water points & Map them

1. Locate the green landscapes
2. Mark Native plants
3. Compile the findings during visit
4. Notice conditions of water fixtures (dirty, stuck, leaking etc.)

Phase II: Calculation

After completion of site visit, the audit team performed calculation to analyses the acquired data with reference to local bye laws (in India: NBC 2016) as base line. This enables to determine whether the premise is covered with green and well shaded.

Based on the calculation, the landscape management strategies have to be define and implement in the respective premises.

Phase III: Audit Report

The team prepares detailed report based on procedure mentioned above. The audit report consists:

- Observations done during audit
- All the measurements, calculations
- Summary and conclusions based on the calculations

Phase IV: Discussion & Implementation

After formation of audit report, the audit team will hold meeting with the respective project team to discuss the current and future scenario towards the landscape management. The key discussion points are:

Possible water conservation measures & their implementation in landscape

Areas where water can be conserved like rainwater harvesting & wastage of water can be minimized

Later, the project team will implement the measure that are finalized in accordance to the discussion and meetings held with audit team.

Phase V Review

After the implementation of measures, the review and maintenance of the same is much needed. Because, the continuous monitoring of the measures can only justify and revise the water savings occurring in the premises.

The formation of "Sustainable Cell" in the premises will help in proper & continuous execution of the measures. This cell is also responsible to educate the occupants regarding effects of water management along with the finding and installing any new techniques at the project site.

Landscape Use

The baseline landscape consumption is calculated as 4.8 Liters/m^2/day. Whereas, the actual landscape requirement is done as per the plantation species/trees/turf grass. Also, during the actual calculation the annual impending rainwater is also considered.

However, as the part of landscape demand is catered with the treated water from STP. Hence, the treated water is reduced from the total landscape demand for more feasible solution.

Landscape Area

Location	Length (ft.)	Width (Ft.)	Area (Sq-Ft.)
Before Old Noran Girls Hostel	143	148	21164
Before New Noran Girls Hostel	43	46	1978
	66	97	6402
	47	28	1316
	47	16	752
Near Mess R.O.	12	10	120
	37	22	814
	35	18	630
	14	43	602
N/P/Block North Side	36	9	324
	36	9	324
	25	19	475
N/P/Block West Side(Front)	12	8	96
	12	8	96
	10	12	120

	12	19	228
N/P/Block East Side(Behind)	20	23	460
	9	119	1071
Near Sir M. Visvesvaraya Block	20	40	800
	21.5	44	946
	21.5	44	946
	14	38	532
	10	39	390
Near Cricket Ground (tringle)	31.5	39	1228.5
	10	15	150
Vikram Sarabhai Block	88	36	3168
Vikram Sarabhai Block (North side)(22/7*88*88)/2	138.06	88	12149.28
Near Tea Post	117	57	6669
	44	19	836
Near Tennis Court	117	10	1170
Behind Surana Sir(residence)	49	50	2450
	56	13	728
Before Vishvakarma Block	56	74	4144
	56	5	280
Near S.T.P.	59	45	2655
	100	3	300
Before Nirwana Boys Hostel	43	3	129
Near Mech. Parking	171	3	513
Gate no.1 to Generator	200	3	600
Tennis Court Both Side	240	2.5	600
	240	2.5	600
Around Cricket Ground	360	5	1800
Behind Nirwana Boys Hostel	95	8.5	807.5
Plantation (near N/P/Block south side)	45	125	5625
Plantation M/Block West Side	228	31	7068
	46	25	1150

TOTAL			95406.28

The total landscape area in the campus premises utilises sprinklers and natural ditches to irrigate the green area which is more than 12.7% of the total site area i.e. 9540628 sq. ft.

Landscape Watering Schedule

Month	No. of Days	Remarks
Apr-19	15	Alternate Days
May-19	16	
Jun-19	15	
Jul-19	6	Once in a week
Aug-19	6	
Sep-19	10	Twice in a week
Oct-19	10	
Nov-19	10	
Dec-19	10	
Jan-20	10	
Feb-20	10	
Mar-20	15	Alternate Days

Different types Plantations

Green Audit – Questionnaire

Which of the following are available in the institute?

1	Garden area	Available
2	Play ground	Available
3	Kitchen	Available
4	Toilets	Available
5	Garbage or Waste Store Yard	Available
6	Laboratory	Available
7	Canteen	Available
8	Hostel Facility	Yes
9	Guest House	Available

Which of the following are found near your institute?

