

## DAV INSTITUTE OF ENGINEERING & TECHNOLOGY

(A Unit of Dayanand Anglo Vedic College Trust & Management Society)

Kabir Nagar, Jalandhar, Punjab - 144 008

Accredited by NAAC with "A" Grade & Recognized by UGC under Section 2(f)

Approved by AICTE; Affiliated to IKG-PTU, Jalandhar | Managed by DAV College Managing Committee, New Delhi

CRITERION NUMBER	CRITERION NAME	MARKS
Criterion 7	Institutional Values and Best Practices	100

#### CRITERION-VII (INSTITUTIONAL VALUES AND BEST PRACTICES)

#### 7.1 INSTITUTIONAL VALUES AND SOCIAL RESPONSIBILITIES (50 Marks)

### 7.1.3- QUALITY AUDITS ON ENVIRONMENT AND ENERGY REGULARLY UNDERTAKEN BY THE INSTITUTION (10 Marks)

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#### A SYNOPSIS OF

## **GREEN AUDIT REPORT**

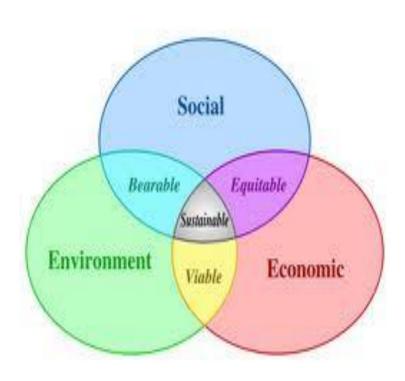
(Covering Energy, Environment & Campus Greenery)

#### DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

#### **DATE OF AUDIT**

22<sup>nd</sup> December 2021



#### **AUDIT CONDUCTED AND SUBMITTED BY**

Energy Audit/ Environmental Audit / Green Audit Committee

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Ref. No.: DAVIET/2022-23/531

Dated 10.1.0.6.2.0.20

#### Certificate

Certified that Green Audit including the Energy and Environmental parameters for the DAV Institute of Engineering and Technology (DAVIET), Jalandhar, Punjab has been conducted by the Institute level Audit Committees on 22<sup>nd</sup> Dec. 2021 as prerequisite requirement under CRITERIA NO: 7 INSTITUTIONAL VALUES AND SOCIAL RESPONSIBILITIES.

Dr Manoj Kumar

Principal Principal
D.A.V. Institute of Engineering & Technology

Kabir Nagar, Jalandhar-144008

Website: www.davietjai.org

Ph.: 0181-2207650, 2200232, 2343400 Toll Free: 1860 180 0126

## A SYNOPSIS OF GREEN AUDIT REPORT

#### **Details of the Client**

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

### 1. ACKNOWLEDGEMENT

#### <u>ACKNOWLEDGEMENT</u>

It is our great pleasure which must be recorded here that the management of DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY (DAVIET) extended all possible support and assistance resulting in expeditious completion of the audit process. The audit team appreciates the cooperation and guidance extended during course of site visit and measurements. We are also thankful to the all those who gave us the necessary inputs and information to carry out this very vital exercise of green audit.

Finally, we offer our sincere thanks to all the members in the engineering division/technical/non-technical and office members who were directly and indirectly involved with us during collection of data and conducting field measurements.

Management Team Members		
Shri. Punam Suri	President	
Shri. Ajay Suri	General Secretary	
Dr.Manoj Kumar	Principal , DAVIET	

## A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

# 2. INTRODUCTION TO ENERGY-ENVIRONMENT-GREEN AUDIT PROCESS

#### 2.1: Preface about the Institution:

DAV INSTITUTE of Engineering Technology (DAVIET) was established by DAVCMC Charitable Trust and Management society in the year 2001. The Trust was founded by professionals with more than 130 years of experience to impart quality education and ethical as well as societal values to the students across globe. The institution offers five UG and three PG programmes. The institution has earned acclaim for its excellent infra-structure, well equipped laboratories and highly qualified, dedicated faculty members. The institution is recognized under section 2(f) of the UGC Act 1956. It is an ISO 9001:2015 Certified Institution. Within two decade of its existence, the institution has earned laurels for its academic, placement, sports and co-curricular achievements. DAVIET is now offering Under Graduate (UG), PG and Ph.D Programmes namely;

UG Programme	PG Programme
Civil Engineering	Civil Engineering
Computer Science and Engineering	Electronics & Communication Engineering
Electronics & Communication Engineering	Computer Science and Engineering
Mechanical Engineering	Business Management
Information Technology	Computer Application
Electrical Engineering	Electrical Engineering
Business Management	Centre for Major Research Programme in
Computer Application	Electronics & Communication Engineering
Hospitality and Tourism Management	Computer Science and Engineering

#### 2.2 : Vision Statement:

• To attain the coveted status of a growth-oriented resource of National Importance known for quality professional education, research and innovation".

#### 2.3: Mission Statement:

• "To provide professional education with a difference confirming a confluence of inter-/multi-disciplinary knowledge domains; targeting excellence in collaboration with Industry; promoting creative competence and innovation aimed at producing skilled human resource and entrepreneurs; sustaining Indian ethics & moral values".

#### 2.4 : Major Activities in the Institution:



Major Activities in the Educational Institution

#### 2.5: Foreword about Energy-Environment-Campus Greenery Audit Activity:

- The primary objective of the green audit is to reduce the amount of energy utilization, reduction of water consumption, improve the green coverage without negatively affecting the productivity or comfort level.
- The vision of the green audit with a focus on energy consumption to assess the viability to upgrade the energy efficiency measures prior to investing extensive resources in electrical and thermal energy systems.
- Energy-Environment-Green audit is an inspection survey and is a major tool for analysing the present utilization of all types of energy, assessment of environmental condition and development of Campus greenery etc. Total area of the college main campus is 18 acres, of which approx. 20 percent is covered by herbs, shrubs and trees, including valuable medicinal Plants. All these plants have been systematically identified by the green audit committee members.

#### 2.6: Scope of the Audit:

- Identification of possible reduction of present energy consumption and thereby find the way reduce it. Also ensures to focus on Green energy generation in the college campus.
- Best practices to be followed in energy conservation, environmental management and solid waste management system.
- Detailed audit process in the college campus with a main focus to identify judicious usage of energy and sustainable environment.
- Providing constant awareness for both faculty and students in Energy, Environment and natural resources.

#### 2.7: Date of Audit:



#### 2.8 : Coverage in Green Audit Process:



#### 2.9: Outcomes of the Audit Process:

- Minimization of present energy cost by adjusting and optimizing energy usage and reduction of energy wastage without affecting the regular activities.
- Providing a pathway to become a sustainable environment inside the college campus and nurture the importance of less energy with more productivity.
- Formation of methodology for long term road map for maintaining green environment within the campus and encourage the stakeholders for continuous improvements

#### 2.10 : Audit Schedule:

S. No.	Activity	Focused Area and Location of Audit
1.	Introduction Meetings	Meeting with core committee members
2.	Electrical Energy	Assessment on Annual Energy Consumption Electrical distribution, Annual Energy Cost, Simple Payback Period etc.
3.	<b>Energy Conservation Proposals</b>	Assessment on PV System, Mounting, Electrical distribution and Energy Conservation Proposals along with Annual Energy and Financial Savings
4.	Water Pumping System	Water storage, Pumps location, Water distribution, Dimensions of sump, tank and well capacity.
5.	Water Distribution System	Assessment on water distribution, Water inlet & outlet and Layout analysis, RO plant
6.	Rain Water Harvesting	Assessment of rain water, rain water inlet & collection and Layout analysis.
7.	HVAC System	Assessment on indoor and outdoor units, Capacity/Star rating, Make & Model, Gas used, Assessment on maintenance record.
8.	Usage Of Chemicals, Salts & Acids	Assessment on usage Of Chemicals, Salts & Acids, Safety measures and storage provisions
9.	Solid Waste Management	Assessment of total Solid waste generation, types and reduce, reuse and recycling potential and Assessment of Composting capabilities
10.	Analysis of E-Waste Management	Assessment of E-waste generation, certification and Assessment of agreements for safe disposal (recycling by authorized vendors/service providers)
11.	Disposal of Biomedical Waste	Assessment of Biomedical/infection waste generated, options used for proper disposal, agreements for safe disposal of waste etc.
12.	Solar PV System (Renewable)	Assessment on PV System, Mounting, Orientation, Cleaning schedule, Integration at MV panel, AC distribution and Inverter systems
13.	Un-interrupted Power Supply (UPS)	Assessment on UPS capacity, Location, Condition monitoring of battery voltage
14.	Green Coverage	Assessment on matured trees, location/coverage, Flowing shrubs and bushes.
15.	Transport System	Assessment of total no. of vehicles, Fitness certification and Assessment of pollution certificates
16.	Closing Meeting	Concluding meeting with faculty representatives at conference hall

## A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

### 3. ENERGY AUDIT SUMMARY

1.	Sensor based energy conservation system	Sensor based energy monitoring and conservation system for measurement of electrical energy consumption along with other electrical parameters such as real power, reactive power, kWh, voltage, current, frequency, power factor of each block of the institute and all the hostels.	
2.	Street Lighting	Assessment of conventional street lights and recommendation of shifting to LEDs.	
3.	Solar water Heating	Assessment of electrical geysers, consumption and usage pattern and recommendation of solar water heater installation	
4.	Solar PV System (Renewable)	Assessment on grid connected solar PV System for the institute and proposal for installation of same.	

#### **Executive Summary**

#### **Electrical Energy Analysis:**

After conducting detailed audit in DAV Institute of Engineering & Technology, Jalandhar, the audit team has come out with following audit report & energy conservation proposals. The summary of all the audit & proposals are given below:

S. No.	Description	Parameters			
1100		of aud	implementation lit/proposals for gy conservation	After implementation of audit/proposals for energy conservation	r
1	Annual Energy	9,	,42,980kWh	7,58,562kWh	1,84,418 kWh
	Consumption				
	(Electricity Only)				
	(Year 2019)				
			Mı	ıltiplying kWh by 9.22	
2	Annual Energy Cos	st	Rs. 86,98,600/-	Rs. 69,93,941/-	Rs. 17,00,333
3	Expected Energy sa	aving in		19.55%	
	%				
4	Initial Investment r	equired		Rs. 39,81,600	
5	Simple Payback Pe	riod		2.67 years	

## A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

### <u>PART-A</u> ENERGY AUDIT REPORT

# 4. ENERGY CONSERVATION PROPOSALS (ENCONs)

Table-1: Energy audit and Conservation proposal (ENCON) along with Annual Energy and Financial Savings

		%Saving	Estimat	Estimated Savings		Simple	Ref.
S. No	Proposed Energy Conservation Measures	& Source	Annual Energy Savings(kWh)	Monetary Savings (Rs.)	Initial Investment (Rs.)	Payback Period	Page. No.
		Low	Cost Investment (I	Lessthan2.0Lakh	s)		
II	Solar water heater installation in the guest house	100% (SWH)	7875	72,607	55000	01 year	19
	Medium Cost Investment (2.0Lakhs – 5.0 Lakhs)						
	Replacement of conventional Street Lighting System with LEDs	53.5% (LEDs)	15943.2	1,46,996	2,11,600	1.43 years	20
	High Cost Investment (Above5.0Lakhs)						
	Sensor based energy monitoring and conservation system	20% (ACs)	30,600	2,82,132	5,15,000	1.83 years	21
4.	Installing grid connected Roof Top Solar Photovoltaic power plant	13.8% (SPV)	1,30,000	Rs.11,98,600	32,00,000	2.67 years	22
	Total		1,84,418 kWh	Rs. 17,00,335	Rs. 39,81,600		

ENCON-1	Solar water heater installation in the guest house
Assessment Area	Institute Guest house
Observations	<ul> <li>07 geysers of 35 litters each were installed in the institute guest house in the college campus.</li> <li>Expected usage of geysers during winter is 03 hours daily.</li> </ul>
Assessments	<ul> <li>Wattage of each geyser is 2.5 kW.</li> <li>Energy consumed during the season is approx. 7875 kWh</li> </ul>
Recommendation (Target)	Two Solar water heaters (Flat plate and evacuated tube type) of 500 liters capacity to be installed to save the power consumed by electrical based geysers.

