

# GREEN AUDIT REPORT 2022-2023



**SANT LONGOWAL INSTITUTE OF ENGINEERING &  
TECHNOLOGY, LONGOWAL.  
(DEEMED TO BE UNIVERSITY, MINISTRY OF EDUCATION)**

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## **1. INTRODUCTION**

The green audit aims to analyze environmental practices within and outside the university campuses, which will have an impact on the eco-friendly atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of university environment. It was initiated with the motive of inspecting the effort within the institutions whose exercises can cause threat to the health of inhabitants and the environment. Through the green audit, a direction as how to improve the structure of environment and there are include several factors that have determined the growth of carried out the green audit. Green audit is a valuable means for a university/institute to determine how and where they are using the most energy or water or other resources; the college/university/institute can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values, and ethics. It provides staff and students better understanding of green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution.

Thus, it is imperative that the university/institute evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent. The rapid urbanization and economic development at local, regional, and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.



## **2. OBJECTIVES**

In recent times, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The university has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe, and prioritize the framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

- To map the Geographical Location of the university and to conduct the baseline survey to know reality status of green practices of campus.
- To document the floral and faunal diversity of the university.
- To record the meteorological parameter of Longowal where university is situated.
- To assess the quality of the water and soil of the campus, drinking water.
- To document the ambient environmental condition of weather, air, water, and noise of the university.
- To document the waste disposal system and noise in the campus.
- To estimate the Energy requirements of the university.
- To report the expenditure on green initiatives during the last five years.
- To increase the environmental consciousness of all the stake holders and make aware students to real concerns of environment and its sustainability. To motivate staff and students for various green initiatives on the campus.
- To identify strengths and weaknesses in Green initiatives adopted in the campus.
- To bring out a present status report on environmental compliance in the campus.
- To identify the gap areas and suggest recommendations to improve the green campus

### **3. METHODOLOGY**

The purpose of the green audit of SLIET is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

#### **3.1 ADMINISTRATION**

The Board of Governors of SLIET is under the SLIET Society, and headed by Dr. K. Radhakrishnan, an Indian space scientist, headed the Indian Space Research Organization (ISRO) between November 2009 to December 2014 as Chairman of Space Commission, Secretary of the Department of Space and Chairman of ISRO and Ministry of Education Development officials. The Administration Section of SLIET, Longowal is having function under the overall managerial control of the Registrar and Director.

SLIET receives its funding from the government, student fees and research funding by industry-sponsored projects. The academic policies of SLIET are decided by its senate. It consists of all professors of the institute, administrators, and students. Registrar is the member secretary of Senate.

There are Five deans, who look after different functions who are appointed by Director for a period of two years, with registrar as the central officer, who is appointed by Board of Management and is also member secretary of building works committee, head of examinations, planning and monitoring board and only authorized official to make outside correspondence on behalf of Institute.

#### **3.2 ADMISSIONS**

The educational programs of this institute are non-conventional, innovative, practical oriented and contain all aspects of new education policy, Govt. of India. The Institute offers programs at Certificate, Diploma, Degree, Post-graduate (M.Tech. and M.Sc.) and Ph.D. levels in Engineering and Technology, Science and Humanities.

The admission to different integrated certificate programs in the institute is accomplished by conducting all India Entrance Examination (SLIET Entrance Test, SET) by the Institute. The admissions to the B. Tech. programs run by the institute are based on Joint Entrance Examination Main (JEE Main) conducted across India. Admissions to the M.Tech. programs are by the GATE exam conducted by the IITs and IISc and in M.Sc. program through CCMN. The postgraduate admission is based on research and interviews by the appropriate screening committees. For foreign students, admissions are done through Direct Admission of Students Abroad (DASA) scheme.

## **4. OVERVIEW OF THE UNIVERSITY**

Sant Longowal Institute of Engineering & Technology (SLIET) has been established by the Government of India and it is Centrally Funded Technical Institute (CFTI), which provides technical education in emerging areas of Engineering & Technology. It caters to the requirement of technical manpower at various levels by adopting the concept of modular system in imparting technical education with emphasis on practical training in industry. The institute was set up in 1989 under Rajiv Gandhi-Longowal accord with an aim to fulfill the cherished dreams of Late Sant Harchand Singh Longowal.

The Institute has carved for itself a niche amongst the professional institutes and universities of the country and is fully funded by Ministry of Human Resource Development, Government of India. It is well known as "Modern Gurukul" of Technical Education due to lush green campus situated on 447 acres in the Longowal, Sangrur district, Punjab, India. SLIET is fully funded by the Ministry of Human Resource Development, and is an autonomous body controlled by the SLIET Society. Educational opportunities include technical and practical training in the fields of engineering and technology. The Institute initiated certificate and diploma programmes in 1991, and the degree programme in 1993. Postgraduate courses in four disciplines were initiated in 2003. All degree programmes were accredited in 2003 by the All-India Council for Technical Education, and an impact assessment and review were conducted by Educational Consultants India in 2004. The institute was previously affiliated to Punjab Technical University. However, the Institute has acquired the status of DEEMED- TO- BE -UNIVERSITY in the year 2007 (Notification No.F.9-42/2001-U.3). Currently, all the undergraduate courses of different disciplines are being accredited by NBA for a period of three years.



## **5. VISION**

***“SLIET shall strive to act as an international podium for the development and transfer of technical competence in academics through formal and non-formal education, entrepreneurship and research to meet the changing need of society”***

### **5.1 MISSION STATEMENT**

- Non-formal, flexible, modular, multipoint entry programmes in engineering and technology and in the areas like rural development, educational planning, information and management sciences.
- Education and training in modern technology areas.
- Promotion of self-development among the students.
- Extension services to industry working population, passed-out students, social organizations and institutions of research and higher learning.
- Close interface with the industry to conduct research on the basis of manpower requirements leading integrated educational planning curriculum development and instructional material preparation in technology and inter-disciplinary areas.
- Promotion of institute-institute linkages for sustainable development of academic and research.

#### **GREEN ‘SLOGAN’**

***“One day is not enough to green our earth. Planting caring and love is also expecting our earth from us. Do it, it will heal not only the land but also your body and mind.”***

#### **SLIET GREEN ‘MISSION’**

**“An overall CAMPUS abeyance with creation of clean and green environment full of fragrance, curiosity, passion and care for nature”**

## **6. GREEN AUDITING**

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

## **7. LAND USE ANALYSIS (AS ON DATE)**

### **7.1 LOCATION**

- SLIET is located 19 kilometers (12 miles) east of Sangrur. It is situated on 447 acres (183 Ha) of land provided by the Punjab government. The property is landscaped and well maintained to provide for an aesthetically pleasing environment.

### **7.2 TOPOGRAPHY**

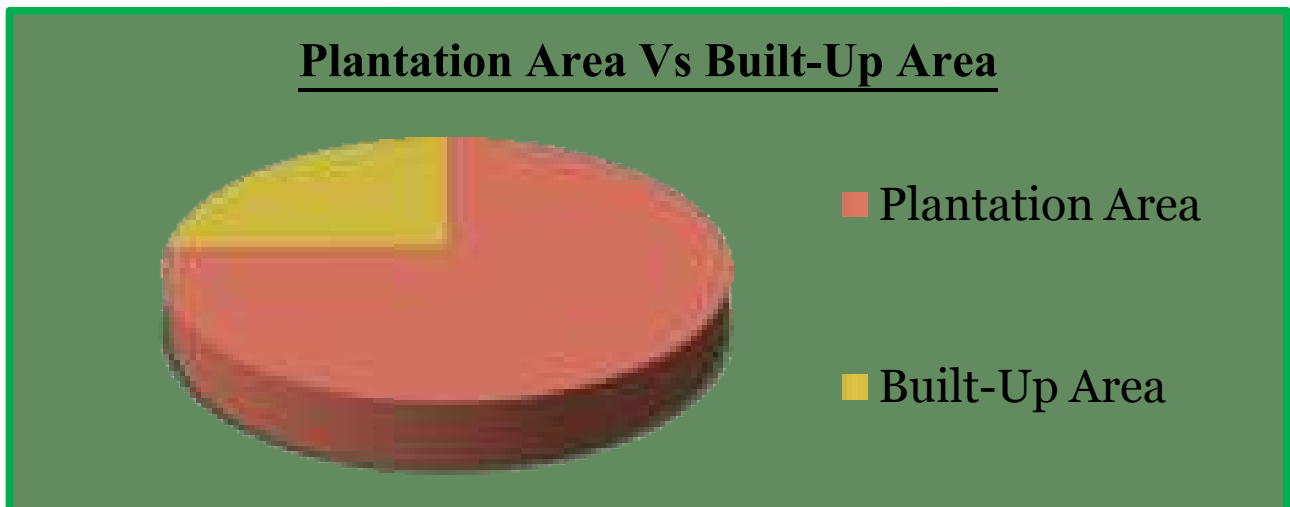
- Longowal is a town with municipal council in Sangrur district in the Indian state of Punjab. Longowal is unique in the history of East Punjab.
- Longowal is located at (Location: 30°21’67" N AND 75°69’33" E). It has an average elevation of 232 meter.

### **7.3 LAND USE (BUILT-UP AREA ANALYSIS)**

The total area of SLIET, Longowal is 18,09,009 m<sup>2</sup> out of which the built-up area (including roads) is 14.29 % (i.e. 2,58,544.92 m<sup>2</sup>) and plantation area is 85.71 % (i.e. 15,50,464.08 m<sup>2</sup>).

- The northern region of SLIET is having Main Administrative Block: Administrative Blocks & Auditorium.
- Central region has Academic block consisting of Electronics & Communications Engineering, Mechanical Engineering, Electrical Engineering, Computer Engineering, Chemical and Food Engineering, Central Workshops, Health Center etc.
- The southern region comprises of: Faculty Flats, Shops etc.
- The western region has hostels, & Gurudwara sahib.
- The eastern region has forest area, underground/open irrigation canal, etc.

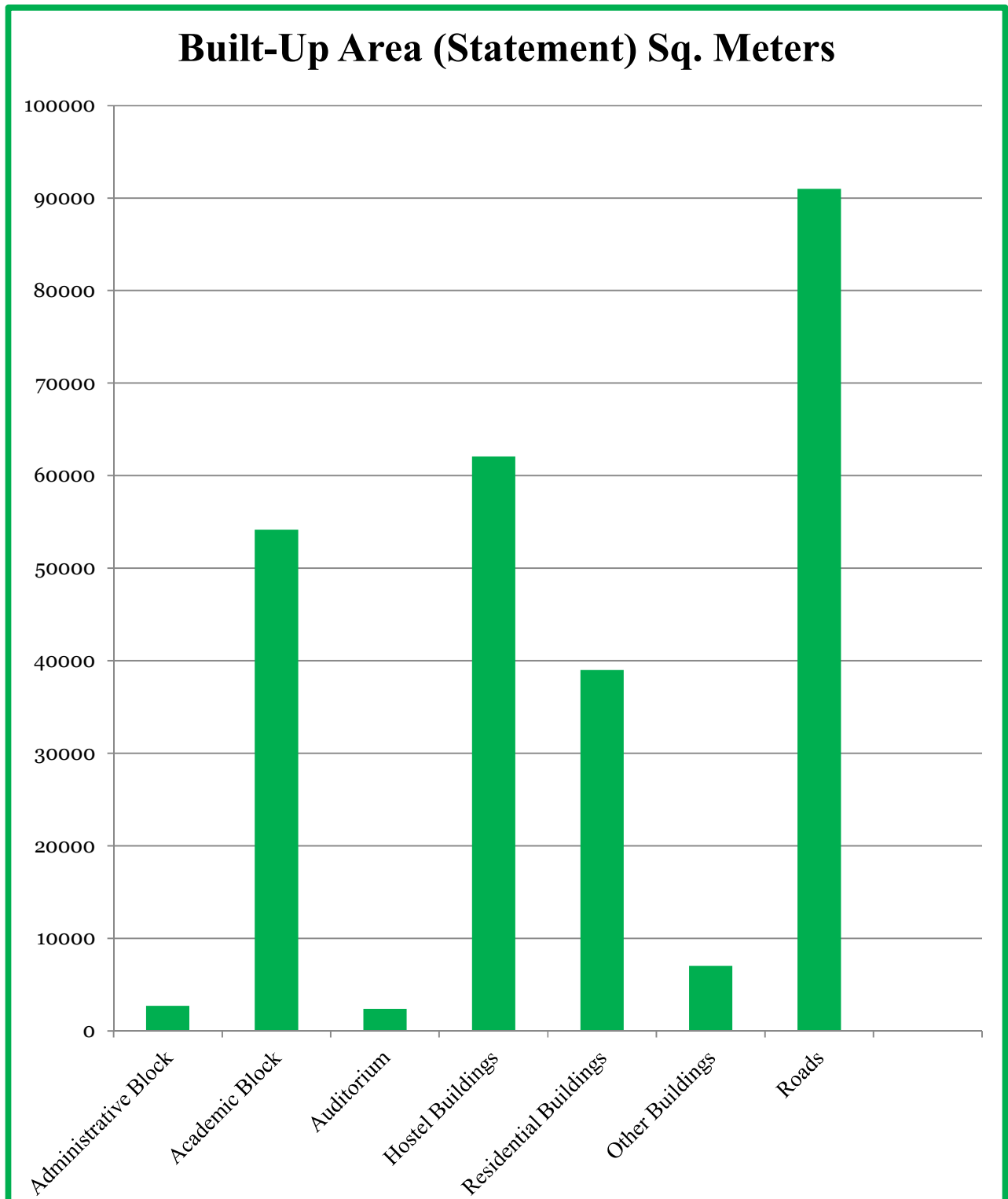
<b>CATEGORIES OF LAND USE</b>	<b>AREA (m<sup>2</sup>) (%)</b>
<b>PLANTATION AREA</b>	<b>15,50,464.08 (85.71)</b>
<b>BUILT UP AREA (INCLUDING ROADS)</b>	<b>2,58,544.92 (14.29)</b>
<b>TOTAL AREA</b>	<b>18,09,009.00 (100.00)</b>



**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**TABLE-1 AREA OCCUPIED BY VARIOUS BUILDINGS AT SLIET, LONGOWAL**

<b>SR. NO</b>	<b>NAME OF BUILDING</b>	<b>NUMBER OF FLOORS</b>	<b>AREA (M2)</b>
1.	Administrative Block (Main building)	03	2,710.00
2.	Academic Block	03	54,256.63
3.	Auditorium	01	2,375.00
4.	Hostel Buildings	03	62,064.15
5.	Residential Buildings	03	38,995.37
6.	Other Buildings	03	7,143.77
7.	Roads	01	91,000.00
		<b>TOTAL AREA</b>	<b>2,58,544.92</b>



**FIGURE-1 BUILT UP AREA OF SLIET CAMPUS**



## **8. GEOGRAPHICAL LOCATION**

The college has a sprawling pollution-free campus spread over 447 acres of land. Located in the region known as Malwa in the agricultural state of Punjab.