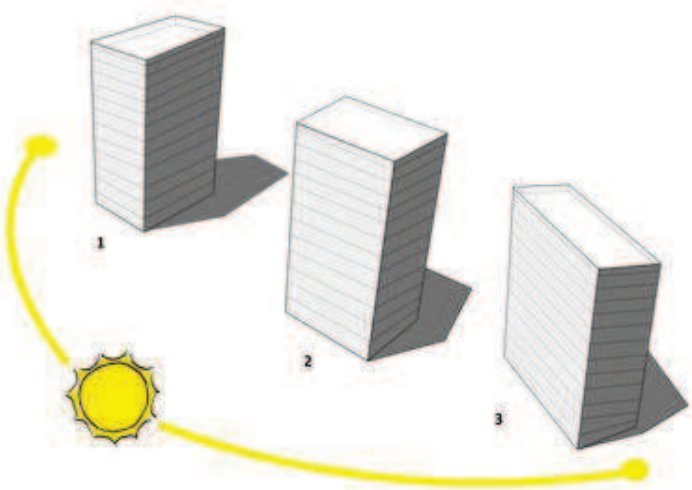
1	Municipal dump yard	Not in vicinity of institute
2	Garbage heap	No, Garbage heaps
3	Public convenience	Yes, public convenience is available
4	Sewer line	Sewer line within campus
5	Stagnant water	No stagnant water
6	Open drainage	No
7	Industry – (Mention the type)	No
8	Bus / Railway station	Faraway from campus
9	Market / Shopping complex / Public halls	Yes

Greening the Campus

1.	Is there a garden in your institute?	Yes, about 40 % of Campus area are developed as open spaces.	
2.	Do students spend time in the garden?	2-4 Hours during winters	
3.	Total number of Plants in Campus	Plant type	Approx. number
		Trees	20,000
4.	Suggest plants for your campus. (Trees, vegetables, herbs, etc.)	List added at the end of the report	
6.	Number of Tree Plantation Drives organized by Institute per annum. (If Any)	Yes, Two Tree Plantation Drives Are Organized Annually. 500 trees and 250 shrubs planted in this financial year also it has a separate green group.	
7.	Number of Trees Planted in Last FY.	500	
	Survival Rate	75%	
8.	Plant Distribution Program for Students and Community	Yes, Saplings are distributed to Students and visitors at various Occasions.	
9.	Plant Ownership Program	Various Trees are Planted and owned by Visitors as well as students.	

Passive Design Strategies

The physical planning norms addresses human settlements in terms of low rise with high density creating mutual shading, the hierarchy of common open spaces as courtyards used as public areas and also connecting one green space to another green thus creating walkable and cyclable Campus. The passive planning in terms of use of natural terrain and using low profile contoured land as storm water resource management evolving through the natural water resource features such as wells. A tested process through many era of civilizations to be adopted in modern eras as part of integrated planning



Sample Image

Existing Shading at SKIT Campus

Reduced Heat Island effect at Site

Heat Island Effect

An urban heat island is an urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities. The temperature difference is usually larger at night than during the day, and is most apparent when winds are weak. SKIT is quite successful in reducing this effect with the passive design strategies.

There are many locations in the Institute that has reduced heat effect and enhanced the livability of the spaces around. The images below show the same.

Landscape Best Practices

The Campus consists of 9540628 sq. ft. of landscape area which is 12.7% meets the requirement of landscape area requirement of minimum 10% of the total site area.

Native plant /adaptive/drought tolerance species are covering around 83% of landscape area and meet the essential requirements.






Landscape best practices at SKIT Campus

Landscape Water Usage

Irrigation

The present irrigation system is sprinkler which is one of effective way to save water, better yield and possibility of using soluble fertilizers and chemicals ¬ less problem of clogging of sprinkler nozzles due to sediment laden water

Recommendations

Pebbles near the hard cape not only store water and provide to the rainwater harvesting system but also maintain the landscape decorum. The use of such measure in landscape reduces the grass area and its related water demand. Water the plants in early morning or late evening to reduce evaporation loss.

Xeriscaping should be promoted at site. Xeriscaping is a method of garden design that involves choosing of plants that can be maintained with little supplemental watering. With a little common sense and aesthetics, landscape can be organized in harmony with the site by using drought tolerant plant species and mulch material in a way to minimize the water use

Rainwater Harvesting Pit

One of medium of harvesting rainwater is providing the incoming rainwater directly to the ground. This will increase the ground water table of the location and also helps in achieving the ground water at same or at less level than the existing level, Further the rainwater is reused in the landscape of SKIT campus

Sr.No.	Name	Quantity (Nos)	Capacity (litres)	Location
1	Rainwater harvesting Tank	1	2, 65,000	Gate No-1
2	Rainwater harvesting Tank	1	11,000	Back Side Of Vikram Sarabhai Block
3	Rainwater harvesting Tank	1	7,000	Back Side Of Vikram Sarabhai Block
4	Rainwater harvesting Tank	1	28,000	Out Side Of Saraswati Temple
5	Rainwater harvesting Tank	1	2,55,000	OPP, Noran Girls Hostal (Carpet Lown)

Observations

Matching with the green and sustainable practices, the Institute campus has facility for sewerage treatment plant, RO drinking water points, solid waste management system and separate parking facilities for 2 and 4 wheelers. Around 15 percent of the total campus area is covered with lush green lawns & plantation covering more than 15000 plants & tree species, thus giving pure oxygen to our students and making campus a treat to eyes.