#### **Energy & Financial Saving Calculation**

Parameters	Descr	ription	
Total No. of water geysers	7 No's.		
Energy Calculation	Before	After	
Expected % of Energy Saving		100%	
Annual Energy Saving		7875 kWh	
Annual Financial Saving		Rs. 72,607	
Initial Investment		Rs. 55,000	
Simple Payback		1 year	

ENCON-2	Replacement of conventional Street Lighting System with LEDs
Assessment Area	Street lighting forth entire campus
Observations	<ul> <li>The total 36 Nos. of Street light poles with 150W each metal halide lamps (Total load of 09 kW) installed along the campus area roads</li> <li>A Light tower located in the front lawn with 12 metal halides of 400 W each with total load of 9.6 kW.</li> <li>All the light sare operated mostly between 8.00 PM to 4.00 AM (8 hours/day) and this may vary depends on the season.</li> </ul>
Recommendation (Target)	<ul> <li>For street lighting system, it is recommended to replace metal halide lamps with LEDs lights (36 Nos. of 65W each)</li> <li>For Light tower located, it is recommended to replace the metal halide lamps with LEDs (08 Nos. of 300W each)</li> <li>To install timer switches with street lighting and light tower and to program for seasonal conditions and minimum lighting requirement during late night hours.</li> </ul>

#### **Energy & Financial Saving Calculation**

Parameters	Description				
Total no. of street lights	36 No's of 150Weach + light tower with 12 lights 400 watt each				
Energy Calculation	Before	After			
Expected % of Energy Saving	_	53.5%			
Expected Energy consumption	29784 kWh	13840.8 kWh			
(8 hrs	s per day considered for all 30	65days)			
Annual Energy Saving		15943.2 kWh			
Annual Financial Saving		Rs 1,46,996			
Initial Investment	-	Rs, 2,11,600			
Simple Payback		1.43 year			

#### Sensor based energy monitoring &conservation System

In order to conserve the energy, first requirement is to analyze the energy usages pattern and to measure various parameters required for energy conservation. At DAVIET, this monitoring is performed by a Sensor based energy monitoring and conservation system installed in the institute by Equilibrium energy. It is a cloud base sensor system provides the measurement of all electrical parameters such as real power, reactive power, kWh, voltage, current, frequency, power factor of each block of the institute and all the hostels.

All the electrical quantities can be monitored live and can be analyzed as per requirement. If there is any abnormal condition/fault occurs in the system, it is informed to the personnel via text message on mobile phone by the company.

Based upon the assessment of the data readings from this system, the team has proposed the following Energy conservation proposals (ENCONs) to the institute for better energy management.

ENCON -1	Sensor based energy monitoring and conservation system
Assessment Area	Institute academic blocks and Hostels of the Institute
Observations	<ul> <li>Through the data analysis of this software, high consumption areas were identified.</li> <li>Hostels were the main areas seen as high energy consumption blocks.</li> </ul>
	For AC rooms of the hostel electrical supply was not metered, hence higher consumption due to misuse of AC's
Recommendation (Target)	<ul> <li>Power supply to all the AC rooms in the hostels need to be metered for individual rooms and are there should be charges if the consumption is more than the allotted no. of free unit's.</li> <li>The resident will be aware of its consumption and wastage of electricity is prevented.</li> </ul>

**Energy & Financial Saving Calculation** 

Parameters	Description				
Total Load of ACs in kW	102kW				
Energy Calculation	Before	After			
Expected % of Energy Saving		20%			
(Considering 150 days, 1	0 hours for before and 8 ho	urs for after)			
Expected Energy consumption	1,53,000kWh	1,22,400kWh			
Annual Energy Saving		30,600kWh			
Annual Financial Saving		Rs. 2,82,132 /-			
Initial Investment		Rs.5,15,000/-			
Simple Payback		1.83 year			

ENCON -4	Installing grid connected Roof Top Solar Photovoltaic power plant
Assessment Area	Energy generation from Roof Top Solar Photovoltaic System
Observations	<ul> <li>300kWprooftopsolarPVplantis planned to install in the campus in three phases of 100kWp with adequate cleaning at regular interval as the dust accumulation must reduce the expected power output and hence it will be a loss of generation.</li> <li>In general; a minimum of 1%powergenerationmaybeimprovedby regularly cleaning the panels. Most of the bulk power generating solar PV plant has separate panel cleaning schedule (pipes, cleaning detergents and man power) to operate the same.</li> </ul>
Recommendation (Target)	<ul> <li>In first 7phase 100kWp solar plant is proposed in the DAVIET campus.</li> <li>Prepare a separate cleaning schedule; assign a team of members with higher degree of supervision. Visually inspect the panels for any damage, cracks, stains and other abnormalities.</li> <li>Even conduct an IR the rmo graphy study on the solar panels, solar DC and AC connectors, AJB and Inverter once in a year.</li> </ul>

**Energy & Financial Saving Calculation** 

Parameters	Description			
Proposed Installed capacity of SPV Plant	100kWp			
Location	Roof Top Area in the campus			
Energy Calculations With Grid Connected system ( Year 2019)				
Electrical Units consumed annually	9,42,980 kWh			
Annual Electricity Bill	Rs. 86,98,600/-			
Current Average Electricity Rate	Rs. 9.22 (per unit)			
With Proposed Roof Top So	olar Power Plant(100 kWp Capacity)			
Electricity Units Generated annually	1,30,000 Units			
Cost of units generated annually In INR	Rs.11,98,600			
Average Revenue per year In INR	Rs.11,98,600			
Annual Financial Saving after payback	Rs.11,98,600			
period In INR				
Initial Investment	32,00,000/-			
Simple Payback	2.67 years			

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Retail Invoice of Purchasing and Installation of 100 Litres/day ETC based Solar Water Heater with electric backup for DAVIET (Rs. 18,950/- paid to Manik Solar Innovation, Jalandhar City, Punjab)

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Retail Invoice of Purchasing and Installation of 100 Litres/day ETC based Solar Water Heater with electric backup for DAVIET, Jalandhar (Rs. 37,960/- paid to Manik Solar Innovation, Jalandhar City, Punjab)

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Retail Invoice of Purchasing and Installation of 375 Litres/day recold Solar Water Heating flat plate collector (4 no. with SS Tank) for DAVIET, Jalandhar (Rs. 96,000/paid to Silverline Industries, Chandigarh)

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Retail Invoice of Purchasing and Installation of Solar lighting systems (4 no.) in DAVIET, Jalandhar (Rs. 99,170/- paid to United Solar Engg. & Technologies, Jalalabad, Ferozpur)

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Retail Invoice of Purchasing and Installation of MFM Schneider Smart meter for the Sensor based energy conservation systems (3 no.) installed in DAVIET, Jalandhar (Rs. 2,12,625/- paid to Ecolibrium Energy Pvt. Ltd., Ahmadabad)

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Retail	Invoice		Dated			
brium Energy Private Limited Venus Atlantis, 100FT Ring Road,	Invoice No. INVRI-16-17 Delivery Note	7-Mar-0069	Mode/	10-Mar-2017 Mode/Terms of Payment as per po Other Reference(s)		
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Retail Invoice of Purchasing and Installation of MFM Schneider, Digital meter and CT Current Transfprmaer for the Sensor based energy conservation systems installed in DAVIET, Jalandhar (Rs. 2,52,000/- paid to Ecolibrium Energy Pvt. Ltd., Ahmadabad)

#### Photographs related to solar energy systems in the campus

#### **Solar Street Lights**



Solar Street Lights installed in DAVIET, Jalandhar



Solar Street Lights installed in DAVIET, Jalandhar

#### 1. 500 ltr. Solar Heater System in the DAVIET campus



Solar Heater System in the DAVIET campus



Solar Heater System in the DAVIET campus



Solar Heater System in the DAVIET campus



Solar Heater System in the DAVIET campus

#### Sensor based energy conservation system installed in the institute

This Sensor based energy conservation system is installed in the substation of the institute by equilibrium energy which provides all electrical parameters such as Power, Energy, Voltage, Current, Frequency, Power Factor of every block and hostels. All electrical data available on line also of which any one can analyze where internet facility is available. Any abnormal condition is informed by the messages on mobiles by the company.



MFM Schneider Smart meter for the Sensor based energy conservation systems (3 no.) installed in DAVIET, Jalandhar



MFM Schneider Smart meter for the Sensor based energy conservation systems (3 no.) installed in DAVIET, Jalandhar



MFM Schneider, Digital meter and CT Current Transfprmaer for the Sensor based energy conservation systems installed in DAVIET, Jalandhar



MFM Schneider, Digital meter and CT Current Transfprmaer for the Sensor based energy conservation systems installed in DAVIET, Jalandhar

## A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

### <u>PART-B1</u> ENVIRONMENTAL AUDIT REPORT

### 5. ANALYSIS OF WATER CONSUMPTION

#### 5.1 : Source of Water, Storage and Distribution:

Water is one of the main consumable in the college campus. DAVIET gets the fresh water from three sources namely i) Bore well ii) Rain Water Harvesting (RWH). Table-1 shows the source of water, location of storage along with their application.

Table-1: Source of Water, Location of Storage and Application

Type of Water	Source	Location	Application
Fresh Water	3 no's of pumps (Bore Water)	<ul><li> In front Lawn</li><li> Near Substation</li><li> Near girls hostel</li></ul>	<ul><li> Cooking</li><li> Utensil Cleaning</li><li> Bathing</li></ul>
	Rain Water Harve	sting (RWH) system is	• Clothing washing
	located near the	college guesthouse	

#### <u>5.2</u>: Reverse Osmosis (RO) Plant and Treated Water for Drinking Application:

- The college management is keen on providing uninterrupted, safe and healthy drinking water to all; throughout the year. This water is being checked in an accredited laboratory and ensures that the water is potable.
- There are 17 Commercial and 32 domestic RO system located at various locations within the institute.
- The specifications of RO Plant and distribution of potable water to the entire campus is given in Table-2.: Specification of RO Plant

Table-2: Specification of RO Plant and Potable Water Distribution

S. No.	Parameters	Description
1.	Capacity of the RO Plants	• 50 Liter per day (Domestic RO system)
		• 50 Liter per hour (Commercial RO system)
2.	Location	All academic and Hostel Block Buildings
3.	Source of raw water	Bore water + Outside water
4.	% of RO water output	• 30 to 50 % approximately
5.	Cleaning schedule of carbon & sand filter	Yearly twice
6.	Cleaning schedule of membrane	Every Month
7.	Back washing duration	• 10 min/day
8.	Functioning of RO Plants	Manual
		(operated based on the students strength)
9.	Provision for automatic controller	Not available (To be implemented)



Water pumping and withdrawal facilities available within the Institute



Water pumping and withdrawal facilities available within the Institute





Water storage and treatment facilities available within the Institute



Water storage and treatment facilities available within the Institute

#### 5.3: Rain Water Harvesting (RWH) System:

- Water is an important natural resource and is the very basis of our life. Water is a cyclic resource which can be used again and again after cleaning. The best way to conserve water is its judicious use.
- RWH is an option which has been adopted to collect and storage of rain water and also other activities aimed at harvesting surface water, prevention of loss through evaporation and seepage.
- The college has a suitable recharge structure (recharge pit) for rain water harvesting located on the right side of the Material Science block. The overall rain water collected is properly rooted to this recharge pit and supports to increase the ground water table of the region.



Rain water harvesting system installed in the DAVIET Campus



Rain water harvesting tank installed in the DAVIET Campus (Located near Material Science Block of DAVIET Campus)

Related video link:- https://www.youtube.com/watch?v=YQmV6crd-cE

# A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

# <u>PART-B2</u> ENVIRONMENTAL AUDIT REPORT

## 6. ANALYSIS OF HVAC SYSTEM

### **Total Ductable ACs of the Institute**

Sr. No.	Type of AC	Installed at	Nos.	Total Nos.
1.		CAD Lab, Material Science Block	01	
2.		CCNA Lab, Core Block	01	
3.		Office of the Principal, R&D Block	01	
4.		Reception, R&D Block	01	
5.		Programming Language Lab, Core Block	01	
6.		Project Lab, Core Block	01	
7.	- - -	Knowledge Centre Library 1st floor	04	
8.	5.5 TR  Ductable	Knowledge Centre K1 2 <sup>nd</sup> floor seminar hall	02	22
9.	Ductable	Knowledge Centre K2 2 <sup>nd</sup> floor restaurant	01	
10.		Knowledge Centre K5 3 <sup>rd</sup> floor computer lab	01	
11.		Knowledge Centre K6 3 <sup>rd</sup> floor	01	
12.		Knowledge Centre K8 3 <sup>rd</sup> floor	01	
13.		Knowledge Centre MCA Lab 2 <sup>nd</sup> floor	01	
14.		Knowledge Centre Ground Floor	01	
15.	1	Smart Rooms	04	
16.	7.5 TR  Ductable	RDBMS & Operating System Lab, Core Block	01	01
17.		Conference Hall, R&D Block	01	
18.		Auditorium	10	
19.	8.5 TR	Advance Computing Lab	01	
20.	Ductable	Convention Hall	07	23
21.	Ductable	Knowledge Centre Library 1st floor	01	
22.	1	Knowledge Centre Ground Floor	02	
23.	1	VLSI Lab	01	

## **Split and Window ACs:**

Sr. No.	Type of AC	Installed at	Nos.	Total Nos.
1.		Office of the Time Table Incharge MBA Deptt.	01	
2.	•	Language Lab PG Block	04	
3.		PG Computer Lab	02	
4.	-	Office of the PP Sharma, R&D Block	01	
5.		Knowledge Centre Store	01	
6.		PG Boys Hostel	58	
7.		Shivani Mehta EE Office	01	
8.		Office of the HOD (CSE), R&D Block	01	
9.	-	Faculty Room (Grround Floor), Core Block	01	
10.	_	Administrative Block, R&D Block	02	
11.	-	Accounts Office, R&D Block	01	
12.	0.8 Ton	Central Computing Lab, Core Block	02	
13.	To	Girls Hostel	30	450
14.	2 Ton Window	Prveen Kakar Office	01	159
15.	window	Server Room, Core Block	01	
16.		TPO Department	03	
17.		Dr. Kiran Ahuja ECE	01	
18.		Manpreet Beddi Office	01	
19.	1	Dr. Kanchan L Singh	01	
20.	-	Computer Programming Lab First Floor	02	
21.	-	Operating System Lab Cor Block	01	
22.		GEO Tech Lab	01	
23.		Office of PA OF Principal	01	
24.	-	UG Boys Hostel	35	
25.	-	Faculty Room (MBA), PG Block	01	
26.	-	GD Room Core Block	02	