The Google aerial views of College Campus have been shown below.



**FIG-2 GOOGLE AERIAL VIEW OF CAMPUS**

## **9. TREE DIVERSITY OF SLIET, LONGOWAL, PUNJAB**

SLIET is within the geo-position between latitude 30°21'67" N and longitude 75°69'33" E in Longowal, Punjab, India. It encompasses an area of about 447 Acres. The area is immensely diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programme organized by the authority and have become an integral part of the college. The trees of the college have increased the quality of life, not only the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favorite of birds and many insects. Leaf – covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day. A thick belt of large shady trees in the periphery of the college have found to be bringing down noise and cut down dust and storms. Thus, the college has been playing a significant role in maintaining the environment of the entire Longowal town in its surrounding areas. The following are the tree species with whom we are being attached-

**9.1 OUR NATURAL HABITATS (PLANTS & TREES) FLORA**

The campus, which is a naturally developed green and clean campus is housing a variety of natural flora & fauna along with habitat of residential and migratory birds. Nearly 73,000 plants of medicinal and non-medicinal are there at SLIET Campus, Longowal plants & trees.

**TABLE-2a: LIST OF TREE SPECIES OF SLIET, LONGOWAL, PUNJAB**

S.No.	Common Name	Botanical Name	Family	Remarks
1	Mango	Mangifera indica	Anacardiaceae	Trees/plants are regularly planted year wise and maintained by Horticulture wing of estate. This reserve is considered as an asset to the SLIET University and is proudly being considered as a contributory in maintaining the green cover.
2	Alstonia	Alstonia scholaris	Apocynaceae	
3	Crape jasmine	Tabernaemontana divaricata	Apocynaceae	
4	Christmas Tree	Araucaria heterophylla	Araucariaceae	
5	Chandni	Tabernaemontana	Apocynaceae	
6	Amla	Phyllanthusemblica	Phyllanthaceae	
7	Bahera	Terminaliabelirica	Combretaceae	
8	Gulmohar	DelonixRegia	Royal poinciana	
9	Ashoka	Saracaasoca	Fabaceae	
10	Phali	Callindria	Legumes	
11	Sat Patti	Alstonia	Apocynaceae	
12	Shree	Varun	Capparidaceae	
13	Kaner	Oleander	Dogbanes	
14	Tamarind	Tamarindusindica	Fabaceae	
15	Aaroo	Peach	Rosaceous	
16	Pomegranate	Punicagranatum	Lythraceae	
17	Jungle jalebi	Pithecellobiumdulce	Legumes	

18	Champa	Magnolia champaca	Magnolia
19	Bottle brush	Callistemon	Myrtle
20	Tun	Toonaciliate	Meliaceae
21	China Palm	Livistonachinensis	Palm
22	Golden Bottle brush	Callistemon	Myrtaceae
23	Harsingar	Nyctanthes arbor-tristis	Olives
24	Koylas	S. oleosa	Sapindaceae
25	Manchi Palm	Arecales	Arecaceae
26	Ficus	Ficus	Mulberry
27	Guava	Psidium	Myrtaceae
28	Gular	Cluster Fig	Mulberry
29	Suhanjna	Moringaoleifera	Moringaceae
30	Araucaria	Araucaria araucana	Araucariaceae
31	Bottle Palm	Hyophorbelagenicau	Palm
32	Naurangi	Citrus X sinensis	Rutaceae
33	Silver Oak	Grevillearobusta	Proteaceae
34	Ber	Ziziphusmauritiana	Rhamnaceae
35	Pears	Prunuspersica	Rosaceous
36	Nakh	Pyruspyrifolia	Rosaceous
37	Aloo Bukhara	Prunusbokharensis	Rosaceous
38	Rose	Rosa	<i>Rosaceous</i>
39	Lemon	Citrus limon	Rutaceae
40	Mausambi	Citrus limetta	Rutaceae
41	Curry Leaf	Murrayakoenigii	Rutaceae
42	Poplar	Populus	salicaceae
43	Litchi	Litchi chinensis	Sapindaceae
44	Maulsari	Mimusopselengi	Sapotaceae

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S.No.	Common Name	Botanical Name	Family	Remark
45	Kinnow	Citrus Reticulata	Rutaceae	<b>SLIET green cover maintaining asset</b>
46	Loquat	Eriobotrya japonica	Apple	
47	Neem	Azadirachta indica	Meliaceae	
48	Kesiya Jawaniya	Benguet Pine	Pinaceae	
49	Mahua	Madhucal longifolia	Madhuca	
50	Pandoli Asoka	Saraca asoca	Caesalpinioideae	
51	Tahli	Dalbergia sissoo	Dalbergia	
52	Chiri Phool	Hibiscus	Malvaceae	
53	Jamun	Syzygium cumini	Myrtaceae	
54	Anjeer	Ficus carica	Moraceae	
55	Sita Phal	Annona squamosa	Annonaceae	
56	Rubber Plant	Ficus elastica	Moraceae	
57	Shahtoot	Morus alba	Rubus	
58	Litchi	Litchi chinensis	Sapindaceae	
59	Kathal	Artocarpus heterophyllus	Moraceae	
60	Koylas	Solanum surattense	Solanaceae	
61	Peepal	Ficus religiosa	Moraceae	
62	Sharifa	Annona squamosa	Annonaceae	
63	Samer	Astrophytum myriostigma	Cacti	
64	Arjun	Terminalia arjuna	Terminalia	
65	Banana	Musa acuminata	Musaceae	
66	Maulishree	Mimusops elengi	Sapotaceae	
67	Sukhchain	Millettia pinnata	Pongamia	
68	Date	Phoenix dactylifera	Areaceae	
69	Tunna	Toona ciliata	mahogany	
70	Lemon	Citrus limon Osbeck	Rutaceae	
71	Chakrasia	Chukrasia tabularis	Meliaceae	
72	Phoenix canariensis	Phoenix canariensis	Areaceae	
73	Amaltas	Cassia fistula	Fabaceae	
74	Safeda	Eucalyptus	Myrtaceae	
75	Hibiscus	Hibiscus rosa-sinensis	Malvaceae	
76	Karunda	Carissa carandas	Apocynaceae	
77	Sita Ashok	Saraca asoca	Leguminosae	

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**TABLE-2b Detail (Number) Of Trees & Shrub Plants at SLEIT LONGOWAL**

SR. NO.	NAME OF TREE	QTY.	SR. NO.	NAME OF TREE	QTY.
1.	Ficus	800	50.	Poplar	3000
2.	Casuarina	150	51.	Rerru	03
3.	Farmah	150	52.	Ashoka	500
4.	Arjun	3180	53.	Bamboo	50
5.	Sukhchain	17075	54.	Gular	60
6.	Jamun	7020	55.	Lemon	200
7.	Kachnar	580	56.	Terminalia	10
8.	Sohanjna	105	57.	Karonda	50
9.	Raisin	150	58.	Hamelia	10
10.	Harsingar	220	59.	Hibiscus	3004
11.	Bottlebrush	600	60.	Kalendra	20
12.	Gul-e-cheen	247	61.	Harad	20
13.	Chandni	1301	62.	Patranji	200
14.	Neem	6025	63.	Tamarind	100
15.	Kassod	200	64.	CasiaSemiya	150
16.	Aamltas	615	65.	Nasuda	10
17.	Peepal	100	66.	Falsa	30
18.	Bargad	50	67.	kathal	05
19.	Balina	10	68.	Rahuda	02
20.	Kaner	1580	69.	Kher	200
21.	Alstonia	1500	70.	Kanakchapa	50
22.	Rubber Plant	10	71.	Chakotra	20
23.	Pilkhan	60	72.	Araucaria	16
24.	Guava	1247	73.	Anjeer	30
25.	Mango	252	74.	Jungle Jlebi	50
26.	Moulsari	200	75.	Mauaa	07
27.	Sheesham	1800	76.	Plum	20
28.	Gulmohar	100	77.	Peach	30
29.	Jacaranda (Blue)	70	78.	Rukbajni	230
30.	Bahera	250	79.	Sugar Apple	20
31.	Mulberry	1200	80.	Dheu	04
32.	Chakresia	7000	81.	Foxtile	71
33.	Babool	700	82.	Pomegranate	150
34.	Dharek	1300	83.	Tun	100
35.	Siris	2200	84.	Bottlepalm	25
36.	Bel Patra	150	85.	Mousmi	70
37.	Amla	102	86.	Fishtail	10
38.	Sagwan	300	87.	Jand	20
39.	Eucalyptus (Safeda)	500	88.	Ban	15
40.	Silver oak	250	89.	Golden Bottle Brush	07
41.	Rosewood	50	90.	Apple	02
42.	Jatropha	300	91.	Curry Leaf	100
43.	I-Length	300	92.	Dhak	50
44.	Sumbal	250	93.	Bougainvillea	2134
45.	Kadam	200	94.	Rose	725
46.	Kusam	250	95.	Tulsi	100
47.	Orange	42			
48.	Gardenia	82			
49.	Guldodi	720			

**TOTAL PLANTS - 73223**

**Table-3 List of various varieties of Herbal trees available in SLIET, Longowal**

- Arjun Terminalia Arjuna
- Baheda Terminalia Billerica
- Simbal Bombaxceiba.
- Banyan/ bargad Ficus Benghalensis
- Desibabool/ desikikar Acacia nilotica
- Desi Kadamb / desikadam Mitragyna Parviflora
- Desi mango Magnifera indica
- Dhak / Palash Butea monosperma
- Gular Ficus racemosa
- Harde / Harar Terminalia chebula
- Jamun Syzygium cumini
- Khejri/Jhand/Shammi Prosopis cineraria
- Mahua Madhuca longifolia
- Neem Azadirachta Indica
- Peepal Ficus Religiosa
- Pilkhan / Pilkan Ficus virens
- Rajain / Papdi
- Sheesham Dalbergia Sissoo
- Suhanjana Moringa concanensis
- White siris Albizia procure
- Amaltas Cassia fistula
- Ber Ziziphus Mauritiana
- Harsingar/ parijat
- Karanj / Sukhchain Pongamia pinnata
- Khair/ Katha Acacia catechu
- Lasora Cordia dichotoma
- Tota Erythrina Indica
- Aak Caliotropis procure
- Anar Punica Granatum
- Mehndi Lawsomia Inermis
- Motia Jasminum Sambac
- Falsa Grewia asiatica
- Karunda Carissa Carandas

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- Khatta Citrus Aurantium
- JharBer Ziziphus Nummelaria
- Ashwangandha Withania Somniferous
- Jangle FalsaGrewiaTenex
- Garna/ Jangli Karunda Carissa Spinarum

**TABLE-4 DETAIL OF HEDGE PLANTS AT SLIET LONGOWAL**

<b>SR. NO.</b>	<b>NAME OF PLANT</b>	<b>QTY.</b>
1	Murraya	2300
2	Boxwood	300
3	Aliar	300
4	Mehndi	5917
5	Coleus	4327
6	Gardenia	20481
7	Chandni Dwarf	4100
8	Duranta	10575
9	Ticoma	250
<b>Total</b>		<b>48550</b>