ECO Friends Club

At SKIT in order to instill awareness about environment among students. Eco-Friends Club has been set up. The members of the Club, known as 'Eco-friends' strive to promote eco-friendly habits not only on the institute premises but also among the masses, in the whole of Jaipur. There have been supporters like the great environmentalist, social reformer and the founder of 'Chipko movement', Padma Bhushan Sunder Lal Bahugana, who has elevated the spirits of the students with his words of appreciation for the initiatives by SKIT ECO-FRIENDS CLUB.

Eco-friendly literally means earth-friendly or not harmful to the environment. This term most commonly refers to products that contribute to green living or practices that help conserve resources

like water and energy. EFC club mainly engage club members in eco-friendly habits or practices by being more conscious of how we use resources.

The Club has vision "To play a pivotal role in the metamorphosis of the earth from moribund planet to a greener one" and the mission of "To herald the essential coordination and harmony between environment, society and economy by endowing the 3 C's with scientific and technical approach"

Snippets of Environmental Awareness programs

Conclusions

Considering the diversity of Swami Keshvanand Institute of Technology, Management & Gramothan, there is significant environmental research both by faculty and students. The environmental awareness initiatives are substantial. The installation of solar panels and rain water harvesting system are noteworthy. Besides, environmental awareness program initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of strategic management using eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development.

ANNEXURE -I

TYPES OF PLANT SPECIES		
Sr.No	**Species name**	**Quantity**
HERBS		
1	Lasora	2
2	Gawarpatha	150
SHRUBS		
3	Gurhal	150
4	Kaner	150
5	Chandini	37
6	Champa	83
7	Tulsi	50
8	Googal	6
9	Bijaura	3
TREES		
10	Aam	27
11	Babul	2
12	Banyan	8
13	Jamun	40
14	Khajur	5
15	Khejda	8
16	Neem	229
17	Aamla	9
18	Shisham	131
19	Lasura	2
Other (As per site)		
20	Cheeku	9
21	Neebu	7
22	Gullar	18
23	Amrood	5
24	Kela	10
25	Papita	7
26	Ramphal	3
27	Sitaphal	8
28	Anaar	11
29	Karuja	2
30	Aanwla	6

31	shahtoot	16
32	lehsooa	2
33	Badaam	3
34	Chaina Paam	10
35	Phiniks Paam	14
36	Shugar	4
37	Pathhar Chatta	10
39	Amaltaash	7
40	Shenjana	5
41	Kander	150
42	Z-Plant	5
43	Mani Plant	200
44	Mogra	25
46	Savera Bail	5
47	Elaichi	1
48	Enermi haij	13121
49	Sita Ashok	2
50	Morchatti	183
51	Gulmohar	18
52	Kachnaar	7
53	Papdi / Karanj	29
54	Pedola Ashok	483
55	Kalp Vriksh	2
56	Arjuna	2
57	Peepal	18
58	Phaikus	158
59	Phaikus Panda	108
60	Rudraksh	1
61	Sagwan	27
62	Chaleel	3
63	Chandan	4
64	Adoo	6
65	Haar Singaar	5
66	Bottle Paam	13
67	Eti Paam	19
68	X-Tree	11
TOTAL		**15855**

.

END OF REPORT

Team Credentials

CERTIFIED COURSE

CERTIFICATE OF ACHIEVEMENT

Avanta Global Pte Ltd

Certified by International Register of Certificated Auditors
Approved Training Partner ID: 01199246

hereby certify that

Ankur Mantri

has successfully completed and passed the exam towards the

ISO 50001:2018 Energy Management System
Auditor / Lead Auditor Course

CQI-IRCA Certified Course Reference No.: 17623

4th, 5th, 6th, 7th and 8th November 2020

D.N: 290184

Director
Training & Development

AG-EnMSLAC-2020-03
16 November 2020

Certificates of Achievement are only valid for three years for the purposes of auditor certification by CQI-IRCA.

Avanta Global Pte Ltd
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Tel: +65 62952112 Fax: +65 62956683 Email: enquiry@avanta.com.sg

LEED AP BD+C

GREEN BUSINESS CERTIFICATION INC. CERTIFIES THAT

N Sai Balaji

HAS ATTAINED THE DESIGNATION OF

LEED AP® Building Design + Construction

by demonstrating the knowledge and understanding of green building practices and principles needed to support the use of the LEED® green building program.

11181524-AP-BD+C

CREDENTIAL ID

18 SEP 2018

ISSUED

17 SEP 2022

VALID THROUGH

Mahesh Ramanujam

MAHESH RAMANUJAM
PRESIDENT & CEO, U.S. GREEN BUILDING COUNCIL
PRESIDENT & CEO, GREEN BUSINESS CERTIFICATION INC.

IGBC

Confederation of Indian Industry

The Indian Green Building Council

hereby certifies that

Tanmay Sharma

has successfully demonstrated knowledge on the Green Building Design & Construction, Building Standards & Codes, IGBC Resources & Processes and Green Design Strategies & their Impacts, required to be awarded the title of

IGBC Accredited Professional

K S Venkatagiri
Executive Director
CII-Godrej GBC

V Suresh
Chairman
Indian Green Building Council

Gurmit Singh Arora
Vice-Chairman
Indian Green Building Council

200432

05 September 2020