27.		Knowledge Centre Crèche	01	
28.		Knowledge Centre Library Office	01	
29.		Estate Offcer Office	01	
30.		Dr. Sanjeev Saini Office	01	
31.		EMM Lab Material Science Block	02	
32.		Faculty Room EE	01	
33.		PG Computer Lab	01	
34.		Sports Office	01	
35.		Computer Lab ( Opp. Server Room)	01	
36.		Seminar Hall, Core Block	06	
37.		Dr. Jagjeet Malhotra Office	01	
38.		Office of the HOD (CE), Material Science Block	01	
39.		Library Cassette Type	02	
40.		Physics Lab	01	
41.		Project Lab	01	
42.		Lecture Hall 31	01	
43.	1.5 TR /	Administrative Block, R&D Block	01	65
44.	2 TR Split	Accounts Office, R&D Block	01	
45.		Faculty Room Civil Deptt.	01	
46.		Office of the HOD (ECE), UG Block	01	
47.		Office of the HOD (EE), UG Block	01	
48.		Office of the TPO, UG Block	01	
49.		Office of the COE, UG Block	01	
50.		Faculty Room (ECE), UG Block	01	
51.		MMM Lab (Balbir )	02	
52.		Maini Sir Office ( MMM )	01	
53.		Server Room Core Block	01	
54.		Machine Shop CNC	01	
55.		GD Room MBA	01	
56.		Sanjay Goel Office	01	
57.		Faculty Room CSE R&D Block	01	
		1	1	

58.	Office of the HOD (MBA), PG Block	01	
59.	Knowledge Centre Rooms	04	
60.	Faculty Room Mechanical Deptt.	01	
61.	Dr. Anil Soni & PA Office	02	
62.	Faculty Room IT Deptt.	01	
63.	RDBMS Lab	01	
64.	HOD IT Office	01	
65.	Dr. Jagroop Office	01	
66.	Doctor's Room	01	
67.	Gaurav Dhuria Office	01	
68.	Old + New Guest House	14	
69.	Central Computing Lab	01	

# A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

# <u>PART-B4</u> ENVIRONMENTAL AUDIT REPORT

7. USAGE OF CHEMICALS, SALTS & ACIDS (HANDLING, STORAGE AND BEST OPERATING PRACTICES)

#### 7.1: List of Chemicals Used, Storage Method and their Application:

Table-7 shows the list of various chemicals/salts/acids used in the Department of Science and Humanities (S&H) laboratories indicating method of storage, dilution and their application area.

Table-7: List of Chemicals Used, Storage Method and Application

Name of the Department	Chemistry	Name of the Laboratory	Chemical Analysis Laboratory
Name of the Department	Civil Engg	Name of the Laboratory	Environmental Engg Laboratory

S. No.	Chemicals/Salts/Acids Used	Method of Storage	Method of Dilution	Application
1	TT downline to A and		Adding the acid to water slowly	Volumetric, Conduct metric
1	Hydrochloric Acid		and with constant stirring.	analysis and synthesis.
2	Sulphuric Acid	Acid cabinet	Adding the acid to water slowly and with constant stirring.	Volumetric, Conduct metric analysis and synthesis.
2	Acetic Acid		Adding the acid to water slowly	Volumetric, Conduct metric
3	Glacial	Acid cabinet	and with constant stirring.	analysis and synthesis.
4	EDTA Disodium Salt	• • • • • • • • • • • • • • • • • • •	-	Volumetric analysis
5	Ammonia Solution		-	Chromatography
6	Potassium Hydroxide	-	-	Volumetric analysis
7	Potassium Iodide	-	-	Volumetric analysis
8	Sodium Thiosulphate	Stored in medium shelf and below eye level	-	Volumetric analysis
9	Phenolphthalein Solution	10.01	-	Volumetric analysis
10	Starch Soluble	_	-	Volumetric analysis
11	Eriochrome Black-T Powder		-	Volumetric analysis
12	Sodium Hydroxide pellets		-	Volumetric analysis
13	Calcium Chloride	_	-	Volumetric analysis
14	Ethanol	-	-	Volumetric analysis
15	Propanol	1		Volumetric analysis, Chromatography
16	Ammonia Buffer Solution		-	Volumetric analysis
17	Phenol	=	-	Synthesis
18	Formaldehyde solution	=	-	Synthesis
19	Salicylic acid		-	Synthesis

20	Acetyl chloride		-	Synthesis
21	Succinic acid		-	Volumetric analysis
22	Silica gel		-	Chromatography
23	Ethyl acetate		-	Volumetric analysis
24	Activated charcoal		-	Volumetric analysis
25	Nitric Acid L.R.(Nice)	Stored in acid cabinets, but it is kept isolated from	Adding the acid to water slowly and with constant stirring.	Volumetric, Conduct metricanalysis.
		all other acids.		
26	Acetone		Adding the acid to water slowly and with constant stirring.	Volumetric analysis.
27	EDTA Disodium Salt		-	Volumetric analysis.
28	Ammonia Solution		Adding the acid to water slowly and with constant stirring.	Volumetric analysis.
29	Copper Sulphate		-	Volumetric analysis.
30	Zinc Sulphate		-	Volumetric analysis.
31	Sodium Sulphate		-	Volumetric analysis.
32	Magnesium Sulphate	Stored in	-	Volumetric analysis.
33	Potassium Permanganate	and below eye	-	Volumetric analysis.
34	Potassium Dichromate	level	-	Volumetric analysis.
35	Ammonium Ferrous Sulphate		-	Volumetric analysis.
36	Ammonium Chloride		-	Volumetric analysis.
36	Phenolphthalein Powder		-	Volumetric analysis.
37	Phenolphthalein Solution		-	Volumetric analysis.
38	Ammonium Purpurate		<u>-</u>	Volumetric analysis.
39	Methyl Orange Powder		-	Volumetric analysis.
40	Methyl Orange Solution		-	Volumetric analysis.
41	Starch insoluble (Nice)		-	Volumetric analysis.
42	Eriochrome Black-T Powder(Nice)		-	Volumetric analysis.
43	Silver Nitrate L.R.(Nice)		-	Volumetric analysis.
44	Potassium Chromate		-	Volumetric analysis.
45	Sodium Chloride L.R.(Nice)		-	Volumetric analysis.
46 47	Calcium Chloride  Barium Chloride		-	Volumetric analysis.  Volumetric analysis.
11.7	Darram Cinoriae		47	, ordinodic dilary 515.

Ethanol		-	Volumetric analysis.
Potassium Chloride		-	Volumetric analysis.
1,10,Phenanthroline		-	Volumetric analysis.
Hydrate			
Manganous Sulphate		-	Volumetric analysis.
L.R.(Nice)			
Ferrous Sulphate		-	Volumetric analysis.
Ammonium Oxalate		-	Volumetric analysis.
Calcium Carbonate		-	Volumetric analysis.
	Potassium Chloride  1,10,Phenanthroline Hydrate Manganous Sulphate L.R.(Nice) Ferrous Sulphate Ammonium Oxalate	Potassium Chloride  1,10,Phenanthroline Hydrate  Manganous Sulphate L.R.(Nice)  Ferrous Sulphate  Ammonium Oxalate	Potassium Chloride  1,10,Phenanthroline Hydrate  Manganous Sulphate L.R.(Nice)  Ferrous Sulphate  Ammonium Oxalate

#### 7.2: General Instructions given to the Students while working in the Laboratory:

- Never work in the lab unless a demonstrator or a teacher is present.
- Never taste any chemicals and don't allow chemicals to come in contact with your skin.
- Don't throw waste into the sink; rather they must be thrown into the waste pins.
- Keep all the doors and windows open while working the laboratory.
- Sulphuric acid must be diluted only when it is in cold condition.
- Reagent bottles must never be allowed to accumulate on the work bench.
- Containers used for reactions must be properly labelled.
- Working space should be cleaned immediately.
- Protection and safety is most important.
- While entering the laboratory, everyone must wear lab coat and shoes.
- Prior knowledge on hazardous property of the chemicals is must.
- Seek the advice of faculty and technical staffs during emergency.
- Know the location of first aid box and fire extinguishers located in the laboratory.
- Don't attend any self-medical practices either for you or for your fellow students.

#### 7.3: Recommendations:

- Most of the chemical, salts and acids used in the science department are inorganic in nature and no harmful effects were created during the experiment process. However after completion of each experiment, the wastes are washed in the water sink and are rooted to sewage lines.
- Ascertain that the chemicals/salts/acids used in the college campus for their academic/research
  application does not pollute the mother earth.
- Submit a detailed audit report based on the specified metric (may be developed internally) to the approved committee annually ensure the minimization of chemical pollution.
- Though the quantity of the chemical wastes generated in an annum is small it is appropriate to divert and treat this effluent to some other means (not letting out to STP).
- The best ways recommended as to treat this is;
  - Design a dedicated system and collect the chemical wastes in a separate tank with suitable backup facility. Once the tank fills; then transfer the effluent to nearby authorized Effluent Treatment Plant (ETP). An agreement may be made between the college and the ETP authorities over a certain period of time.

# A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

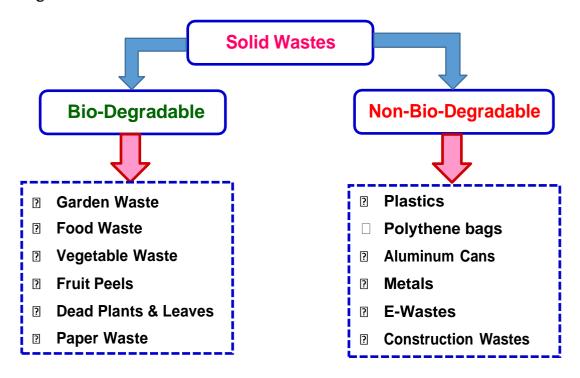
Kabir Nagar, Jalandhar City, Punjab - 144008

# <u>PART-B5</u> ENVIRONMENTAL AUDIT REPORT

8. SOLID WASTE MANAGEMENT

#### 8.1: Solid Waste Management System:

Different types of wastes generated inside the college promises are represented in the below block diagram.



#### 8.2: Process of Waste Management:

The college management practiced some methods to treat the waste generated and Table-7 shows the process of treating the solid waste generated inside the college campus.

**Table-8: Process of Waste Management** 

S. No.	lo. Waste Type Waste Treatment					
	Bio-Degradable Waste Management					
Food and Vegetable Waste     Collected & used by Ma		Collected & used by Mali's for composting yard				
2.	Garden Wastes and Plant Leaves	Daily collected and dumped in a yard for composting				
3.	Paper Waste	Collected and stored in a separate place for recycling at sister institute (HMV College, Jalandhar)				
	Non-Bio-Degrada	ble Waste Management				
4.	Plastics	Mostly Banned in the college campus				
5.	Construction Wastes	Mostly used by their own construction				
6.	Metals	Construction metals or from any other sourcesare stored in a separate place				
7.	Transport Oil + Tyres	Transport oils not covered in DAVIET scope; as it is being taken by the service authority  Vehicle tyres are stored in a separate place and sale to 3 <sup>rd</sup> party				
8.	E-Waste Management	Collected and stored in a separate place.				

#### 8.3: Waste Management Policy:

# DAV Institute of Engineering & Technology, Jalandhar "Waste Management Policy"

#### Contents

- 1. Introduction
- 2. Policy Statement
- 3. Policy Objectives
- 4. Organization and Management
- 5. Action Plan
- 6. Glossary

#### 1. Introduction

DAV Institute Of Engineering & Technology, Jalandhar (DAVIET, Jalandhar), is committed to transform lives and serve the society through pursuit of excellence in teaching, innovation, lifelong learning, cultural enrichment and outreach services. DAVIET, Jalandhar came into existence in 2001, with the objective to promote interdisciplinary higher education and research in the fields of Engineering, Management & computer application. DAVIET realizes sustainable and holistic waste management essential in reducing its environmental footprint and providing a safe and healthy work environment for teaching and non-teaching employees, students, and visitors. The institute has a duty to ensure that all the campus wastes are disposed of responsibly by using proper waste segregation mechanism at the source and if possible, converting it into value added environment friendly product. Furthermore, the medical and other Furthermore, the medical and other hazardous waste should be disposed or managed by government approved, registered waste contractors. The purpose of the policy is to facilitate implementation of the action plan brought out in "National Environment Policy 2006" on management aspects of hazardous waste including their minimization, environmentally sound management and active promotion of transfer and use of cleaner technologies.

#### 2. Policy Statement

The Institute will adopt the principles of the 'best practicable environmental option' in the delivery of its waste management services. The institute will apply a 'waste hierarchical approach', to reduce, reuse, recycle and recover waste products in preference to the disposal of waste to landfill. The institute recognizes the importance of meeting these legal requirements and to manage its waste responsibly, reduce the volume of waste sent to landfill and maximize reuse and recycling where possible. The University requires all the teaching and non-teaching staff, students, guests and anyone else making use of the premises to comply with this Policy and associated "Institute Environmental Guidance" to ensure compliance with all waste legislations. Any solid waste generated in the campus shall be managed and handled in accordance with the compliance criteria and the procedure laid down in Municipal Solid Wastes (Management and Handling) Rules, 1999, published under the notification of the Government of India in the Ministry of Environment and Forests number S.O. 783(E),

dated, the 27th September, 1999 in the Gazette of India, Part II, Section 3, Sub-section (ii). There is a legal requirement for all who produce, keep or dispose hazardous/radioactive waste/chemical waste of any type to comply with the various regulations under national and international environmental protection legislation.