**TABLE-5 HERBAL PLANTS RAISED IN INSTITUTE NURSERY**

<b>SR. NO.</b>	<b>NAME OF PLANTS</b>	<b>BOTANICAL NAME</b>
1.	Aloe Vera	Aloe Barbadensis Miller
2.	Aak	Caliotropis Gigantea
3.	Turmeric	Curcuma Longa
4.	Datura	Datura Stramonium
5.	Lajwanti	Mimosa Pudica
6.	Suhanjna	Moringa Oleifera
7.	Tulsi	Ocimum Tenuiflorum
8.	Shyama Tulsi	Ocimum Sanctum
9.	Amla	Phyllanthus Emblica
10.	Ashwangandha	Withania Somniferous
11.	Amaltas	Cassia Fistula
12.	Pomegranate	Punica Granatum
13.	Bel Patra	Aegle Marmelos L.
14.	Bahera	Terminalia Billerica
15.	Dhak	Butea Monosperma
16.	Lemongrass	Cymbopogon
17.	Shamak Namoli	Solanum nigrum
18.	Puthkanda	Achyranthes Aspera
19.	Bhumi Amla	Phyllanthus Niruri
20.	Ratti	Abrus Precatorius
21.	Tamarind	Tamarindus Indica
22.	Sugar Apple	Annona Squamosa
23.	Arjun	Terminalia Arjuna
24.	Guava	Psidium Guajava
25.	Neem	Azadirachta Indica
26.	Mango	Mangifera Indica
27.	Harsingar	Nyctanthes Arbor-Tristis
28.	khair	Senegalia catechu
29.	Dheu	Artocarpus lacucha

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<b>SR. NO.</b>	<b>NAME OF PLANTS</b>	<b>BOTANICAL NAME</b>
30.	Anjeer (Fig)	Ficus Carica
31.	Lemon	Citrus Limon
32.	Stevia	Stevia Rebaudiana
33.	Grapes	Vitis Vinifera
34.	Saunf	Foeniculum Vulgare
35.	Ajwain	Trachyspermum Ammi

## **9.2 ACTIVITIES UNDERTAKEN ON ROUTINE BASIS IN SLIET CAMPUS BY ESTATE AND THEIR OUTCOME**

### **A. UNDER GO-GREEN, ENVIRONMENTAL PROTECTION AND PUBLIC AWARENESS PROGRAM**

For the purpose twice, ever year in the SLIET campus and in the Hostels, plantation is being carried out to create awareness among SLIET residents including students for environmental protection and clean and green environment which has shown a positive impact on Campus wellbeing, outlook and stability. Various activities undertaken are depicted subsequently along with their impact (Outcome):

### **B. PLANTATION DRIVE (SLIET, LONGOWAL) 2022**

Referring to Hon'ble Minister of Education initiative of launching a campaign "One Student One Tree". This initiative is in line with the Honorable Prime Minister's idea of a green and healthy environment. The SLIET took part in a Plantation drive initiative and planted more than 500 trees in different locations including Hostel premises, roadsides and other areas by involving the newly admitted students of ICD, Degree, M. Tech. On 15th of August 2022, Director SLIET, along with Retd. Air Marshal Shri Kulwant Singh Gill, Deans, HODs, Estate Officials, Faculty & Staff, residents, and newly admitted students planted trees under the Plantation Drive programme being initiated in the SLIET. **FIG-3 PLANTATION DRIVE (2022) ACTIVITY PICTURES\**



**C. HORTICULTURE ACTIVITIES (UNDERTAKEN IN (2020-23)**

- (i) **FLOWER EXHIBITION/SHOW (2022):** From the year 2019 onwards the Horticulture wing of estate organize flower exhibition/show cum competition from the day of Convocation and continue during flower season. Different varieties of flowers have been grown in the pot and in nursery ground including Dog flower, Sand flower, Dahlia, Verbena, Petunia, Gazania, Kel, Dahlia double, Salvia, Dianthus, Calandria, Marigold, Stone flower.



**FIG-4 FLOWER EXHIBITION/SHOW (2022) ACTIVITY PICTURES**

**OUTCOME:** The nursery is regularly visited by faculty, staff and SLIET residents, Guests, including students and work is appreciated in the direction of preserving flora and fauna and natural diversity. Flower exhibition as a competitive and participation activity during convocation adds an activity for visitors during convocation along with chief guests and other dignitary and created interest and enthusiasm among public in general and SLIET in particular.

- (ii) **FLOWER EXHIBITION/SHOW (2021):** A flower show has been exhibited by the Horticulture wing of Estate in SLIET Nursery, which was formally inaugurated by the Director SLIET. Different varieties of flowers have been grown in the pot and in nursery ground including Dog flower, Sand flower, Dahlia, Verbena, Petunia, Gazania, Kel, Dahlia double, Salvia, Dianthus, Calandria, Marigold, Stone flower. The nursery is regularly visited by faculty, staff and SLIET residents including students and work is appreciated in the direction of preserving flora and fauna and natural diversity.



**FIG-5 FLOWER EXHIBITION/SHOW (2021) ACTIVITY PICTURES**

- (iii) **HERBAL PARK:** Inauguration of Herbal Park by the Director SLIET on 15<sup>th</sup> August, 2020. Herbal plants like Tulsi, Aloe Vera, Gotu Kola, Calendula, Basil, Rosemary, Lavender, Lavender, Sage, Peppermint, Globe Artichoke, Ashwangandha, Lemon Grass, Khus, Sagargota, Bonduc nut, Stevia, Marsh Mallow, Bael, Babul, Neem, Bargad, Peepal, Arjuna, Amla, Harad, Audumbar, Drumstick Tree, Turmeric, Mulathi, wheat grass, lemon grass, Behera, Giloy etc. are being planted as per requirement , availability and growing conditions.



**FIG-6 HERBAL PARK (2020) ACTIVITY PICTURES**

**OUTCOME:** Awareness among SLIET residents about herbal plants and trees and availability for use. Many herbal varieties were distributed to SLIET residents and consumed during COVID-19 pandemic.

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(iv) **PLANTATION DRIVE:** Referring to Hon'ble HRD Minister of launching a new campaign "One Student One Tree" and the initiative is in line with the Hon'ble Prime Minister's idea of a green and healthy environment, every year plantation is being carried out in SLIET Campus during the period from July-Aug and Feb-March. Accordingly, from 15th of August, 2020, plantation drive was initiated in the campus by the worthy Director along with SLIET residents and around 1000 plants of different varieties including fruit trees (Sukhchain, Kaner, Guava, Jaman, Habicus, Chandni, Mango, Neem, Amaltas, etc.) were planted at different locations and also along road sides to maintain the green cover and flora and fauna.



**FIG-7 PLANTATION DRIVE (2020) ACTIVITY PICTURES**

**OUTCOME:** Fruit are made available for SLIET residents including students' consumption along with creating a tree bank for different varieties of plants and tree nearly having approx. 20 different species of plants/trees/shrubs/decorative.

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**(i) HERBAL PARK EXTENSION AND TREE PLANTATION DRIVE :**

- In the 1<sup>st</sup> Phase and area of 3100 Sq meter has been developed for the herbal plants planted in the Institute campus.
- In the 2<sup>nd</sup> Phase and area of 2200 Sq meter has been proposed to be developed in the second phase and the development of herbal is in progress.

<b>1.</b>	<b>Herbal Park</b>	250' x 132' = 33,000 in Sq. feet (Phase-I) Developed (Approx. 3100 Sq. Meter)
		180' x 132' = 23,760 (Phase-II) In Progress (Approx. 2200 Sq. Meter)



**FIG. 8 HERBAL PARK EXTENSION AND TREE PLANTATION DRIVE (2021)  
ACTIVITY PICTURES**



**D. INSTITUTE NURSERY**

**i) Raising of pot plant, Hedge, other plants, Manure composite etc.** The Institute has developed nursery for raising the trees, plants, pot plants, pots, hedge, lawn grass in order to meet the requirements of whole campus. Different varieties of hedges (Boxwood, Dwarf Chandni, Bougainvillea, Gardenia, Emerme, Coleus, Hibiscus, Mendhi etc), pot plants to full fill the requirements during Institute, departmental or hostel events/programs) and to decorate the buildings/premises. The plants and trees which are grown in the nursery are planted in campus. The institute has also developed Herbal-park and the herbal plants requirement is also met through nursery.



**FIG.9 INSTITUTE NURSERY PICTURES**

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**Table-6 Detail of Plants raised in Nursery at SLIET Longowal, for the Year-2023**

Sr. No.	Name of Plant	Quantity (No.)	Market Value (Rs)
1	Zade Plant	70	3500/-
2	Zabrina	100	5500/-
3	Neem	200	3000/-
4	Mahndi	200	5000/-
5	Gardenia	1500	31500/-
6	Ficus	150	9000/-
7	Sukhchain	200	4000/-
8	Guldaudi	800	8000/-
9	Rose	200	14000/-
10	Hibiscus	250	6250/-
11	Jamun	200	6000/-
12	Ticoma	700	35000/-
13	Muryia	1000	30000/-
14	Zade Plant	70	3500/-
15	Zabrina	100	5500/-
<b>Total</b>		<b>5740</b>	<b>IRG/Total Value Rs. 1,69,750/-</b>

**Table-7 Detail of Plants raised in Nursery at SLIET Longowal, for the Year-2022**

Sr. No.	Name of Plant	Quantity (No.)	Market Value (Rs)
1	Bogunvillia	300	15000/-
2	Dracena	50	3000/-
3	Zade Plant	60	300/-
4	Zabrina	60	3300/-
5	Neem	130	3900/-
6	Kaner	100	4000/-
7	Mahndi	600	15000/-
8	Coleus	1500	30000/-
9	Gardenia	3000	60000/-
10	Chadni	80	2400/-
11	Duranta	500	10000/-
12	Pulmeria	70	10500/-
13	Hibicus	80	2000/-
14	Ficus	300	18000/-
15	Sukhchain	200	4000/-
16	Gauldaudi	1000	10000/-
<b>Total</b>		<b>8030</b>	<b>IRG/Total Value Rs. 1,94,100/-</b>

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**Table-8 Detail of Plants raised in Nursery at SLIET Longowal, for the Year-2021**

Sr. No.	Name of Plant	Quantity (No.)	Market Value (Rs)
1	Bougainvillea	250	5000/-
2	Rose	250	12500/-
3	Euphorbia	100	5000/-
4	Dracaena	110	5500/-
5	Jade	60	3000/-
6	Zebrine	100	4000/-
7	Neem	100	1000/-
8	Kaner	100	2000/-
9	Mehndi	1000	20000/-
10	Jamun	150	1500/-
11	Coleus	1200	18000/-
12	Gardenia	3000	60000/-
13	Chandni Dwarf	200	5000/-
14	Duranta	500	10000/-
15	Drumstick Tree (Suhanjna)	300	4500/-
<b>Total</b>		<b>7420</b>	<b>IRG/Total Value Rs. 1,57,000/-</b>

**Table-9 Detail of Plants raised in Nursery at SLIET Longowal, for the Year-2020**

Sr. No.	Name of Plant	Quantity (No.)	Market Value (Rs)
1	Bougainvillea	200	4000/-
2	Morepankhi	200	6000/-
3	Euphorbia	100	5000/-
4	Pulmeria	100	20000/-
5	Chandni	50	1000/-
6	Raat Rani	50	2500/-
7	Dracaena	30	1500/-
8	Farmah	50	1000/-
9	Hibiscus	200	4000/-
10	Gardenia	2000	40000/-
11	Neem	50	500/-
12	Mehndi	400	8000/-
13	Ficus	100	5000/-
14	Sukhchain	200	3000/-
15	Duranta	600	12000/-
16	Chandni Dwarf	1200	30000/-
17	Coleus	500	7500/-
<b>Total</b>		<b>6030</b>	<b>IRG/Total Value Rs. 1,51,000/-</b>

**OUTCOME**

**GRAND TOTAL OF IRG GENERATED DURING THE LAST 4 YEARS IS RS. 6,71,850/-**

## **E. COMPOST-MANURE PRODUCTION**

- Compost is a mixture of ingredients used to fertilize and improve the soil. It is commonly prepared by decomposing plant and food waste and recycling organic materials. The resulting mixture is rich in plant nutrients and beneficial organisms. Compost improves soil fertility in gardens, landscaping, horticulture, and organic farming. The benefits of compost include providing nutrients to crops as fertilizer, acting as a soil conditioner, increasing the humus or humic acid contents of the soil, and introducing beneficial colonies of microbes that help to suppress pathogens in the soil. It also reduces expenses on commercial chemical fertilizers for recreational gardeners and commercial farmers alike. Compost can also be used for land and stream reclamation, wetland construction, and landfill cover.
- The decomposition process is aided by shredding the plant matter, adding water, and ensuring proper aeration by regularly turning the mixture in a process that uses open piles or "windrows." Composting is an important part of waste management since food and other compostable materials make up about 20% of waste in landfills and these materials take longer to biodegrade in the landfill.
- Compost/Manure is prepared in the Institute for the last 4 years from the waste material of forest litters etc. The same is used in the horticulture activities.



**FIG 10 PICTURES OF COMPOSITE MANURE PRODUCTION**

**OUT COME:** The total volume and cost of manure produced is  
a) Volume: 250 cum and b) IRG: Rs. 2,50,000/-

**F. PARKS (DEVELOPMENT AND MAINTENANCE)**

The purpose of development of public parks is to create human friendly environment in a residential campus. Different parks as detailed below are developed and maintained for public use. The impact of this development makes the residents to use the parks for morning or evening walk, sun bath which paved the way for their recreation and health well being.