#### 3. Policy Objectives

The objectives of this policy are:

- ✓ To ensure that waste management is performed in accordance with all waste legislative requirements, including the duty of care, and to plan for future legislative changes and to mitigate their effects.
- ✓ To minimize waste generation at source and facilitate repair, reuse and recycling over the disposal of wastes in a cost effective manner.
- ✓ To provide clearly defined roles and responsibilities to identify and co-ordinate each activity of the waste management.
- ✓ To promote environmental awareness in order to increase and encourage waste minimization, reuse and recycling.
- ✓ To invest into the expansion of recycling opportunities on the institute campus and transform waste into value added products.

- ✓ To ensure the safe handling and storage of wastes on institute campus.
- ✓ To provide appropriate training for teacher, resident, staff, students and other stakeholders on waste management issues.
- √ To promote holistic approach of waste management in the campus.

#### 4. Organization and Management

The responsibilities and organizational arrangements for this Waste Management Policy lie with a variety of personnel within the Institute.

- Advisory Board
- a. The Principal Chairman
- b. Dean Academic Affairs
- c. Dean (Student Affairs)
- d. Dean (RIC)
- e. Dean (Accreditation)
- f. Medical Officer, DAVIET
- g. Two outside expert (to be nominated by Principal)

#### Function of Advisory Board.

- Coordinating the provision of a central waste and recycling contract service for use by all facilities on the campus.
- Ensuring that all contractors are advised that they must comply with the Duty of Care; that they must comply with the institute's Waste Management Policy.
- iii). Ensuring that all contractors appointed to carry out works are from the government 'approved list'.
  - Co-ordinator, Environment Sustainability Management Cell,DAVIET,Jalandhar is responsible for:
- i). Provision of advice and guidance to the University on waste management.
- ii). Setting Environmental Performance Indicators for waste management.
- iii). Reporting annually to the advisory Board on progress against the 'Environmental Performance Indicators'.
- iv). Monitoring and auditing the management systems for all wastes, to ensure safety and legal compliance.
- v). Monitoring and auditing all waste contractors working for the institute.
- vi). Provision of appropriate training for all personnel who have responsibilities for waste management.
- vii). Coordinating the gathering of, and supplying all relevant information to appropriate enforcement agencies, when information relating to waste management is requested.

viii). Investigation of any incidents or spillage relating to all type of hazardous and general waste management.

#### Support staff is

#### Responsible for:

- i). Overseeing the day to day delivery of general waste and their recycling services.
- Monitoring the performance of the institute contractor against the contact agreements.
- iii). Liaising with the "Environment Sustainability Management Cell" to establish standard procedures for managing waste on the Institute campus.
- iv). Operational monitoring of waste management systems across the campus.
- v). Compiling waste transfer data and statistics notes for centrally managed waste and recycling collections.

#### Heads of Departments are:

Responsible for:

#### i). Non-hazardous Wastes

Ensuring that no hazardous waste is disposed of through the general or waste recycling streams.

#### ii). Hazardous Wastes;

Nominating a 'responsible person' within their department to coordinate waste disposal for any hazardous or laboratory wastes.

- iii). Informing the Environment Sustainability and Management Cell, about the nominated 'responsible person' and updating the cell if and when the 'responsible person' changes. The tenure of the person will be minimum two year.
- Staff/Supervisor (contractual) will be

#### Responsible for:

- Disposing of waste responsibly (at both office and residence), through the appropriate waste disposal system (segregation of waste), in accordance with Institute policy and procedures.
- Reporting any problems with waste collection schemes to Environment Sustainability and Management Cell of the Institute.

#### Students will be

Responsible for:

- Disposing of waste responsibly, through the appropriate waste disposal system, in accordance with institute policy and procedures.
- Reporting any problems related department/laboratory waste or waste collection Procedure to the 'Head of Department'.

#### Action Plan

The waste could be recycled /reused or disposed of in captive or common treatment, storage and disposed facilities available in the campus or incinerated, as proposed in the waste hierarchy list (Fig. 1). Inventories of 'end of life' consumer products such as e-waste are also required to be made.

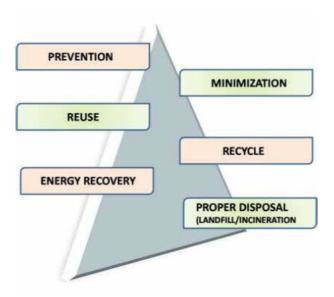


Fig. 1. Waste Hierarchy list in order of preference from the most favorable (top) to the least (bottom).

#### Waste avoidance and waste minimization at source

In the hierarchy of waste management, waste avoidance and waste minimization have to be attempted first, for which dissemination of information on technological options should be a continuing exercise. Promote implementation of recovery of resources such as solvents, other reagents and by-products as well as re-generation of spent catalysts in a time frame manner.

#### Reuse, recovery and recycling of non-hazardous waste

Institute will explore options/ opportunities of reusing, recovery and recycling of non hazardous waste in an environmentally sustainable manner. Paper waste will be recycled to make file covers paper board and packing material. The dry leaves/food waste generated in the hostels etc will be treated in the pits adjoining the PG hostel to convert them to compost.

#### Safe disposal of hazardous waste

For the waste which cannot be recycled/ reused, safe and environmentally sound disposal will be adopted depending upon waste category. Design and operation norms of disposal facilities should be strictly adhered to as per the guidelines framed by CPCB.



Dry Garbage (Garden waste) daily collected using manually driven rehris within DAVIET Campus



Garbage daily collected using manually driven rehris within DAVIET Campus



Dry Garbage daily collected using manually driven rehris near composting plant within DAVIET Campus



Dry Garbage (Garden waste) used in the composting plant for preparation of the Compost for the use in the Institute lawn and gardens

#### **Construction Wastes**



Constriction waste is stored near parking shreds for recycling in the constriction activities

#### Related Video link:-

https://www.youtube.com/watch?v=BwtVpS7vHb0

(Part 1, 5 and 6)

#### Office order regarding Plastic Waste Management "Swachhta Hi Seva Campaign":



# DAV INSTITUTE OF ENGINEERING & TECHNOLOG

Kabir Nagar, Jalandhar, Punjab - 144 008

Accredited by NAAC with "A" Grade & Recognized by UGC under Section 2(f

Approved by AICTE; Affiliated to IKG-PTU, Jalandhar | Managed by DAV College Managing Committee, New Del

Ref. No.: DAVIET/ 2019, 20/ 2848

Office Order

Dated : ... ( -/9/1)

Plastic is a necessary evil. You can hardly do away with it. The amount of plastic that is disposed off every year can circle the earth four times. Every day we come across plastic in various forms as garbage and grocery bags, food containers, computer keyboards, plastic mouse, coffee cup lids and other such products. Though plastic products are very convenient to use, they play harmful role in polluting the environment. According to a study, around eight million metric tons of plastic ends up in our oceans every year. However if prompt action is not taken, this figure will increase by ten times during the next ten years.

The chemicals which are released from the plastics into the water and atmosphere contaminate the fishes and as a result the plastic chemicals are entering food chains. Pollution caused by plastic is not only harmful for marine life but is also affecting health of humans. The harmful chemicals like PCB's, DDT and PAH, which get absorbed in the plastic debris that floats in the sea water ,have a varied and harmful range of chronic effects like endocrine disorders. It has been found that an average person produces more than a kilogram of plastic waste every day. Keeping in view the ill effects of plastic......

DAVIET has started "Swachhta Hi Seva Campaign" from September 11, 2019 to October 2, 2019. This campaign will have a "Single Use Plastic Ban" in DAVIET campus as one of the primary objective to address the environmental hazards being created by continuous use of plastics in society. The following measures are adopted for the said campaign:-

- There will be a complete ban related to single use plastic products, including water bottles, take away coffee cups, lunch wrapped in disposable plastic packaging, plastic bags disposable food containers, plates and container made of polystyrene foam, plastic straws etc. w.e.f September 15, 2019.
- (ii) Every student will collect at least 1 Kg. of plastic from September 11 to October 2, 2019 and shall handover the same to the Estate Officer Sh. Vinay Kumar (in the basement of Knowledge Centre) who will liaison with the Ministry of Drinking Water & Sanitation to hand over the plastic waste for further recycling.

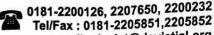
All the HoD(s) are requested to inspire the students towards achieving the above said goal and submit the progress report to Dr. Sanjeev Naval, Head Department of Civil Engineering by September 20, 2019. noster (Dr. Manoj Kumar) Principal Copy to:-All HoD(s)/HcD(s)/ - to circulate the above information amongst the faculty/staff & students of their respective departments Sr. Asstts. (Admn. & A/c.s) - to circulate the above information amongst all Supporting staff of their respective section(s) Establishment Section -Head (T&P Deptt.) Chief Warden and all Hostel Warden(s) Medical Officer Estate Officer # Information Corner Il Departmental and Hostels' Notice Board(s) Website: www.davietjal.org Email: daviet@davietjal.org Ph.: 0181-2207650, 2200232, 2343400 Toll Free: 1860 180 0126

<u>Non-Bio-Degradable waste: Plastics Bottles Cushing and disposal machines installed under Smart City Jalandhar Mission</u>



Plastic Bottles Crushing and waste recycling machine installed in DAVIET, Jalandhar

Nº 003056



e mail : daviet@davietjal.org



### .V. INSTITUTE OF ENGINEERING & TECHNOLOGY (DAVIET)

KABIR NAGAR, JALANDHAR. - 144008 (ISO 9001:2008 Certified)

Approved by : All India Council for Technical Education, New Delhi & Govt. of Punjab

Affiliated to : Punjab Technical University, Jalandhar

Managed by : DAV College Managing Committee, New Delhi

Ref. No. DAVIET/ 2015-16 719 x

#### Office-Order

It has been observed by the undersigned that there is a lot of paper wastage in the Institute which in fact should be avoided in order to save money, reduce pollution & cutting down the beautiful life giving trees and also to save water. It is a mere fact that 10 liters of water is needed to make one piece of A4 paper. So, at least in internal documents like drafts, the waste papers printed on one side should be used for the purpose instead of throwing them away.

(Dr. Manoj Kumar) Principal Copy to: Circulation amongst all staff members

# A SYNOPSIS OF GREEN AUDIT REPORT

### PART-B7

### **ENVIRONMENTAL AUDIT REPORT**

## 9. ANALYSIS OF E-WASTE MANAGEMENT

#### 9.1: Identified E-Waste in the College Campus:

E-Waste – Electrical	E-Waste – IT & Communication
<ul> <li>Motors and Starters</li> <li>Fans</li> <li>Lamps and Luminaries</li> <li>Electrical Drives</li> <li>Heater Coils</li> <li>Broken/Fired Cables</li> <li>Air Conditioning System</li> <li>Power Distribution Panels</li> <li>Electronic Music Instruments</li> <li>Electronic GYM Equipment's</li> <li>Electronic Attendance System</li> <li>Analog &amp; Digital Measuring Instruments</li> </ul>	<ul> <li>Copier/Printers &amp; Fax Machines</li> <li>Power Stripes &amp; Power Supplies</li> <li>UPS/Servo Stabilizers/Inverters</li> <li>Batteries</li> <li>Wi-fi-Modems, Routers, Toggle</li> <li>Network Cables, Switches, Hubs</li> <li>Phone, Intercom &amp; PBX</li> <li>Audit &amp; Video Equipment's/Remote Controls, Projectors</li> <li>Printed Circuits Boards</li> <li>Barcode/QR scanners</li> </ul>

#### 9.2: E-Waste Management Committee:

S. No	Name and Department	Responsibility
1.	Principal	Chairperson
2.	HOD(ECE)	Coordinator
3.	HOD(CSE)	Member
4.	Assistant Professors (ECE/CSE Department)	Member
5.	Assistant Professors (Electrical/Civil Department)	Member
6.	EO (Estate Officer)	Member
7.	Sr. Assistant (General Administration)	Member
8.	Senior Assistant (IT/CSE Services/Department Network Maintenance)	Member
9.	Incharge Store (Administrative Member)	Member

#### 9.3: E-Waste Policy:

E-Waste means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects form manufacturing, refurbishment and repair processes.

E-Waste Management Rules, 2016 have been notified vide notification No. G.S.R. 338 (E) dated 23.03.2016 and are come into force w.e.f. 1st October 2016 and amended vide notification No. G.S.R. 261 (E) dated 22.3.2018.

#### Salient features of E-Waste Management Rules, 2016:

These rules are applicable to every manufacturer, producer, consumer, bulk consumer, collection centres, dealers, e-retailer, refurbishes, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their

components, consumables, parts and spares which make the product operational.