**Table-10 Area under Parks & Lawns: Academic & Administrative Buildings**

S. No	Location	Area Covered	Out Come
1.	Science Block	97' x 50' = 4850	Lawns are being used by the Faculty/Staff and students of the Institute. The lawn area is being maintained regularly by deploying outsourced workers.
		60' x 55' = 3630	
		110' x 55' = 6050	
2.	ME Block	77' x 50' x 4235	
		130' x 31' = 4030	
		80' x 70' = 5600	
		237' x 48' = 11376	
		65' x 35' = 2275	
3.	Workshop	160' x 42' = 6720	
		110' x 52' = 5720	
4.	Food Block	120' x 356' = 4200	
		84' x 38' x 3192	
		134, x38' = 5092	
		93, x 48, = 4464	
5.	Plaza	360' x 235' = 84600	
		360' x 110' = 39600	
6.	Computer Block	100' x 125' = 12500	
		195' x 26' = 5070	
		433' x 55' =23815	
7.	Library	217' x 138' x 29940	
		43' x 39' =1677	
		110' x 50' = 5500	
		250' x 45' =11250	
8.	Estate Office	88' x 37' = 3256	
		135' x 75' = 10125	
		73' x 50' = 3650	
9.	Swimming Pool	197' x 52' = 10244	
		270' x 90' = 24300	
10.	Faculty Club	270' x 152' = 41040	
		270' x 160' x=43200	
11.	Health Centre	183' x 48' = 8784	
		138' x 23' =3174	
		105' x 52' = 5460	
		160' x 40' = 6400	

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S. No	Location	Area Covered	Out Come
12.	KV School	185' x 165' = 30525	
13.	SAC	105' x 110' = 11550	
14.	Guest House	160' x 40' = 6400	The lawn area is well maintained keeping in view the importance of visit of VIP's.
		177' x 160' = 28320	
		175' x 50' = 8750	
		238' x 84' = 19992	
		419' x 45' = 18855	
15.	NEW EIE Building	65' x 22' = 1430	
		55' x 48' = 2640	
		150' x 40' = 6000	
		50' x 40' = 2000	
16.	Administrative Block	129' x (135+84/2) = 1425	
		11/4 x 84' x 84' = 5539	
		100 x (72+88/2) = 8000	
		105 x (70+86/2) = 8190	
		11/4 x (100) = 31400	
17.	Auditorium	110' x 27' = 2790	
		38 x (63+17/2) = 1520	
		336 x (321+272/2) = 99624	
		167x (55+23/2) = 6513	
		200' x 110' = 22000	



**FIG 11 PICTURES OF ACADEMIC & ADMINISTRATIVE BUILDINGS PARKS**

**TOTAL LAWN AREA      7,81,368 SQ. FT    OR    72,617 SQ. MTR. (APPROX.)**

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**Table-11 Area under Parks & Lawns: Residential Area**

S No	Location	Area Covered (Sq. Feet)	Out Come
1.	Type-II Qtrs.	50' x 152' = 7600	Lawns are being used by the Residents of Institute. The lawn area is being maintained regularly by deploying outsourced workers.
		72' x 191' = 13752	
2.	Type-II Qtrs. New	50' x 60' = 3000	
		100' x 120' = 12000	
		170' x 123' = 20910	
		115' x 400' = 46000	
3.	Type-III Qtrs.	100' x 50' = 5000	
		133' x 150' = 19950	
		150' x 150' = 22500	
		146' x 100' = 14600	
		322' x 150' = 48300	
4.	Type-IV Qtrs.	140' x 110' = 15400	
	Type-IV Qtrs. along road	760' x 75' = 57000	
5.	Type-V Qtrs.	150' x 160' = 24000	



**FIG 12 PICTURES OF RESIDENTIAL AREA PARKS**  
**TOTAL LAWN AREA 307012 SQ. FT OR 28532 SQ. MTR.**

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**Table-12 Area under Parks & Lawns: Hostels**

S. No	Area	Area Covered (Sq. Feet)
1	Boys Hostel No. 01	80' x 80' = 6400
		35' x 180' = 6300
		110' x 150' = 16500
		400' x 100' = 40000
2.	Boys Hostel No. 02	35' x 100' = 3500
		400' x 100' = 40000
		80' x 80' = 6400
		100' x 150' = 16500
3.	Boys Hostel No. 03	200' x 325' = 65000
		250' x 80' = 20000
		200' x 70' = 14000
		268'' x 140' = 37520
4.	Boys Hostel No. 04	350' x 200' = 70000
		250' x 100' = 25000
		200' x 70' = 14000
		340' x 160' = 54400
5.	Boys Hostel No. 05	120' x 270' = 32400
		100' x 80' = 18000
		75' x 70' = 5250
		50' x 300' = 15000
6.	Boys Hostel No. 06	60' x 350' = 21000
		74' x 150' = 11100
		120' x 180' = 21600
		100' x 80' = 8000
7.	Boys Hostel No. 07	2 x 200' x 95' = 38000
		86' x 90' = 7740
		250' x 45' = 11250
8.	Boys Hostel No. 08	95' x 260' = 24700
		300' x 45' = 13500
		86' x 90' = 7740
9.	Boys Hostel No. 09	415' x 140' = 58100
		150' x 350' = 52500
		100' x 90' = 9000
		80' x 30' = 2400
10.	Boys Hostel No. 10	110' x 325' = 35750
11.	Girls Hostel no.01	280' x 100' = 28000
		145' x 140' = 20300
12.	Girls Hostel no.02	250' x 115' = 28750
		100' x 40' = 4000
		70' x 50' = 3500
13.	Girls Hostel no.03	190' x 50' = 9500
		50' x 70' = 3500

**TOTAL LAWN AREA 926100 SQ. FT OR 86068 SQ. MTR.**





**FIG 13 PICTURES OF RESIDENTIAL & HOSTEL AREA PARKS**

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**Table-13 Area under Parks & Lawns: PUBLIC PARKS**

S. No	Location	Area Covered (Sq. Feet)	Out Come
1.	Near Health Centre	48' x 174' = 8352	Lawns are being used by the Residents and students at the Institute. The lawn area is being maintained regularly by deploying outsourced workers.
2.	Lawn near CBI Bank	192' x 144' = 27648	
3.	Lawn near Restaurant	215' x 592' = 127280	
4.	Community Centre	220' x 322' = 70840	
5.	Lawn OHT-1	350' x 210' = 73500	
6.	Nursery	380' c 150' = 57000	
		146' x 36' = 5256	
		170' x 140' = 23800	



**FIG 14 PICTURES OF PUBLIC AREA PARKS**

**TOTAL LAWN AREA 393676 SQ. FT OR 36586 SQ. MTR.**

## **10. WATER CONSERVATION**

- The Institute is having rainwater harvesting arrangement in various building such as Director Residence, Guest House, Transit Accommodation, Student activity Centre, Swimming Pool, Administrative block and Auditorium etc. along with open field provisions. There is also provision for canal water irrigation through water courses, which irrigates the lawns, fields and trees.
- The treated wastewater is also being recycled through 400 meter long Non pressure water line for watering SLIET Campus locations. There are two big water bodies one near the sewerage plant and one near nursery which is supporting the wildlife in the campus including fish, migratory birds, other birds. The various species of migratory birds are found near the water bodies all around the year. An open oxidation plant for the treatment of the wastewater and the use of wastewater for irrigation of forest area of the Institute has been build and working since the inception of the SLIET.



**FIG 15 A PICTURES OF RAINWATER HARVESTING  
RAINWATER HARVESTING PITS. = 13 NOS.**

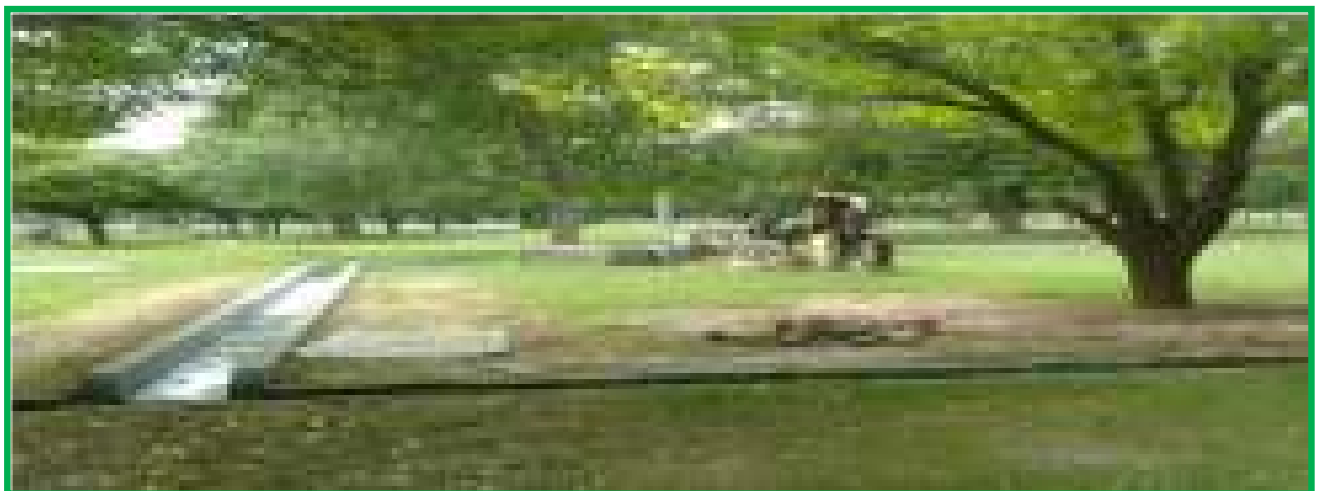
**OUTCOME:** Irrigation though use of water other than ground water, water conservation and maintenance of Natural habitats including flora and fauna

**GREEN AUDIT REPORT, SLIET, LONGOWAL**  
**CANAL WATER**

	Under ground Water Course No.01	5330 (R. Ft.)
	Underground Water Course No.02	3570 (R. Ft.)
	Underground Water Course No.03	1000 (R. Ft.)
Total Length		9990 R ft. Or 3017 Rmt.



**FIG 15 B PICTURES OF CANAL WATER (NAKKAS)**



**FIG 15 C PICTURES OF CANAL WATER**

## 11. FAUNAL DIVERSITY IN SLIET CAMPUS:

SLIET is located in Longowal District of Punjab. Longowal is an industrial city known for hosiery, cycles and sewing machines. It has got extreme climates. The highest temperature is recorded 47 C just prior to the onset of monsoon (around May- early June). Summer rain is normal, and is principally caused from late July to August by the moisture-laden South-West Monsoon, on striking the Himalayan foothills of the north. The climatic condition of the Longowal district as a whole and SLIET in particular is very suitable for a wide variety of flora and fauna to support its rich biodiversity. The faunal Diversity of SLIET campus has been studied and documented as below:

**Table-14: Common and Scientific names of birds and animals of Campus**

S. No	Common Name	Scientific Name
1.	Common Myna	Acridotheres Tristis
2.	Bank Myna	Acridotheres Ginginianus
3.	House Sparrow	Passer Domesticus
4.	House Crow	Corvus Splendens
5.	Cuckoo	Cuculidae
6.	Snake	NajaNaja
7.	Yellow Wasp	Ropalidia Marginata
8.	Butter Fly	Danaus Genutia
9.	Common Woodshrike	Tephrodornis Pondicerianus
10.	Pied Myna	Gracupica Contra
11.	Red-Vented Bulbul	Pycnonotus Cafer
12.	Skylark	Aluda Gulgula
13.	Garden Tiger Moth	Arctia Caja
14.	Little Owl	Athene Brama
15.	Oleander Moth	Syntomeida Epilais
16.	Slender Skimmer	Orthetrum Sabina



**(LAKE - DUCKS)**

**FIG 16 COURTESY: PHOTOGRAPHY CLUB, SLIET**



**(LAKE - DUCKS)**

**FIG 16 COURTESY: PHOTOGRAPHY CLUB, SLIET**



**COMMON MYNA (ACRIDOTHERES TRISTIS)    HOUSE SPARROW (PASSER DOMESTICUS)**  
**COURTESY: PHOTOGRAPHY CLUB, SLIET**



**HOUSE CROW (CORVUS SPLENDENS)    CUCKOO (CUCULIDAE)**  
**FIG 17 COURTESY: PHOTOGRAPHY CLUB, SLIET**





**SNAKE**



**YELLOW WASP (ROPALIDIAMARGINATA)**



**BUTTER FLY (DANAUS GENUTIA)**



**BEETLE INSECT**

**FIG 17 COURTESY: PHOTOGRAPHY CLUB, SLIET**



**COMMONWOODSHRIKE**



**PIED MYNA (GRACUPICACONTRA)**



**RED-VENTED BULBUL (PYCNONOTUSCAFER)**



**SKYLARK (ALUDAGULGULA)**

**FIG 17 COURTESY: PHOTOGRAPHY CLUB, SLIET**



**GARDEN TIGER MOTH (ARCTIACAJA)**



**LITTLE OWL (ATHENE BRAMA)**



**OLEANDER MOTH (SYNTOMEIDA EPILAIS)**



**SLENDER SKIMMER (ORTHETRUM SABINA)**

**COURTESY: PHOTOGRAPHY CLUB, SLIET**

**FIG. 17 BIRDS, INSECTS, OTHER CREATURES AND ANIMALS OF CAMPUS**

## 12. WEATHER DATA OF LONGOWAL AND SLIET

**Station:** Longowal (INDIA (STATIONS NORTH OF LATITUDE 20~N))

Location: 30°21'67" N AND 75°68'33" E in Longowal, the climate is warm and temperate. The summers are much hotter and the winters are colder in Longowal. The highest temperature in Longowal is 47.8 °C in June & July. The driest month is generally April and May. The greatest amount of precipitation occurs in July, August and September. The lowest temperatures in the year occur in December and January, when it is around 6-7 °C.

**Table-15: WEATHER DATA MONTH WISE Longowal (Source: Google)**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Record high °C (°F)	29.0 (84.2)	33.3 (91.9)	41.1 (106.0)	46.1 (115.0)	48.3 (118.9)	47.9 (118.2)	47.8 (118.0)	44.4 (111.9)	41.7 (107.1)	40.0 (104.0)	35.8 (96.4)	29.4 (84.9)
Average high °C (°F)	18.9 (66.0)	21.0 (69.8)	26.0 (78.8)	34.6 (94.3)	38.8 (101.8)	39.6 (103.3)	34.9 (94.8)	32.9 (91.2)	33.4 (92.1)	32.0 (89.6)	26.4 (79.5)	20.7 (69.3)
Daily mean °C (°F)	12.8 (55.0)	14.8 (58.6)	19.4 (66.9)	26.7 (80.1)	31.1 (88.0)	33.0 (91.4)	30.5 (86.9)	28.8 (83.8)	28.5 (83.3)	24.9 (76.8)	19.0 (66.2)	14.1 (57.4)
Average low °C (°F)	6.7 (44.1)	8.5 (47.3)	12.8 (55.0)	18.8 (65.8)	23.3 (73.9)	26.2 (79.2)	26.1 (79.0)	24.8 (76.6)	23.4 (74.1)	17.7 (63.9)	11.6 (52.9)	7.4 (45.3)
Record low °C (°F)	-2.2 (28.0)	-1.1 (30.0)	1.4 (34.5)	7.1 (44.8)	11.7 (53.1)	18.0 (64.4)	17.4 (63.3)	18.0 (64.4)	15.2 (59.4)	9.4 (48.9)	0.3 (32.5)	-1.1 (30.0)
Average precipitation mm (inch)	21 (0.8)	39 (1.5)	31 (1.2)	20 (0.8)	20 (0.8)	60 (2.4)	229 (9.0)	189 (7.4)	85 (3.3)	5 (0.2)	13 (0.5)	21 (0.8)
Average precipitation days (≥ 1.0 mm)	2.8	3.6	4.5	1.9	2.3	4.7	11.6	9.6	4.5	0.5	1.4	2.1

However a lot of irrigation and environmental changes have made the land viable for wheat cultivation. The climatic conditions bear a strong resemblance with the other cities in the northern part of India. The summers are usually very hot and the winters are very cold. The summers are prevalent during the months of April to September with June, July, August being the hottest months. The winter is prevalent from the month of November till February. There is onset of Monsoon in the month of July to September.

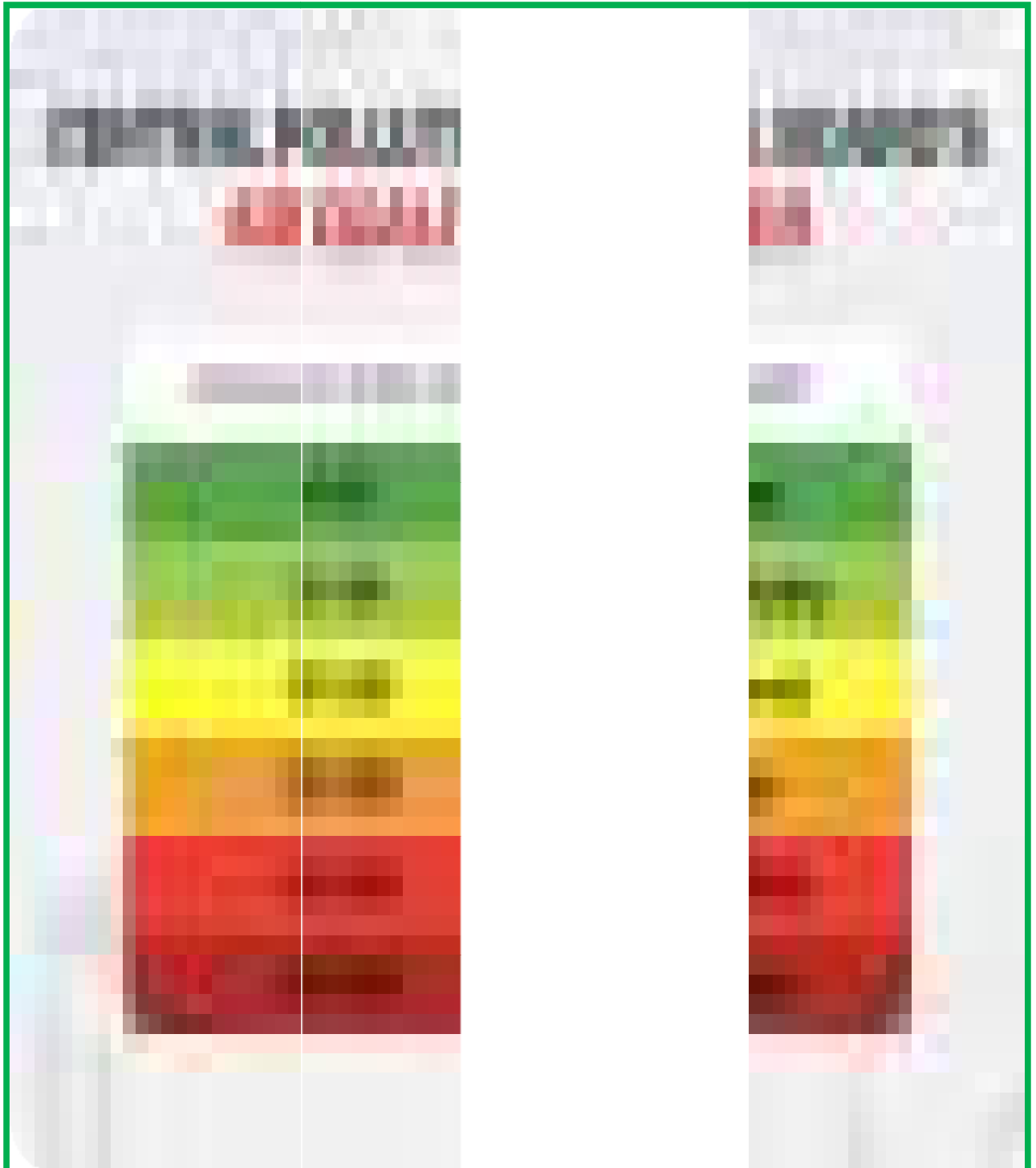
### **13. AIR QUALITY IN LONGOWAL AND SLIET:**

An Air Quality Index (AQI) is used by the government agencies to communicate to the public how polluted the air currently is. Public health risks increases as the AQI rises. The ambient air quality data for Longowal and SLIET for the last one year shows that there are very less polluted particles in ambient air; AQI for SO<sub>2</sub> & NO<sub>x</sub> parameters are within the range of Indian living standards, there are a number of factors responsible for this cleanliness, calmness and serenity in this area. Firstly, population which is most responsible for all the problems and hurdles in smooth living is lowest here of all the districts of Punjab. Secondly, in the institute more than 70,000 trees have been planted as compared to other cities. Furthermore, no air polluting industry is established near here. Therefore, the ambient air quality of Longowal Area falls in between moderate to rich quality state. The Punjab Pollution Control Board is pondering over the various possibilities to reduce the air pollution for the improvement of ambient air quality with respect to AQI is concerned. There are six AQI categories namely, Good, Satisfactorily, Moderately Polluted, Poor, Very poor and Severe. Good (0-50), Satisfactorily (51-100), Moderately polluted (101-200), Poor (201-300), Very Poor (301-400) & Severe (401-500)

#### **13.1 AIR QUALITY DETERMINATION**

**Table-16: Satisfactory Air quality index (OVERALL=88) in Longowal, Punjab India on dated 07<sup>th</sup> February 2023:**

<b>Parameter</b>	<b>Result (Range)</b>
NO <sub>2</sub>	25.4 µg/m <sup>3</sup> , AQI 26 Very Good
NO	10.09 µg/m <sup>3</sup> , AQI 10 Good
O <sub>3</sub>	31.49 µg/m <sup>3</sup> , AQI 31 Good
PM <sub>2.5</sub>	28.13 µg/m <sup>3</sup> , AQI 28 Good
PM <sub>10</sub>	77.2 µg/m <sup>3</sup> , AQI 79 Satisfactory
CO	35.0 µg/m <sup>3</sup> , AQI 18
Humidity	56.0 %
Barometric Pressure	1013 millibar or hPa
Wind Speed	10-15 m/s
Wind Direction	28.0013 degrees
Sun Rise	06:28 AM
Sun Set	05:56 PM
Moonrise	07:05 PM
Moonset	07:31 AM



**FIG.18 CPCB AIR QUALITY STANDARDS**

## **14. WATER AUDIT & ANALYSIS**

- Water is an important natural resource and is available naturally depending on the climate and topographic features. All organisms are dependent on water for their living. Although water is available in nature, portable water is not available freely for human consumption. There have been many practices to conserve water so that it can be readily available for human use. It has been noticed that due to unsustainable use of water resources there is contamination and depletion of the ground water and also water which is available in various reservoirs like lakes, ponds, streams etc which is becoming more alarming. Therefore it becomes increasingly important to conserve protect and manage the water resources availability and usage so that it is sustainably used within the university campus. Water auditing is conducted to evaluate the quality, availability and usage of water; the facilities available and methods adopted to revitalize and use it so that the resources are intact without leading to deterioration.
- The university is presently dependent on borewell for feeding the Over Head Tank to supply the drinking water to the campus. There are 2 Nos. of OHT provided in the campus. Water audits provide decision making tools to utility managers and operators. i.e., knowing where water is being used in your system. Water audits allows how to efficiently reduce water losses in the system. It creates awareness among water users i.e., customers can see and understand that the utility is taking proactive steps to manage wasted water and save for the future.

Drinking water indicators. The following is a list of indicators often measured:

- Alkalinity
- Color of water
- pHvalue
- Taste and odor (geosmin, 2-Methylisoborneol (MIB), etc.)
- Dissolved metals and salts (sodium, chloride, potassium, calcium, manganese, magnesium)
- Microorganisms such as fecal coliform bacteria (*Escherichia coli*), *Cryptosporidium*, and *Giardia lamblia*; see Bacteriological wateranalysis
- Dissolved metals and metalloids (lead, mercury, arsenic, etc.)
- Dissolved organics: colored dissolved organic matter (CDOM), dissolved organic carbon(DOC)
- Heavymetal



**(OVERHEAD TANK-1)**



**(OVERHEAD TANK-2)**

**Fig.19 SLIET OVER HEAD WATER TANKS FOR DOMESTIC SUPPLY**



## GREEN AUDIT REPORT, SLIET, LONGOWAL

### 14.1 WATER QUALITY ASSESSMENT

- Water quality testing is important because it identifies contaminants and prevents water-borne diseases. Drinking or using contaminated water can result in severe illness or death. That is why it is important to ensure that drinking water is safe, clean and free from bacteria and disease. The parameters for water quality are determined by the intended use. Work in the area of water quality tends to be focused on water that is treated for human consumption, or in the environment.
- Water samples (01 & 02) from two different locations were collected and analyzed for its quality parameters. The samples collected are the main water source of the campus. The samples were collected, preserved and transported to chemical engineering department and analyzed for various physio-chemical parameters. The major parameters analyzed include dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids and salinity. The results are presented in the Table 1. The results are comparable with the values of drinking water standards prescribed by different agencies.

**TABLE-17 Water Quality Assessment Report of SLIET**

<b>PARAMETERS</b>	<b>SAMPLE -1</b>	<b>SAMPLE -2</b>	<b>STANDARD VALUE (BIS)</b>
Dissolved Oxygen (mg/l)	7.3	7.6	6-8
Acidity (mg/l)	22	10	200
Alkalinity (mg/l)	22	35	200
Chloride (mg/l)	36.72	27.78	250
Hardness (Total)	57	70	200
Conductivity ( $\mu$ s)	99	95	
pH	6.7	6.9	6.5-8.5
Total Dissolved Solids (ppm)	127	99	500
Salinity (ppt)	0.118	0.067	
Total coli form	0	0	0
Fecal coli form	0	0	0
Taste/Odour	Ok	Ok	Ok



## Punjab Biotechnology Incubator

Department of Science, Technology & Environment, Delhi

A Consortium of Knowledge City, Mohali

An NABL Accredited Facility



---





Date: 19/07/2024

### TEST REPORT

**UN: 10000000000000000000**

Sample Registration No: **10000000000000000000**

Sample code given by customer: **10000000000000000000**

Address: **10000000000000000000**

Phone No: **10000000000000000000**

**CLIENT:**

**Dr. Nishu Singh**  
 Lead Lecturer Institute of Engineering and Technology  
 Longowal  
 Dist. Sangrur (141001)  
 Punjab

**LABORATORY**

Department: **MS. 10000000000000000000**

<b>Year of Inaug.</b>	<b>2019</b>
<b>Type of Inaug.</b>	<b>Industrial</b>
<b>Manufacture of goods:</b>	<b>Drinking Water</b>
<b>Sample handling process:</b>	<b>Industrial</b>
<b>Location of the sample:</b>	<b>Industrial/Commercial/Other (with/without the certificate)</b>
<b>Brand name:</b>	<b>MS</b>
<b>Dist/State:</b>	<b>TS, INDIA (State: Punjab) MS</b>
<b>Quantity:</b>	<b>MS</b>
<b>Name of Manufacturer:</b>	<b>MS</b>
<b>Manufacturer Address:</b>	<b>MS (with/without the certificate)</b>
<b>Year of Inaug.</b>	<b>2019</b>
<b>Test Commission Date:</b>	<b>19/07/2024</b>



**Authorized Signatory**  
 Punjab Biotechnology Incubator Ltd  
 Employee Code: **10000000000000000000**

**Note:**

- 1. The test results are valid only for the sample received by the Lab. Sample from other laboratory cannot be tested and test results are not valid. For more information, please contact the Lab. Operator/MS. Sangrur/MS. Longowal.
- 2. The test results are valid only for the sample received by the Lab. Operator/MS. Sangrur/MS. Longowal.
- 3. The test results are valid only for the sample received by the Lab. Operator/MS. Sangrur/MS. Longowal.