**BULK CONSUMER** means bulk users of electrical and electronic equipment such as Central Government or State Government Departments, public sector undertakings, banks, educational institutions, multinational organisations, international agencies, partnership and public or private companies that are registered under the Factories Act, 1948 (63 of 1948) and the Companies Act, 2013 (18 of 2013) and health care facilities which have turnover of more than one crore or have more than twenty employees. **CONSUMER** means any person using electrical and electronic equipment excluding the bulk consumers.

**DEALER** means any individual or firm that buys or receives electrical and electronic equipment's their components or consumables or parts or spares from producers for sale.

#### **E-Waste Definition:**

E-Waste means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects form manufacturing, refurbishment, and repair processes.

#### **Institute E-Waste:**

The Institute awards the contract for Electrical/Electronic goods Recycling to the emplaned vendors of Punjab Pollution board mentioned at their website i.e. https://ppcb.punjab.gov.in/.

 All institute departments/branches will take consideration of the disposal/obsolete /condemnation E-Waste policy of the university.

#### Life Span of Electronic/Electrical Items to be dispose-off:

Cat.	Nature	Items	Useful/Productive Life
1	Immediate obsolescence/ use and throw products	Printing Consumables (Ink Toners), Floppies, CDs, DVDs, Digital Audio Tapes (DAT), Linear Taps Open (LTA), UPS Batteries.	As per usage, No. residual value determined. However, proper inventories of purchase, issue and final use/disposal etc. would be maintained in order to keep an accounting system.
2	Low life/Fast	Mobile Phones	Two years
	obsolescence products	Laptops, pen drives, external hard disk Drive (HDD), SSD etc.	Three years in case of Laptops, HDD, SSD etc. for replacement.
		etc.	One years in case of Pen Drive. Residual values determined separately.
3	Medium obsolescence/ Medium Life products	Desktops, All-in-ones, Printers, HIFDs, Scanners, Multimedia Projectors, Online UPS System etc.	Eight years in case of Desktops/All-in-ones.  Five years in case of, Printers, MFDs, Scanners, Multimedia Projectors, Online UPS System etc.
4	Slow obsolescence/ Pledium Life products	Fax, EPBAX, Electronics Items such as Bio Metric Machines, Cameras, TVs, DVD Players, Public Address Systems, Electronics Calorie Meter, Electronic Thaw Unit, Sterilizers etc.	Seven years

5	Software	Software Like MS Office, Oracle, MS-SQL, MS Windows, Antivirus, etc.	As per license the purchased.				
6	Others	Any other Electronics/ Electrical Items	As per the license purchased/ life span claimed by the concerned manufacturer/ supplier.				
Note:	The above-mentioned items can be used beyond the mentioned/specified life till such time these items continue to serve the purpose.						

The following equipment will be considered for obsolescing/disposal/condemnation:

The equipment will Be Covered Under electronic E-Waste equipment's like TV, Air Conditioners, and Information Technology/Telecommunication Equipment like Minicomputer, Centralized Data Processor Nlainframe, Server, Computer(Central Processing Unit with Input and Output Devices), Laptop, Computer, Notebook, Printer including Cartridge, Scanner, Multifunctional Printer, Printer Sharer, Copying Equipment, Electrical and Electronic Type Writer, User Terminal and System, Facsimile, Fax, EPABX, Telex, Telephone, Pay Telephone, Codeless Telephone, Cellular Telephone, Public Address System, Electronic Calorie System, Electronic Thaw Unit, Answering System, UPS Bakeries, Online UPS, UPS, Stabilizers, DVD Players, CVTs, DVD, CD, Floppies, Pen-Drive, Internal & External HDD/SSD, DAT Tape, RAM, LCD & DLP Projector, Head Phones, Computer Speakers, Computer MIC, VGA Cable, HDMI Cable, C-Type Cable, Networking items like Switch, HUB, Router, Modem, LAN Card, WIFI Access Point and Other Electronics Card Like Sound, Graphics, PCI Cards etc.

#### **E-Waste Process and Important points**

All departments will condemns/write-off their electronic/electrical items in following steps

- a) Each department/branch will submit the details of items as per **Annex "A"** to the IT Services Branch/department of Institute in half-yearly i.e., 31<sup>st</sup> July and 31<sup>st</sup> Dec. of every year.
- b) The General branch will compile all such requests and submit a detailed report to the E-Waste Inspection Committee within 10 working days.
- c) The Inspection committee will collect the request from the department/branches. All disposal obsoleting/ condemnation equipment and stock register will be presented and shown by all departments/branches to the inspection committee at the time of inspection. Senior Assistant (IT/CSE Services/ Network Maintenance department) will verify the working condition of all the equipment as submitted by the department/branch on the site.
- d) The committee will submit their final report on the consolidated list of disposal/obsolete/condemnation equipment to be disposed of to worthy Principal.
- e) After the approval of competent authority Senior Assistant (IT/CSE

- Services/Department) and Incharge Store will perform the dispose-off process directly with the emplaned vendors of the Punjab Pollution board for the consolidated list of obsoleting/disposal/condemnation material mentioned on their website i.e. https://ppcb.punjab.gov.in/.
- f) All department/branches will retain this obsoleting/disposal/condemnation material at their site and will be picked by sanctioned emplaned E-waste vendor under the supervision of Senior Assistant (IT/CSE Services/Department) as **Annex "B"**
- g) All CPU hard drive/other storage device must be cleaned by the concern employee. He/She will be solely responsible for the backup of their data before obsoleting/disposal/condemnation of the material.
- h) The concerned department will be responsible for prevents damage to obsoleting/disposal/condemnation material while awaiting disposal.
  - 1. Monitors/Screens/LED/LCD etc. should be stored in an upright position. These should be stored in a manner that prevents breakage of the screen. Computer monitor power cables should be wrapped up or properly secured before offering it for recycling.
  - 2. Toner cartridges and paper in printers should be removed from printers prior to disposal.
- i) Department must ensure that leased equipment is returned to the leasing vendor only as mentioned in the "Annex "B".
- j) Inspection committee will schedule the disposal of electronic waste from the Institute. Electronic waste disposal is performed by emplaned vendors of Punjab Pollution board. Incharge Store will maintain all records of disposal, including shipping papers and certificates of recycling where applicable.
- k) E-waste policy is derived from Punjab Pollution Board E-Waste Rules.
- 1) The policy will be reviewed after 2 years, as the need.

#### E - Waste Policy

#### Annexure "A"

S.	Item Description	Date of Purchase or year of Purchase	Stock Register Page No.	Qty	Unit Price	Total Price	Purchase was Made directly or Through the emplaned vendors	Status (Working or Not working)	Signature of Concern employee

HOD/In-Charge (Concern Branch)

### Verified by

#### **CSE/IT/ECE/EE Department**

Remarks (if any)				
••••••	 ••••••	••••••••	••••••	
•••••	 •••••••••••	•••••••	•••••••••••	
	 ••••••			

Dealing Hand/Senior Assistant (IT services)/ Incharge Store

HOD/In-Charge

#### Annexure "B"

Sr. No	Name & Address of the facility	Type of Facility	Capaci ty	Contact Person With	Mobile No	E- mail ID	E <b>Waste</b> authorizatio n	Valid up To	Rema rks
1	Ms KJ. Recycler, (Recycling facility)  C-38, Sanjay Gandhi Nagar, Industrial Area, Jalandhar City,	Recycler	2 TPD	Sh. Pritpal Singh Chawla (Partner)	9814060756		Vide no. 25590-92 dated 24.11.202	20.11.2026	
	Punjab								

# A SYNOPSIS OF GREEN AUDIT REPORT

### PART-B

#### **ENVIRONMENTAL AUDIT REPORT**

### 10. DISPOSAL OF BIOMEDICAL WASTE



# DAV INSTITUTE OF ENGINEERING & TECHNOLOGY

Kabir Nagar, Jalandhar, Punjab - 144 008

Accredited by NAAC with "A" Grade & Recognized by UGC under Section 2(f

Approved by AICTE; Affiliated to IKG-PTU, Jalandhar | Managed by DAV College Managing Committee, New Del

Ref. No.: DAVIET/ 1711

Dated : 15 01 2029

The CEO (Smart City), Jalandhar.

Sub: Request for installing Napkin Vending Machine.

Dear Sir,

DAV Institute of Engineering & Technology, Jalandhar (DAVIET) is a flagship institution of DAV College Managing Committee, New Delhi (DAVCMC). DAVCMC is the largest NGO of our country in the field of education, having more than 800 schools & colleges across the country. DAVIET is a premier institution of Northern India providing quality education in Engineering, Business Administration, Hotel Management & Tourism related Undergraduate & Postgraduate courses. DAVIET is a co-education institution. Our students are serving in the various capacities in Government/Public Sector/Private Sector undertakings. National Assessment & Accreditation Council (NAAC) of India has awarded "A" grade which certifies the quality of our services to the nation.

There is a requirement of following items for the cause of female students in our institute.

1. Sanitary Napkin Vending Machine

06 pcs

2. Incinerators

06 pcs

You are requested to get the machines installed in our institute.

Thanking you,

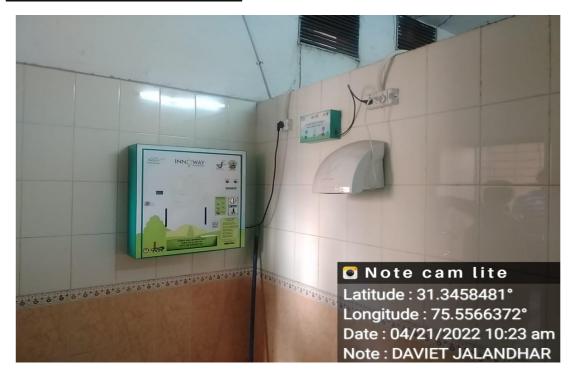
Yours sincerely,

(Dr. Manoj Kumar) Principal

Website ; www.davietjal.org Email ; daviet@davietjal.org

Ph.: 0181-2207650, 2200232, 2343400

#### Sanitary Napkin Vending Machine



Sanitary Napkin Vending Machine installed in the academic area (core block washroom)



Sanitary Napkin Vending Machine installed in the Girl hostel washroom

#### Incinerator (used for disposal of biomedical waste)



Incinerator (used for disposal of biomedical waste) in the academic area (core block washroom)



Incinerator (used for disposal of biomedical waste) in the in the Girl hostel washroom



Additional Sanitary Napkin Vending Machine installed in the Girl hostel common room

Financial support for the Installation of Sanitary Napkin Vending Machine for the Girl students and female staff members



# DAV INSTITUTE OF ENGINEERING & TECHNOLOGY

Kabir-Nagar, Jahandhar, Punjab - 1/14:008

Accredited by NAAC with "A" Grade & Recognized by UGC under Section 2(f)

Approved by AICTE; Affiliated to IKG-PTU, Jalandhar | Managed by DAV College Managing Committee, New Delh

Ref. No.: DAVIET/ 2018, 20 3389

Dated: 7/11/19

Mid South Sikh Sabha Corodova TN – 38016

Sub:- Financial Support for the purchase of SMART - MANUAL Sanitary Napkin Vending Machines

Dear Sir(s),

DAV Institute of Engineering & Technology (DAVIET), Jalandhar got established in year 2000 under the aegis of DAV College Managing Committee, New Delhi. The Institute is approved by AICTE and affiliated to IKG Punjab Technical University, Jalandhar. We are a non-profit making organization working with a mission to spread education to masses. We intend to install 02 'SMART – MANUAL Sanitary Napkin Vending Machines' in our girls hostel for the facility and hygiene of the female resident scholars.

The approximate cost of this machine is Rs. 12,500/-. You are requested to extend financial support for purchase of the same. We assure you that every bit this donation shall be optimally utilized and will not be used for any kind of profit making. This facility will be extended to the female resident scholars on no profit basis and maintenance of this machine shall be borne by the Institute.

Thanks with regards,

(Dr. Manoj Kumar) Principal

Copy to:-

1. Mrs. Hapreet K. Bajaj, Assoc. Prof. & Head (CSE) & Convener. Women Cell, DAVIET

2. Sr. Asstt. (A/cs.)

antalle drayle iganoria del est

#### **Recommendations:**

- Except vegetable and food wastes; all other wastes must be measured and monitored on daily basis. Record the values and maintain separate record for each.
- Establish an MOU with 3<sup>rd</sup> party for handling and proper disposal of the waste and document it.
- Like E-waste; develop separate polices for all type of wastes indicating i) Identification of sources of waste generation, ii) Segregation process, iii) Waste handling (from source to storage to disposal), iv) Recycling-Reuse methods and v) Effective disposal.
- Encourage and educate all the stakeholder to reduce the waste generation and reuse the same.

# A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

## <u>PART-C1</u> GREEN AUDIT REPORT

## 11. ROOF TOP SOLAR PV SYSTEM

(Green Energy Generation)

#### DAV INSTITUTE OF ENGINEERING AND TECHONOLOGY JALANDHAR

#### 11.1: Roof Top Solar PV System (SPvS):

Sr.	Item
No.	
1.	Energy Conservation Calculations – Solar Street Lights in the campus.
2.	Use of LED street lights/Power efficient equipment's
3.	Energy Conservation Calculations – 500 liters Solar Water Heating System in guest house.
4.	Related Photographs
5.	Sensor based energy conservation system
6.	Related Photographs

#### **Energy Audit for Solar Street Lights in the Campus:**

Total No. of Street Lights in the Campus : 04

Wattage of each light : 15 Watts

Operating Hours per day of each light : 09 Hours daily

Energy saving by each light : 0.135 KWH per day

Energy Consumed by 04 lights : 0.540 KWH per day

Energy saves by 04 lights monthly : 16.200 KWH

Energy saves by 04 lights annually : 194.400 KWH

Avg. Unit Cost : Rs.6.38/- per KWH

Energy cost saving by solar light : Rs.1238/- Annually

Cost of one solar street light 15 W : Rs.10000/-(including all)

Cost of 04 solar lights : Rs. 40,000/-

Payback Period : 32.3 years

Result/Conclusion		
Energy save per year	194.4 KWH	
Savings per year	Rs.1238/-	

#### <u>Use of LED Street lights /power efficient equipments :</u>

Total No. of street lights in the campus : 36 + 24 (Mask Pole)

No. of street lights replaced with LED street lights : 28 of 65W each + 08 of 100W each

Approx. daily use of street lights : 10 hours daily

Total Annually consumption of LED Street lights : (28\*65\*10\*30\*12)+(08\*100\*10\*30\*12)

= 9432KWH

Total Annually consumption without LED Street lights : 36\*400\*10\*30\*12 = 51,840 KWH

Annual Energy saved using LED street lights : 51840 – 9432 = 42408 KWH

Avg. unit cost : Rs. 6.38 /- per KWH

Savings per year : Rs. 270563/-

Result/Conclusion				
Energy save per year	42408 KWH			
Savings per year	Rs.270563/-			

	Annual Consumption of Electricity							
Sr. No.	Month	MDI	KVAH	KWH				
1	Jul-18	466	107770	105280				
2	Aug-18	542	148650	143500				
3	Sep-18	471	118160	115160				
4	Oct-18	471	84950	83480				
5	Nov-18	157	49570	49430				
6	Dec-18	141	48510	48450				
7	Jan-19	154	52160	52070				
8	Feb-19	158	44270	44160				
9	Mar-19	169	46340	46210				
10	Apr-19	375	76090	75210				
11	May-19	417	108330	105830				
12	Jun-19	464	102310	99340				
		TOTAL	987110	968120				

#### **Energy Audit for solar water heater system in the guest house of the campus:**

Total No. of 35 liters Geysers installed in the guest house : 07

Approximate No. of Hours use of each geezer in winters : 03 Hours daily

No. of days in winter season (for 05 months) : 150 days

Working hours of each geyser in winter season : 450 hours

Working hours of 07 geysers in the season : 3150 hours

Wattage of each geyser : 2.5 KW (apprx.)

Energy consumed by 07 geysers in the season : 7875 KWH

Approx. Rate of Energy unit : Rs. 6.38 per KWH

Energy cost by 07 geysers in the season : Rs.78750/-

Capacity of solar water heater (one unit) : 500 liters

Cost of solar water heater : 55,000/-

Energy saves annually : 7875 KWH

Energy costs save annually : Rs. 50242/-

Payback period : 1.09 Year

<u>Audit Result</u>			
Energy Save Annually	7875 KWH		
Annual Savings	Rs. 50242/-		

#### **Amount of Power handling by Renewable sources:**

1. Solar Power Plant of 100 KW (proposed).

2. Solar street lights :  $4 \times 15 = 60 \text{ W}$ 

3. Solar water heater system :  $7 \times 2.5 \text{ KW} = 17.5 \text{ KW}$ 

Institute Sanctioned Load = 938 KW

Percentage of power handled by renewable sources = 12.5 % (including proposed capacity enhancement details)

#### **Geo-tagged Photographs related to solar energy systems in the campus**

#### **Solar Street Lights**



Solar Street Lights installed in DAVIET, Jalandhar



Solar Street Lights installed in DAVIET, Jalandhar



Solar Street Lights installed in DAVIET, Jalandhar

500 ltr. Solar Heater System in the campus



Solar Heater System in the DAVIET campus



Solar Heater System in the DAVIET campus

#### 11.2: Recommendations:

- Maintain a record for panel cleaning schedule. Ensure that for each cleaning, the power generation must increase.
- Ensure that the solar PV plant has to connect in all the days and the power generation must be fully utilized by the college loads during day time in order to achieve quicker payback for the investment made towards setting up of the plant.

# A SYNOPSIS OF GREEN AUDIT REPORT

## <u>PART-C2</u> GREEN AUDIT REPORT

## 12. ANALYSIS OF UPS SYSTEM

Total 27 UPS are installed in the institute at different locations. The details are as given below:

Table 12.1 Details of all UPS installed in the Institute at various locations

S.No.	Rating	Date of Purchase	Place of Installation	Location
1	11KVA	29/1cccccccccs0/ 2004	Programming Language Lab	Core Block I <sup>st</sup> Floor
2	10KVA	5/10/2002	Project lab	Core Block I <sup>st</sup> Floor
3	10KVA	30/05/07	Computer Network Lab	Core Block I <sup>st</sup> Floor
4	10KVA	11/08/2006	VLSI Lab	U.G Block Ground Floor
5	10KVA	11/09/06	AC Lab	U.G Block I <sup>st</sup> Floor
6	10KVA	19/07/07	Language Lab	P.G Block I <sup>st</sup> Floor
7	10KVA	03/05/2007	CAD Lab	Mechanical Block I <sup>st</sup> Floor
8	10KVA	28/03/2011	COE Lab2nd Floor Knowledge Centre	Knowledge Centre2nd Floor
9	10KVA	24/08/16	Center of Ex.(K5) 3rd Floor Knowledge centre	Knowledge centre 3rd Floor
10	10KVA	19/07/07	PG Computer Lab-11	P.G Block I <sup>st</sup> Floor
11	10KVA	03-062017	Library	Knowledge centre
12	10KVA	11-10-2017	Operating system lab	Core Block I <sup>st</sup> Floor
13	6KVA		NANO LAB	R&D Block G. Floor
14	6KVA	27/08/12	C.C Lab	Core Block I <sup>st</sup> Floor
15	6KVA	24/08/05	RDBMS Lab	Core Block I <sup>st</sup> Floor
16	6KVA	3/3/2010	FCPIT Lab	R&D Block Ist Floor
17	6KVA	19/06/2006	Research Lab	
18	6KVA	11/10/2016	Server Room	Core Block Ist Floor
19	5KVA	30/05/2007	CIE Lab Knowledge Centre Basement	Knowledge centre Basement
20	3KVA	3/3/2010	FCPIT Lab	R&D Block Ist Floor
21	3KVA	6/9/12	Geometrics Lab	
22	1KVA Online		PG Hostel	Security Room
23	1KVA Online		UG Hostel	Store Room
24	1KVA Online		Principal Office	R&D Block G. Floor
25	1KVA Online		COE	U.G Block I <sup>st</sup> Floor
26	1KVA Online		Dean student	R&D Block Ground Floor
27	1KVA Online		Surveillance lab	R&D Block 3rd Floor

# A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

## <u>PART-C3</u> GREEN AUDIT REPORT

13. LIST OF MATURED TREES IN THE COLLEGE CAMPUS (GREEN COVERAGE)

#### 13.1: Campus Greenery:

The college management planted many native trees inside the campus and is completelycovered with matured trees grown for more than 20 years. Total number of matured trees available in the college campus is around <u>700+</u> <u>with 30 varieties of trees.</u> Presently, there are more than 30 trees plant species identified apart from 15 medicinal value plants species. The green audit report is also discussed with environmental experts of Amritsar and Patiala districts of Punjab with suggestions to increase greenery in the campus. Extra efforts have been taken by the college to create environment consciousness amongst students.

One major step in this regard is the extensive tree plantation campaigns and environmental awareness programs organized by the members of the committee with the support of students mainly from Civil and Electrical Engineering departments.

Apart from the mature trees; preserving the ecology; the entire college campus is planted with various flowing shrubs and pushes etc. Table- 13.1 and Table 13.2 show the list of matured trees and medicinal plants available inside the college campus.

Table-13.1: List of Matured Tree Available in the College Campus

(Selected Matured Trees /plants only)

S.	Scientific Name	Image of the tree plant	<b>Local Name</b>	No. (s)	Gardener Name (s)
No.	of Plant				
1	MAGNIFERA INDICA		MANGO	17	Surinder, Ram Bahadur, Ram partp
2	CHUKRASIA TABULARIS		CHUKRASIA	03	Surinder

3	HYOPHORBE LAGENICAULIS	BOTTLE PALM	08	Surinder, Ram Bahadur
4	MAGNOLIA CHAMPACA	СНАМРА	08	Surinder, Ram Bahadur
5	NEOLAMARCKIA CADAMBA	KADAM	04	Surinder,
6	ALSTONIA SCHOLARIS	ALOSTONIA	17	Surinder, Ram Bahadur, Ram partp
7	SYZYGIUM CUMINI	JAMUN	04	Surinder, Ram Bahadur, Ram partp, Ravinder
8	ROSA SINENSES	HIBISCUS	08	Surinder, Ram Bahadur, Ram partp

9	TABERNAEMONT ANA DIVARICATA	DOUBLE CHANDNI	02	Surinder
10	AEGLE MARMELOS	BEL	01	Surinder, Ram Abhilash
11	FICUS RELIGIOSA	PEEPAL	02	Surinder, , Ram Abhilash, Ravinder
12	AZADIRACHTA INDICA	NEEM	07	Surinder, Ram Abhilash, Ravinder, Ram Bahadur, Ram partp
13	PHYLLANTHUR EMBLICA	AMLA	01	Surinder,
14	CITRUS NOBILIS	KINNOW	01	Surinder,

15	CASSIA FISTULA	GOLDEN FICUS	02	Surinder, Ram Bahadur

Activities organized to create greenery and its conservation at college campus is as follows-

- Plantation of diversified species
- Uses of medicinal plants
- Identification of plants species

#### **Plantation of diversified species:**

To create green cover, eco-friendly atmosphere, pure oxygen in the college campus, plantation program were organized every year with involvement of all students, principal, and departmental faculty/staff members.

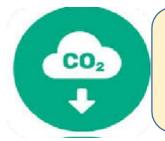
In the current academic session, tree plantation drives were organized and about 100 ornamental and medicinal plants including few rare and exotic beautiful trees were planted in the gardens and other parts of the college campus. To keep the greeneries in the campus, a team of six gardeners regularly maintains the gardens which are also looked after by the paid staff members under the guidance of Green Audit Committee members.

#### **Uses of medicinal plants:**

There are many medicinal plants are planted in college gardens. The plants have medicinal value but students don't have knowledge how to use and they can't identify the particular plants, so therefore faculty members of civil engineering department help them to identify with scientific name and give information about medicinal uses of the plants to the faculty, staff and students of the institute.

#### **Identification of plant species:**

There are so many plant species are present at college campus. The faculty member of the Civil Engineering department with the team of 10 dedicated volunteers given their services in identification of various plant species with the help of college staff members.



Total No. of Matured Trees available in the college campus is **700+** which contributes for**CO**<sub>2</sub> reduction of **20.0** Tons/Annum

### 13.2: List of Medicinal Plants (Shrubs / Bushes):

S.No	Scientific Name	Image of the medicinal plant	Local Nmae	Uses	No. (s)	Gardener Name (s)
1	Stevia rebaudiana		Stevia	It maintain the Blood Sugar Level, Blood Pressure Level, Obesity, Confidence Level, Acid Level in the body, act as causative agent of dental caries and tooth cavities. Also use Its dry leaves as a sugar for sweetness	100	Surinder, Ram Bahadur
2	Chamaecost us cuspidatus		Insulin e	It maintains the Blood Sugar Level, Skin Complaints, Reduce fever and Treat asthma.	36	Surinder, Ram Bahadur
3	Rosmarinus officinalis		RoseM ary	Its leaves or dry leaves powder is used as Garm Masala or for taste and flavour in dishes. Its mostly used in chiness dishes	5	Surinder, Ram Bahadur
4	Justicia adhatoda		Adusa	It is very effective for treating all kind of cold related problems especially cough, for removing phlegm,skin disease and asthma	10	Surinder, Ram Bahadur
5	Citronella		Odomo s	It is used for freshing the enviorments, Controling Pets, Mosquito's and All kind of Bacteria's. Its very good for skin problems	20	Surinder, Ram Bahadur

6	Elettaria cardamomu m	Kali Elaichi	Its Leaves and flowers are used for the elaichi flavouring in all kind of dishes.	36	Surinder, Ram Bahadur
7	Elettaria cardamomu m	Green Elaichi	Its Leaves and flowers are used for the elaichi flavouring in all kind of dishes.	36	Surinder, Ram Bahadur
8	Trachysperm um ammi	Ajwain	This plant is used in offices for environment purifying environment and make the environment bacteria free. Along this its leaves are used for stomach related problems and for fever.	20	Surinder
10	Withania somnifera	Ashwa ngand ha	Its used to resolve all kind of allergies	20	Surinder, Ram Bahadur
11	Pimenta dioica	All Spices	This plant leaves are used on the place of Garam Masala in all dishes.	20	Surinder, Ram Bahadur
12	Bryophyllum pinnatum	Pather Chatta	Its best for the kidney stone	10	Surinder
13	Santalum album	White Snadal	Good for High blood pressur, all type skin infections, Headache etc.	02	Surinder

Certificate of Appriciation from AICTE "One Student One Tree" Campaign



Certificate of Appriciation from AICTE (Green campus initiatives –One Student One Tree Campaign)