Page No: **001/01/0000**

Total Pages: **001/01/0000**

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National Reference Lab for LPO/MSO Detection under Food Safety Act 2006 | National Lab under Food Safety and Standards Act 2006

# D-134, Industrial Focal Point, Phase-III, SAS Nagar (Mohali) - 160 071, Punjab, India  
 Phone : +91-173-8826600, 8003484, E-mail : pnbilab@punjab.gov.in, Website : www.pnbilab.com

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

Date: \_\_\_\_\_

**SLIET**

**GREEN AUDIT REPORT**

**SLIET, LONGOWAL**

**GREEN AUDIT REPORT**

**SLIET, LONGOWAL**

**Table 1: Green Audit Findings**

No.	Item	Remarks	Score	Weight	Remarks/Action/Status
1	Water	Water is used for drinking purposes.	100	100	Water is used for drinking purposes.
2	Water	Water is used for bathing purposes.	100	100	Water is used for bathing purposes.
3	Water	Water is used for washing clothes.	100	100	Water is used for washing clothes.
4	Water	Water is used for cleaning.	100	100	Water is used for cleaning.
5	Water	Water is used for irrigation.	100	100	Water is used for irrigation.
6	Water	Water is used for other purposes.	100	100	Water is used for other purposes.
7	Water	Water is used for drinking purposes.	100	100	Water is used for drinking purposes.
8	Water	Water is used for bathing purposes.	100	100	Water is used for bathing purposes.
9	Water	Water is used for washing clothes.	100	100	Water is used for washing clothes.
10	Water	Water is used for cleaning.	100	100	Water is used for cleaning.
11	Water	Water is used for irrigation.	100	100	Water is used for irrigation.
12	Water	Water is used for other purposes.	100	100	Water is used for other purposes.
13	Water	Water is used for drinking purposes.	100	100	Water is used for drinking purposes.
14	Water	Water is used for bathing purposes.	100	100	Water is used for bathing purposes.
15	Water	Water is used for washing clothes.	100	100	Water is used for washing clothes.
16	Water	Water is used for cleaning.	100	100	Water is used for cleaning.
17	Water	Water is used for irrigation.	100	100	Water is used for irrigation.
18	Water	Water is used for other purposes.	100	100	Water is used for other purposes.
19	Water	Water is used for drinking purposes.	100	100	Water is used for drinking purposes.
20	Water	Water is used for bathing purposes.	100	100	Water is used for bathing purposes.
21	Water	Water is used for washing clothes.	100	100	Water is used for washing clothes.
22	Water	Water is used for cleaning.	100	100	Water is used for cleaning.
23	Water	Water is used for irrigation.	100	100	Water is used for irrigation.
24	Water	Water is used for other purposes.	100	100	Water is used for other purposes.
25	Water	Water is used for drinking purposes.	100	100	Water is used for drinking purposes.
26	Water	Water is used for bathing purposes.	100	100	Water is used for bathing purposes.
27	Water	Water is used for washing clothes.	100	100	Water is used for washing clothes.
28	Water	Water is used for cleaning.	100	100	Water is used for cleaning.
29	Water	Water is used for irrigation.	100	100	Water is used for irrigation.
30	Water	Water is used for other purposes.	100	100	Water is used for other purposes.

Page No. 19



**GREEN AUDIT REPORT, SLIET, LONGOWAL**

# Punjab Biotechnology Incubator

(Department of Science, Technology & Environment, GOPI)  
A Component of Knowledge City, Mohali  
Food Safety and Quality Assurance Agency

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STATE GOVERNMENT OF PUNJAB  
DEPARTMENT OF SCIENCE, TECHNOLOGY & ENVIRONMENT  
KARNAL ROAD, MOHALI

FORM NO. 1  
DATE: 13/05/2023

## TEST REPORT

<b>Client / SUBSTITUTION TEST:</b> Sample Registration No.: Sample collection by reference:	<b>Registration No. &amp; System Name:</b> PUNJAB
<b>CLIENT:</b> Dr. Gaur, Sangeet, Senior Lecturer, Government Engineering and Technology College, Gadhri, District: Mohali Phone:	
<b>SAMPLE PARTICULARS:</b>	
Flow Chart No.:	FST/2023/05/13/0000001
Name of Product:	Yoghurt
Manufacturer of sample:	Cooking Master
Source from which it is taken:	Process water
Quantity of the sample:	100ml (more sample under investigation required)
Sample date:	04/05/2023
Shelf life:	15 to 20 days (approx. in process)
Name of Institution / Company:	SANSI
Sampling Method:	Direct (as received)
Test Start Date:	09/05/2023
Test Completion Date:	10/05/2023



**Authorized Signatory**  
Punjab Biotechnology Incubator Lab  
Mohali, Punjab - 140 104

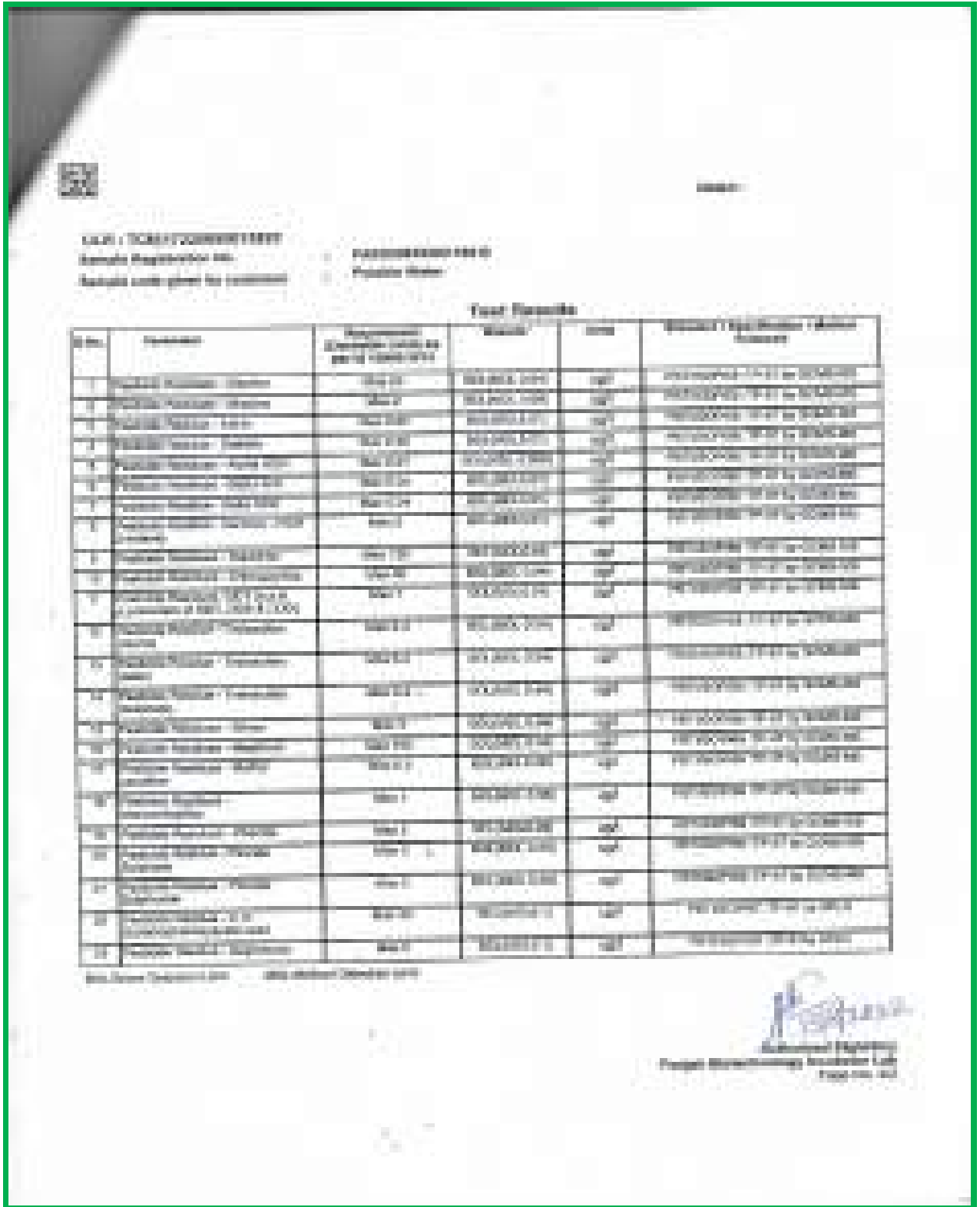
Form No. : PBI/RTI/005  
Revision No. : 02 (01/04/2023)

Page No. 01

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Punjab Biotechnology Incubator (GOPI) is a Government of Punjab initiative for promoting Food Safety and Quality Assurance in Punjab, India.  
P O-154, Industrial Food Point, Phase-05, SAS Nagar (Mohali) - 140 101, Punjab, India  
Phone: +91-972-602065, 3033763, E-mail: pbi@longowal.gov.in  
Website: www.pbiindia.com, pbiindia.in

**GREEN AUDIT REPORT, SLIET, LONGOWAL**



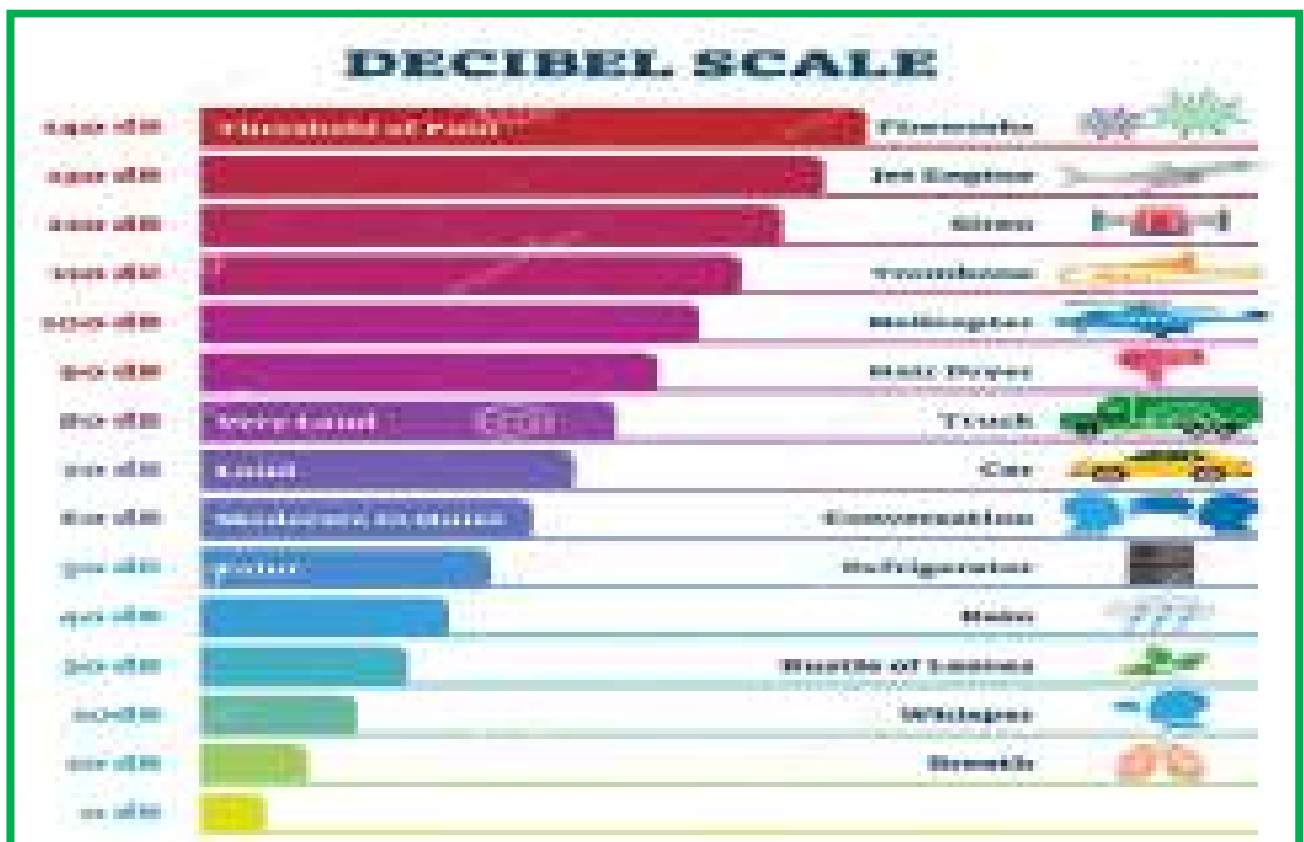
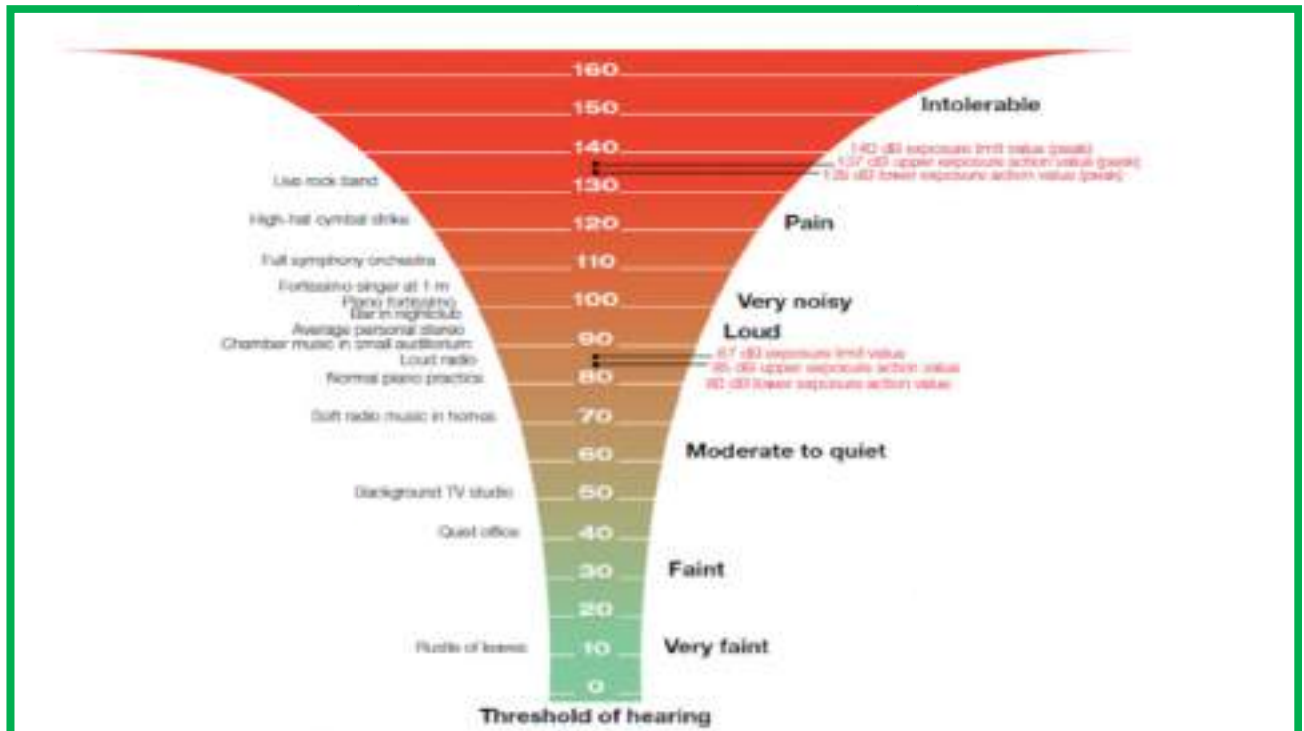
**15. NOISE LEVEL IN THE SURROUNDING OF SLIET:**

- The human ear is constantly being assailed by man-made sounds from all sides, and there remain few places in populous areas where relative quiet prevails. There are two basic properties of sound:
  - Loudness and
  - Frequency.
- Loudness is the strength of sensation of sound perceived by the individual. It is measured in terms of Decibels. Just audible sound is about 10 dB, a whisper about 20 dB, library place 30 dB, normal conversation about 35-60 dB, heavy street traffic 60-0 dB, boiler factories 120 dB, jet planes during take-off is about 140 dB, rocket engine about 180 dB. The loudest sound a person can stand without much discomfort is about 80 dB. Sounds beyond 80 dB can be safely regarded as Pollutant as it harms hearing system. The WHO has fixed 45 dB as the safe noise level for a city. For international standards a noise level up to 65 dB is considered tolerate. Loudness is also expressed in sones. One sone equals the loudness of 40 dB sound pressure at 1000 Hz.
- Frequency is defined as the number of vibration per second. It is denoted as Hertz (Hz).

**TABLE-18 NOISE Quality Assessment Report of SLIET**

<b>Area</b>	<b>Noise Limit, Leq, dB(A)</b>	
	<b>Day Time</b>	<b>Night Time</b>
Silence zone	50	45
Residential area	55	45
Commercial area	65	55
Industrial area	75	65

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

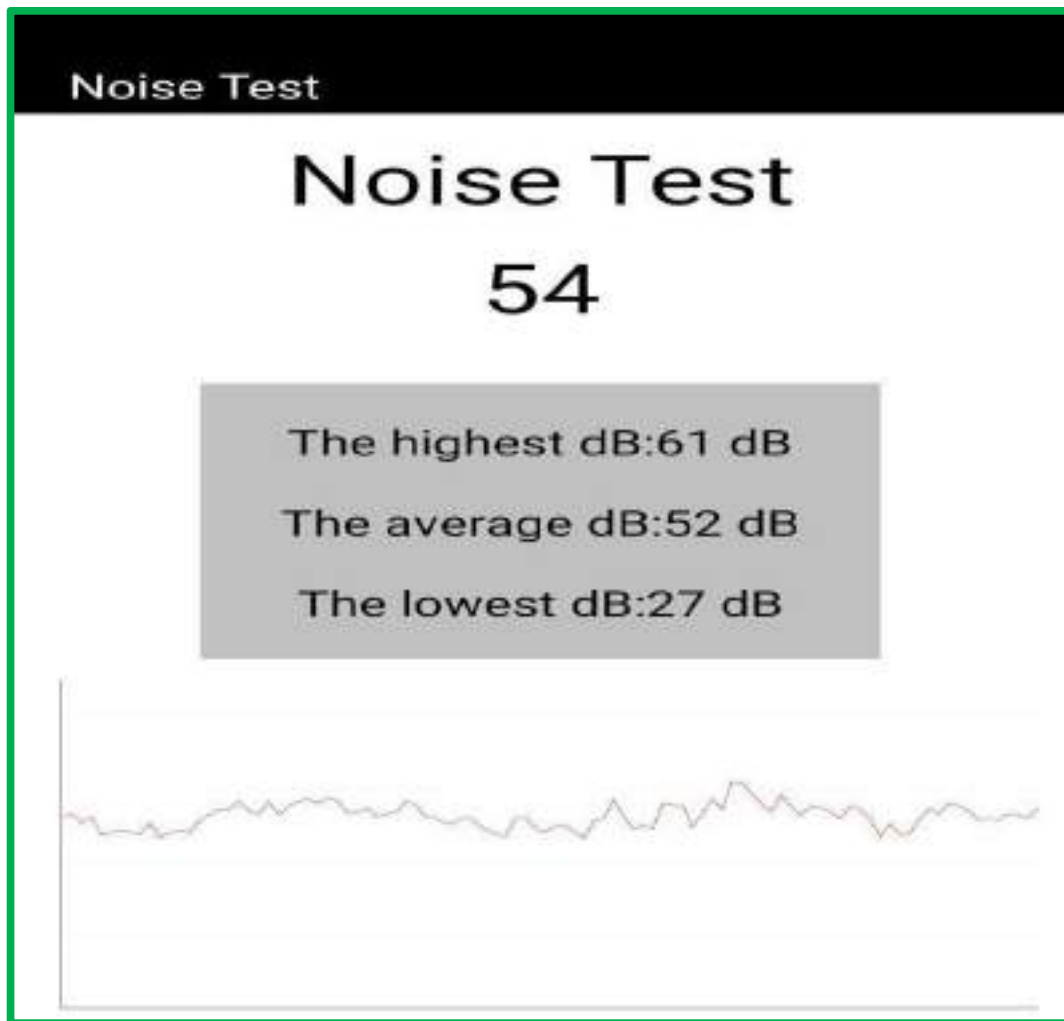


**FIG 20 INDIAN STANDARDS FOR NOISE LEVELS**



**15.1 MATERIALS, STUDY AREA & METHODS**

Noise level meter or noise measuring app, Apple watch noise meter App was used to measure the noise level. It detect any noise, music or sound in your surroundings. It will tell you maximum, minimum and average decibels.



**FIG. 21: NOISE MEASUREMENT BY APPLE WATCH**

**15.2 DESCRIPTION OF THE INSTITUTE SITE**

The site of the SLIET is bounded to the North/East by Kunara Village, Open Irrigation Fields & Duggan Village and to the South/West by Longowal Village, waste open Canal Channel and Tehsil Office.

**15.3 MEASUREMENT PROCEDURE**

The noise level was recorded at the different Important Locations of SLIET, LONGOWAL. At each spot, the measurements were taken for 60 seconds during day time (6 AM- 6 PM) and noted down the measurements. Screen shots of the measurements of noise were taken immediately on the app at the time of 60th second of each measurement.

**15.4. RESULTS**

The results of the experiments at different places have been tabulated in the following table:

**Table 19: Measurements of Noise in and around SLIET:**

<b>PLACE</b>	<b>MEASUREMENT (Duration in Sec.)</b>	<b>MINIMUM (dBA)</b>	<b>Maximum (dBA)</b>	<b>AVERAGE (dBA)</b>
Canteen	60	74	90	85
Library	60	51	85	65
Mechanical Dept Area	60	27	54	48
Mechanical Lab	60	45	89	72
CSE Dept Area	60	50	81	73
CSE Lab	60	66	85	76
EE Dept Area	60	66	87	76
EE Lab	60	40	87	68
ECE Dept. Area	60	63	82	76
ECE Lab	60	65	85	78
Auditorium	60	27	61	44
Workshop	60	66	90	78
Faculty Flats	60	35	80	69
Staff Flats	60	49	71	65
Guest House	60	50	77	67
Boys Hostel	60	54	68	62
Girls Hostel	60	52	90	68

## **16. WASTE MANAGEMENT OF SLIET:**

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

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

With smart initiatives like “Think Green Campus Model”, waste management is helping colleges and universities to achieve a higher level of environmental performance. By reusing or recycling we are contributing to the conservation of natural resources, saving energy, helping to protect the environment, reducing landfill. We will also reduce our impact on the environment by minimizing the carbon emissions associated with both disposing of old products and obtaining new ones. SLIET adopts environment friendly practices and takes necessary actions such as – energy conservation, waste recycling, carbon neutral etc. The biological reusable waste are processed as organic manure for the plants available in the campus and the other solid waste generated in the university campus is taken for recycling and disposal as manure and vermicompost.

### **16.1 WASTE DISPOSAL AUDIT**

Pollution from waste is aesthetically unpleasing and results in large amounts of litter in our communities which can cause health problems. Human activities create waste, and it is the way these wastes are handled, stored, collected and disposed of, which can pose risks to the environment and public health.

Solid waste can be categorized into three types: biodegradable, non-biodegradable and hazardous waste.

- Bio-degradable wastes include food wastes, canteen waste, trees leaves, decomposed plants.
- Non-biodegradable wastes include what is usually thrown away in homes and schools such as plastic, tins and glass bottles etc.
- Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals, acids and petrol.

Unscientific management of these wastes such as dumping in pits or burning them may cause the harmful discharge of contaminants into soil and water supplies, and produce greenhouse gases contributing to global climate change respectively. Special attention should be given to the handling and management of hazardous waste generated in the campus. Bio-degradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology. Non-biodegradable waste can be utilized through recycling and reuse. Thus the minimization of solid waste is essential to a sustainable University. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

## **16.2 STATUS OF SOLID WASTE GENERATION IN THE CAMPUS**

Each and every department, hostel, residential complex, shopping complex of SLIET as well as administrative offices collect the waste and dumped in small waste bin located in the department.

Each building several dust bins are placed from where housekeeping staffs take the wastes. From the small bin wastes are dumped in big bin/dipsoal brickwork structures by the housekeeping staffs regularly. From the big waste structure the solid waste are transferred through the Institute tractor and Sanitation Workers to the Isolated area in the campus .

Further, the tree leaves, plants, grass and other green waste is transported through Institute tractor by the Horticulture workers to the Isolated area in the campus . The solid waste is than used for the manure and vermicompost production by the horticulture wing.



**FIG 22 SOLID WASTE GENERATION IN THE CAMPUS**

### **GREEN AUDIT REPORT, SLIET, LONGOWAL**

The organic wastes filled in the pits are subjected to composting which forms a best practice in the campus. In addition to the organic waste generated from different units, large sources of organic wastes other than kitchen wastes (University canteen, house hold) like leave litter, terrestrial weeds etc that are generated from maintain and cleaning the campus are collected during different periods of the year. These organic wastes are used for the manure and vermicompost production by the horticulture wing.