Tree Plantation Campaign under Green campus initiatives



Tree Plantation Campaign under Green campus initiatives

# A SYNOPSIS OF GREEN AUDIT REPORT

DAV INSTITUTE OF ENGINEERING AND TECHNOLOGY

Kabir Nagar, Jalandhar City, Punjab - 144008

## <u>PART-C4</u> GREEN AUDIT REPORT

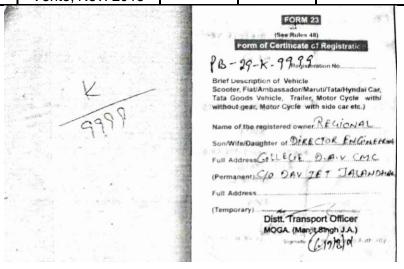
14. LIST OF VEHICLES USED THE COLLEGE CAMPUS (Transporting Vehicles)

#### Transporting Vehicles used in the College

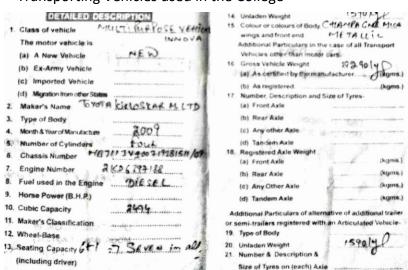
The college is committed to green environment not only in the campus; but also to the entire atmosphere. The list of transporting vehicles available in the college campus along with their fuel type and usage are represented in Table-14.1

Table-14.1: List of Transporting Vehicles used in the College

S. No.	Type of Vehicle	Make, Model & YoM	Fuel Used	No. of Vehicles	Date of FC & Due Date	Non Pollution Certified (Y/N)
1.	Car - Innova	Toyota, Nov. 2009	Diesel	1	27.11.2024	Yes
2.	Car - Bolero	Volkswagen/ Vento, Nov. 2015	Petrol	1	03.11.2030	Yes



Transporting Vehicles used in the College



### Transporting Vehicles used in the College





UNITED INDIA INSURANCE COMPANY LIMITED

CERTIFICATE OF INSURANCE
PRIVATE CAR PACKAGE POLICY
UIN: IRDANS458RP0047V01199900

(FORM ST. OF CENTRAL MOTOR VEHICLE BILLES 1989)

				OF CENTRAL MO	OTOR VEHIC	CLE RULES 1989	)				
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Transporting Vehicles used in the College

#### Form 59

[See rules 115 (2)]

#### Pollution Under Control Certificate

Authorised By .: Government of Punjab

22/01/2022 Date 11:43:59 AM Time Validity upto 21/07/2022



Certificate SL. No.

Registration No.

Date of Registration

Month & Year of Manufacturing Valid Mobile Number

**Emission Norms** 

Fuel

PUC Code

**GSTIN** 

Fees

MIL observation

PB00800170010808

PB29K9999 28/Nov/2009

November-2009

\*\*\*\*\*9893

BHARAT STAGE III/IV

DIESEL

PB0080017

Rs.100.00(GST as applicable)

Vehicle Photo with Registration plate 60 mm x 30 mm



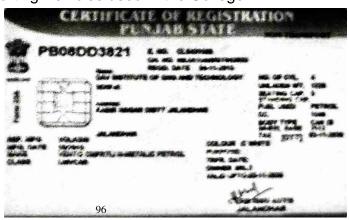
Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
	Carbon Monoxide (CO)	percentage (%)	. 70	
Idling Emissions	Hydrocarbon, (THC/HC)	ppm		
	со	percentage (%)		
High idling emissions	RPM	RPM	2500 ± 200	
emissions	Lambda	•	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	1.62	1.1

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://vahan.parivahan.gov.in

Authorised Signature with stamp of Ruchberator 60mm x 20 mm

Transporting Vehicles used in the College



Form 59

[See rules 115 (2)]

Pollution Under Control Certificate

Authorised By:

Government of Punjab

Date

30/03/2022

Time

10:58:33 AM

Validity upto

29/09/2022



Certificate SL. No.

Registration No.

Date of Registration Month & Year of Manufacturing

Valid Mobile Number

**Emission Norms** 

Fuel

**PUC Code** 

**GSTIN** 

Fees MIL observation PB00801110010429

PB08DD3821 04/Nov/2015

October-2015

\*\*\*\*\*0996

BHARAT STAGE III PETROL

PB0080111

Rs.80.00(GST as applicable)

Vehicle Photo with Registration plate 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
		3	4	5
1	2 Manayida (CO)	percentage (%)	0.5	0.23
Idling Emissions	Carbon Monoxide (CO)	ppm	750.0	72.0
Idining Emissions	Hydrocarbon, (THC/HC)	percentage (%)	0.0	0.0
***	CO	RPM	2500 ± 200	0.0
High idling emissions	RPM Lambda		1 ± 0.03	0.0
Smoke Density	Light absorption coefficient	1/metre	of motor vehicles a	nd does not require

This PUC certificate is system generated through the national register of motor vehicles and does not require

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://vahan.parivahan.gov.in

Authorised Signature with stamp of PUC operator

60mm x 20 mm

nsurance ( Car/ Scooter/Motorcycle)

FREE (1st/2nd/3rd) & Paid Services of MARUTI SUZUKI ARENA Cars

MARUTI SUZUKI GENUINE PARTS (MSC

For more details and latest discount offers & updates, Like us on FACEBOOK at f /punjabmotorgarage 

Details of the Transporting Vehicles used in the College

### **Progress Reports**

A. Water Management System (Proper record kereping of maintaiance, service and AMC)

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	+ Elbourg
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13-04,22 ARNEW MS Block FF.	1 Membrane Housing Phs
: 15-4-22 Pushpa core Block G.F.	3 Span - 3 rentreue Chs 18

B. Waste Management System (Waste Generation and Disposal record –Waste added Pit wise for the composting of waste)

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22	23/6/22	- 2kg (err-4)		10 70 1	TVI
23	28/6/22	3 Kg (PIT-2,6)			M':
				The same of the sa	

#### **c.** Follow up (1)

Minutes of meeting held on 5<sup>th</sup> May 2022 in the Office of Dr Ashok Kumar – Associate Professor (Chemistry) & NSS Nodal officer with members of "Environment Sustainability and Management cell."

Following faculty/staff members were present in the meeting:

- Dr Ashok Kumar Associate Professor (Chemistry) & NSS Nodal officer
- Mr M.S. Bedi, Assistant Professor (CE)
- Dr M K Kaushik Assistant Professor (CE)
- Dr Bhupender Singh Assistant Professor (Chemistry)
- Mr. Viney Kumar, Estate Officer

The flowing points were discussed in the meeting:-

- 1. All Mali and Sweeper may be deputed for waste collection and segregation.
- 2. Training of the above deputed staff for composting shall be provided by Dr M.K. Kaushik.
- 3. Empty paint containers may be used as waste baskets for proper segregation of waste in the institute.
- 4. Sign boards to be displayed at specific places.
- 5. Cleaning of composting areas will be done after discussion with HDFC representatives.
- 6. Sh. Viney Kumar, Estate Officer, will supervise the proper functioning of segregation and composting yard.
- 7. A crushing machine for plastic bottles is already installed in the campus that shall be taken care of by Dr. Bhupender Singh, and the polythene bags, wrappers etc. shall also be collected and segregated and sold to the same vendor to whom the bottle crush is being supplied.
- 8. Energy audit shall be done by the Electrical Engineering department of our institute.
- 9. Mr. M.S. Bedi shall prepare Performa for internal Green and Environment audit and submit the same by 11th May 2022.

**Dr Ashok Kumar** 

**Associate Professor (Chemistry)** 

&

**NSS Nodal officer** 

Convenor- Environment and Sustainability Cell

Copy to: IQAC Cell for information.

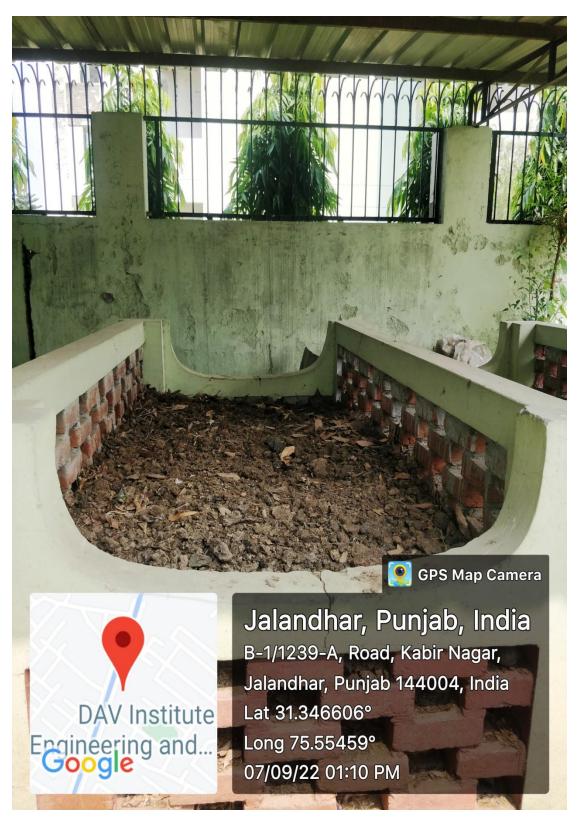
### Follow up (2)



Dry Garbage (Garden waste) used in the composting plant for preparation of the Compost (Sept. 2022)



Dry Garbage (Garden waste) used in the composting plant for preparation of the Compost (Pit No. 2 - Sept. 2022)



Dry Garbage (Garden waste) used in the composting plant for preparation of the Compost (Pit No. 8 - Sept. 2022)

#### Follow up (3)



Banana peel collected from ARYA Samaj Madhir, VikramPura, Jalandhar as residue of the Prasad distributed after Hawn ceremony were also used in the composting pits for preparation of manure (17<sup>th</sup> Sept. 2022).

#### 3. CLEAN AND GREEN CAMPUS INITIATIVES

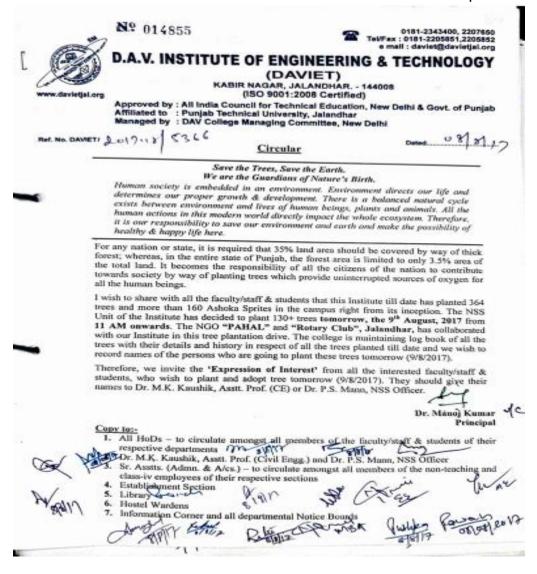
Swachh Bharat Abhiyan- or Clean India mission - is a nation -wide campaign which strives for cleanliness and hygiene.

DAVIET College held several events to make our youth aware not only about the cleanliness and hygiene but also about the environmental degradation and its sustainability simultaneously.

#### 3.1 One Student – One Tree initiative

NSS wing of our institute has organised a Tree Plantation Drive under "One Student – One Tree initiative" of AICTE in Burlton Park, on 8<sup>th</sup> August 2019 for a Clean and Green Environment. 1100 Samplings of different plants are planted to support green belt around institute.

Office Circular related to Tree Plantation drive in The DAVIET Campus





Tree Plantation drive in the Burlton Park and DAVIET Campus under One Student One Tree Campaign



Tree Plantation drive in the Burlton Park and DAVIET Campus under One Student One Tree Campaign

#### 3.2 Swachh Survekshan

NSS Wing of the Institute conducted a cleanliness drive at Burlton Park with Municipal Corporation, Jalandhar (MCJ) under Swachh Survekshan 2019on 30.03.2019. Around 100 NSS volunteers of different departments took part in this exercise to make a stretch around the Park garbage free.



Cleanliness drive at Burlton Park with Municipal Corporation, Jalandhar (MCJ) under Swachh Survekshan on 30.03.2019



Cleanliness drive at Burlton Park with Municipal Corporation, Jalandhar (MCJ) under Swachh Survekshan on 30.03.2019

### 3.3 "Keep Clean, Go Green" Drive under 'Mission Fateh'

NSS wing of DAV Institute of Engg. & Technology (DAVIET) in collaboration with American Society of Civil Engineers (ASCE) – Student Chapter, DAVIET has started "Keep Clean, Go Green" Drive under 'Mission Fateh' in which Herbal and Medicinal properties based Trees are to be planted in and around the campus in Aug. 2020



DAVIET organized Keep Clean, Go Green" Drive under 'Mission Fateh' in Aug. 2020

#### 3.4 GO GREEN DRIVE AT DAVIET CAMPUS

A Tree Plantation Drive was organized by NSS unit of DAVIET. This drive is in association with NGO Pahal and Rotary Club Jalandhar. The drive was aimed at creating awareness among students about the importance of having a clean and green environment.

Mr. Lakhbir Singh, President PAHAL and Mr. Irwindeep Singh, President Rotory Club Jalandhar along with Dr. Manoj Kumar, Principal DAVIET planted more than 130 trees of different varieties in the DAVIET campus.



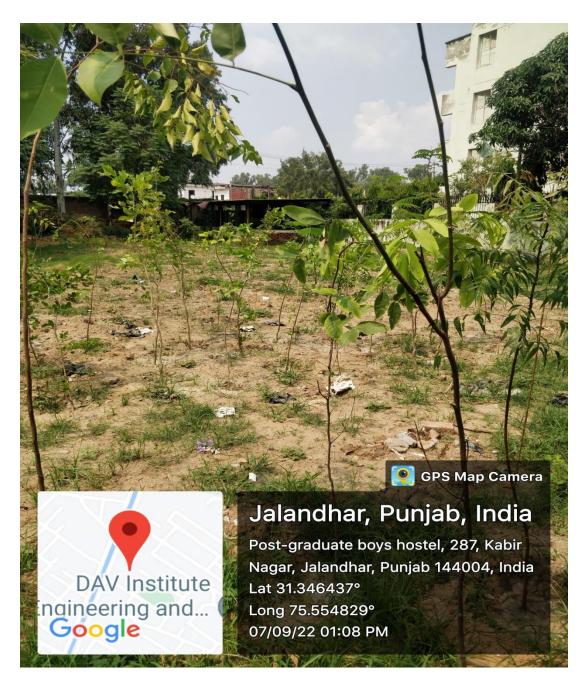
Tree Plantation Drive organized with NGO "Pahal" in DAVIET in Aug., 2018

Mr. Lakhbir Singh, President PAHAL highlighted that trees help clean the environment and aid human beings in remaining healthy. He also highlighted the fact that in a hot country like India trees become all the more important as they provide shade and fruit. Mr. Irwindeep Singh, President Rotory Club, also applauded the effort of the Institution to have a tree plantation drive and highlighted that trees are help conserve soil and reduce ground water pollution.

The drive was attended by Ms. Sonia Chawla, Dean Academics, Dr. Jagjeet Malhotra, Dean Students Affairs, Dr. Sudhir Sharma, Dean RIC, Dr. Neeru Malhotra, Head Department of Electronics and Communication Engineering, Dr. Dinesh, Head Department of Information Technology, Dr. Kanchan L Singh, Head Department of Applied Sciences, Mr. Gaurav Dhuria, Head Department of Mechanical Engineering, Mr. Parveen Kakkar, Dr. PS Mann (NSS Officer), Dr M K Kaushik, Faculty and staff of the Institution.

# 3.5 "MINI FOREST" DEVELOPED WITH THE HERBAL AND MEDICINAL PROPERTIES BASED TREES IN THE CAMPUS

DAV Institute of Engg. & Technology (DAVIET) developed a "Mini Forest" in which Herbal and Medicinal properties based Trees are planted in the campus in July. 2022

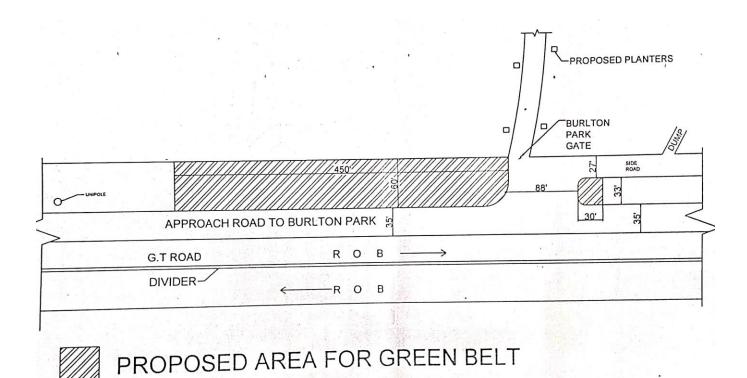


"Mini Forest" with the Herbal and Medicinal properties based Trees developed in DAVIET, Jalandhar

#### 4. BEYOND THE CAMPUS ENVIRONMENTAL PROMOTIONAL ACTIVITIES

Renovation of the historic Baltron Park Gardens located at the entrance was also done by the institute staff members, Mali's and by the UG, PG students of the institute without any financial support from Municipal Cooperation, Jalandhar and Govt. of Punjab.

Many existing gardens located in institute's front **Burtlon Park** are also maintained by the environmental society of DAVIET, Jalandhar in addition to the plantation on the divider of the main road from **Swami Vivekananda Chowk** to **DAV College flyover Chowk** (**Mahatma Hans Raj Marg**). Extension programs were also organized to create environment awareness and conservation of biodiversity amongst the students and public by the members of this team.



Proposed Area for the Green Belt Development



Tree Plantation drive in the Burlton Park under One Student One Tree Campaign – more than 1000 tree plants were planted in the Burlton park and in the Proposed area for Green Belt Development (adjoining Burlton Park outer boundary wall side)



Developed area of the Green Belt adjoining Burlton Park outer boundary wall side



Developed area of the Green Belt adjoining Burlton Park outer boundary wall side

# ਨਗਰ ਨਿਗਮ,ਜਲੰਧਰ

ਵੱਲੋਂ

ਕਾਰਜਕਾਰੀ ਇੰਜੀਨੀਅਰ ਨਗਰ ਨਿਗਮ, ਜਲੰਧਰ।

ਵੱਲ

D. A. Y Sutilité of Engineering as Technology Labi's Nagn Joy - 94781-01102

ਵਿਸ਼ਾ:-

ਉਪਰੋਕਤ ਵਿਸ਼ੇ ਦੇ ਸਬੰਧ ਵਿੱਚ ਦੱਸਿਆ ਜਾਂਦਾ ਹੈ ਕਿ ਮਾਨਯੋਗ ਕਮਿਸ਼ਨਰ ਸਾਹਿਬ ਜੀ ਦੇ ਹੁਕਮ ਮਿਤੀ : 27 । । ) ਰਾਹੀਂ ਤੁਹਾਡੀ ਏਜੰਸੀ ਨੂੰ ਉਪਰੋਕਤ ਜਗ੍ਹਾਂ ਦੀ ਸਾਂਭ-ਸੰਭਾਲ ਜਿਵੇਂ ਕਿ ਘਾਹ ਬੂਟੇ ਦੀ ਕਾਂਟ-ਛਾਂਟ, ਪਾਣੀ ਦਾ ਪ੍ਰਬੰਧ, ਕੰਧਾਂ ਦੀ ਰਿਪੇਅਰ ਅਤੇ ਰੰਗ ਰੋਂਗਨ, ਮਲਵਾ ਚੁੱਕਣਾ ਅਤੇ ਜਗ੍ਹਾਂ ਦੀ ਸਾਫ ਸਫਾਈ ਦਾ ਪ੍ਰਬੰਧ ਕਰਨ ਦੀ ਮੰਜ਼ੂਰੀ ਦੇ ਦਿੱਤੀ ਹੈ। ਇਸ ਸਬੰਧੀ ਨਗਰ ਨਿਗਮ ਨਾਲ ਇੱਕ ਫਿਤੇ ਦੇ ਵਿੱਚ-2 ਇਕਰਾਰਨਾਮਾ ਕੀਤਾ ਜਾਵੇ।

ਕਾਰਜਕਾਰੀ <u>ਬ੍ਰਿੰਜ੍ਰੀਨੀ</u>ਅਰ

Endorsement No. 8770 / 2017-18/

Dt: 14/12/2012

Copy to:

- Dr. Sanjay Goel, Assistant Professor (CE) With reference to the proposal drafted by him, he is requested to do the needful as desired above.
- 2. HOD (CE)
- 3. Estate Officer
- 4. Sr. Asstt. (Admn. & A/cs.)
- NSS Officer

(Dr. Manoj Kumar) Principal

#### **Copy of letter translated to English language**

#### **MUNICIPAL CORPORATION, JALANDHAR**

From:-

Executive Engineer Municipal corporation Jalandhar

TO:-

DAV Institute Of Engineering And Technology Kabir Nagar, Jalandhar

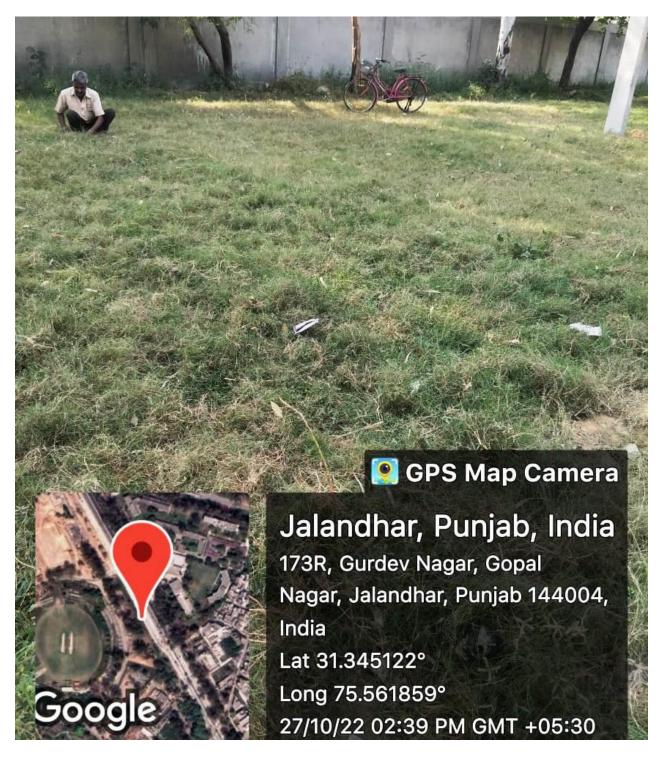
LETTER NO:-728/CC/22

DATE:-13/12/17

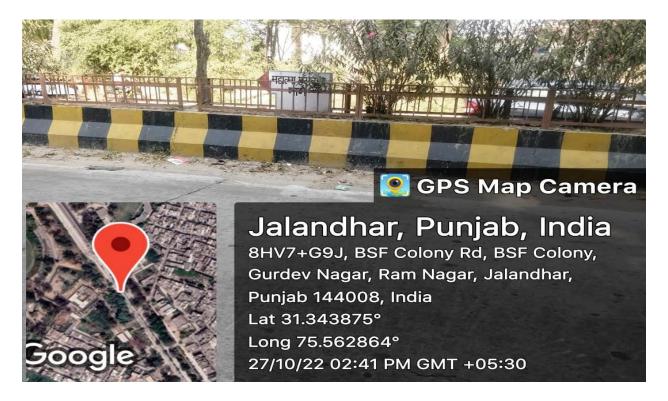
SUBJECT:-For maintenance of green belt stretched across Burlton park, Hockey stadium to GT road flyover.

In relation to the above subject it said that according to the order of the honorable commissioner sir on 27/11/17, the permission to your agency to maintain in the above premises such as grass cutting, water supply, repair and painting of walls, garbage removal and other cleanliness is granted. In regard, an agreement with the municipal corporation.

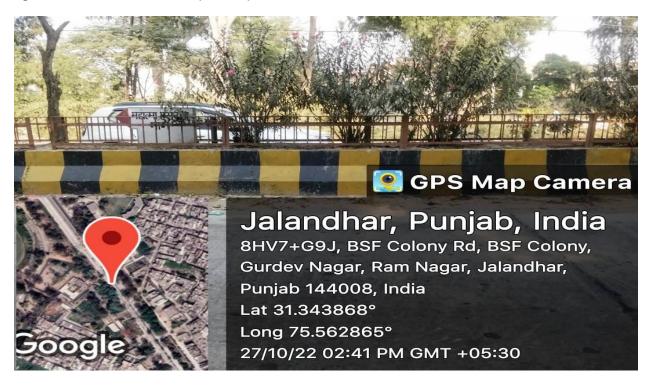
**Executive Engineer** 



DAVIET staff members is deployed for maintenance of green belt stretched across Burlton park, Hockey stadium (grass cutting, water supply, repair and painting of walls, garbage removal and other cleanliness operations)



Maintenance of the central verge stretched across GT road flyover as per agreement with the municipal corporation, Jalandhar



Maintenance of the central verge and green belt stretched across GT road flyover as per agreement with the municipal corporation, Jalandhar

#### SWACHH BHARAT MISSION

# "SWACHHATA HI SEWA" & "SAY NO TO PLASTIC" Campaigns organized on $27^{\text{th}}$ Oct 2019 at NUSSI Village

The students of Applied Sciences department visited **Nussi village** to spread awareness among villagers about "**SWACHHATA HI SEWA**" & "SAY NO TO PLASTIC" campaigns. During the visit, students awakened the villagers about ill effects of use of plastics on our environment and suggested them the different alternatives of it.



"SAY NO TO PLASTIC" Campaigns organized at NUSSI Village on 27th Oct 2019

## List of the supporting documents/videos

- 1. Video on Institute's Water Conservation and Rainwater Harvesting facility
- 2. Video on Institute's Waste Management Activities and Best Practices

## Video links

- 1. <a href="https://www.youtube.com/watch?v=YQmV6crd-cE">https://www.youtube.com/watch?v=YQmV6crd-cE</a>
- 2. <a href="https://www.youtube.com/watch?v=BwtVpS7vHb0">https://www.youtube.com/watch?v=BwtVpS7vHb0</a>

(Video 2:- Part 1, 5 and 6)