#### **16.3 VERMICOMPOSTE**

Vermicomposting is the technology where with the use of locally available appropriate species of composting earthworms (*Perionyx excavatus*), huge amount of plant biomass produced in the University campus is reduced into available plant nutrient rich organic manure within a short time span. The organic wastes to be processed by earthworms are chemically analysed to know their nutrient values. All the different types of wastes are mixed thoroughly and precomposted for 2-3 weeks. After precomposting precomposted substrates are loaded in the cemented vermicomposting tanks. Locally available earthworms, *Perionyx excavatus* are then introduced in the composting tanks. Following inoculation, the earthworms (*Perionyx excavatus*) through their feeding, burrowing and casting activities convert the organic wastes into manure called vermicompost within 45 days.



**FIG 23 VERMI COMPOSITE GENERATION IN THE CAMPUS**

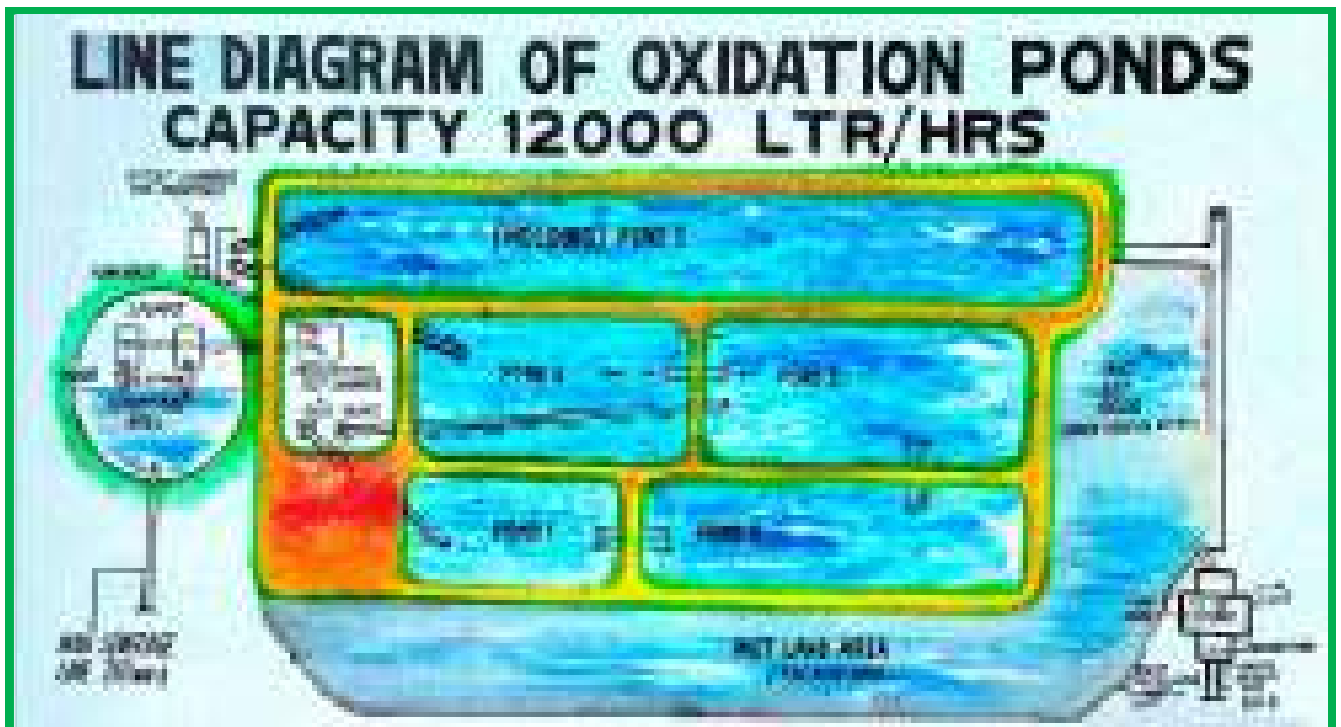
**16.4 LIQUID WASTE MANAGEMENT:**

Liquid waste is generated from departments, laboratories, Hostels, Residential quarters and canteen etc. Liquid wastes generated by the university is of detailed below:

- 1. Sewage waste including toilet, washroom, kitchen, canteen , residential complex etc.

The liquid wastes are mainly drained to improve the ground level of water.

- The collection chamber to collect raw sewage has been provided for collection of dirt, solid waste and screening of waste etc.
- An open oxidation pond has been provided for the treatment of waste water. Oxidation ponds, also called lagoons or stabilization ponds, are large, shallow ponds designed to treat wastewater through the interaction of sunlight, bacteria, and algae. During the process of photosynthesis, the algae releases the oxygen needed by aerobic bacteria. Algae helps the bacteria break down the sewage and effluent. The wind helps with the evaporation of the water and serves to get oxygen into the water. This helps in water getting cleaned.
- The waste water is used for irrigation of forest area of Institute and the informal garden in the campus near BH-08. Oxidation pond of the campus has is handling 5,00,000 litres/day.



**16.5 RECYCLING OF WASTEWATER:**

The waste water of the university campus is used for watering of forest area of Institute and the informal garden in the campus near BH-08.



**OXIDATION POND**



**FIG 24 RECYCLING OF WATER IN THE SLIET**





**OXIDATION POND**



**FIG 24 RECYCLING OF WATER IN THE SLIET**

### **16.6 BIOMEDICAL WASTE MANAGEMENT:**

In SLIET, the bio medical waste is produced through Health Center. Though the amount of waste is very negligible. The waste is handed over to Longowal Municipal Council for Biomedical waste management

### **16.7 E-WASTE MANAGEMENT**

SLIET has very efficient mechanism to dispose E wastes generated from various sources. E-wastes are generated from computer laboratories, electronic labs, Physics Labs, Chemistry Lab, Biotech Labs, Academic and Administrative Offices.

The e-waste includes out of order equipments or obsolete items like lab instruments, circuits, desktops, laptops and accessories, printer, charging and network cables, Wi-fi devices, cartridges, sound systems, display units, UPS, Biometric Machine, scientific instruments etc. All these wastes are put to optimal use.

All such equipment's which cannot be reused or recycled is being disposed off through Notice Inviting Quotation or E-tender by the Store & Purchase department. Also, in view of new procurement policy, Buy-Back option is preferred for technology upgradation.

### **16.8 HAZARDOUS WASTE**

In India, the Ministry of Environment, Forest and Climate Change, Government of India; is the agency to promulgate the Hazardous Waste (Management and Handling) Rules, 1989, under the provision of the Environment Protection Act, 1986. These rules were amended and new rules entitled "**Hazardous waste (Management, Handling, and Trans-boundary Movement) Rules, 2008**" were promulgated, which was further amended in the years 2009 & 2010 for proper management and handling of hazardous waste in the country (CPCB, 2010-2011). These regulations sometimes require detailed knowledge of the constituents and properties of waste streams so they can be managed properly.

SLIET, do not generate hazardous waste and can be classified as conditionally exempt small quantity generators

- Most departments do not generate large quantities

## **17. VEHICULAR MOVEMENTS**

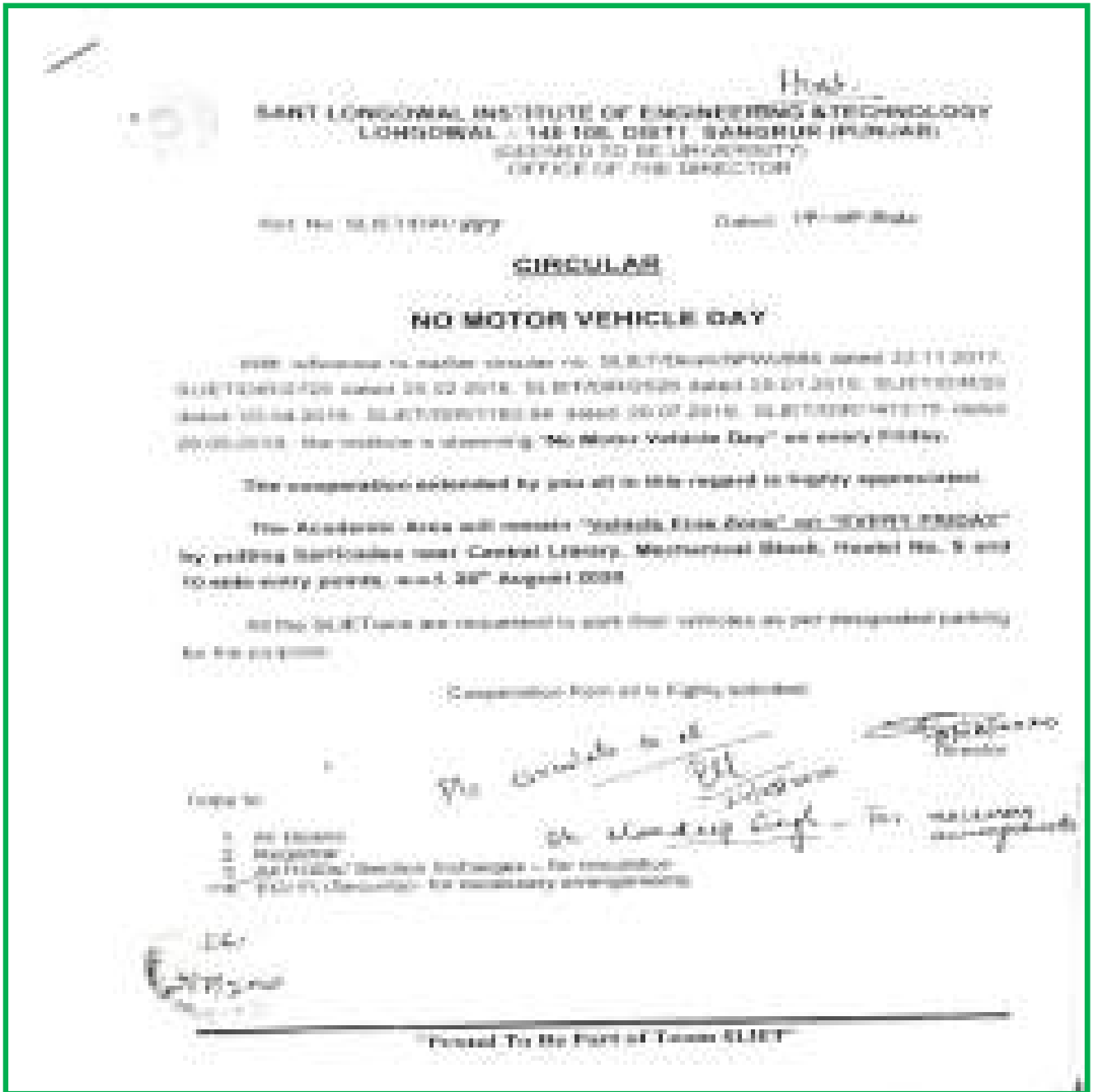
- Transportation is the fastest growing major contributor to global climate change, accounting for 23% of energy-related carbon dioxide (CO<sub>2</sub>) emissions. Many experts foresee a three- to five-fold increase in CO<sub>2</sub> emissions from transportation in Asian countries by 2030. This is driven by the anticipated six- to eight-fold increase in the number of light-duty vehicles and a large increase in the number of trucks, which could overwhelm even the most optimistic forecasts of improvements in vehicle fuel efficiency. It was estimated that on an average around 500 nos. of two wheelers and 300 nos of four- wheeled vehicles (including vehicles coming to Bank & Post Office) visited SLIET Campus in general days per month during 2019-20 excluding the vehicles of campus dwellers. The University has designated parking places at several locations. The Institute is located in between village Longowal, Kunran and Duggan. Therefore, to reduce the vehicle movement in the campus, the bye pass road has been constructed to restrict the movement of vehicles visiting the campus.
- Hence, there has been reduction in carbon emissions due to construction of bye pass road connecting Kunran village to Duggan village in the year 2017-2018 due to reduction of vehicle movement in the campus.



**FIG 25 VEHICULAR MOVEMENTS IN THE SLIET**

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

One day (Friday) is observed as vehicle free day i.e. “ No Motor Vehicle Day” in the Academic Area of the Institute. This has resulted in reduction in carbon emissions due to restricted movement of vehicles in the campus. The students are encouraged to use cycles, two wheelers rather than four wheelers which leads to fuel saving and also the contribution of pollutants to atmosphere is less.



## **18. ENERGY AUDIT REPORT**

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	18.1.2 Methodology of Energy Audit
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<b>18.5</b>	<b>Outcomes of Energy Audit</b>

## **18.1 ENERGY AUDIT**

### **18.1.1 INTRODUCTION**

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In the Institute, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints. An energy audit in general includes identification and evaluation of the of the energy systems for their improvements in term of their energy efficiency through energy conservation measures. A detailed analysis of the various activities is as listed below.

Energy audit is an effective tool in defining and pursuing comprehensive energy management programmes. It has positive approach aiming at continuous improvement in energy utilization in contrast to financial audit which stresses to maintain regularity. Energy audit provides answer to the question what to do, where to start, at what cost and for what benefits?

Energy audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating and maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation equipment, instrumentations and technology.

It has been established that energy saving of the order of 15 to 30% is possible by optimizing use of energy by better housekeeping, low cost retrofitting measures and use of energy efficient equipment at the time of replacements. Indian industry consumes more energy as compared to its counter parts in the developed countries.

### **18.1.2 METHODOLOGY**

Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions. Industrial energy audit is an effective tool in defining and pursuing comprehensive energy

## ***GREEN AUDIT REPORT, SLIET, LONGOWAL***

management programme. As per the Energy Conservation Act, 2001, Energy Audit is defined as “the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption”.

### **18.1.3 NEED FOR ENERGY AUDIT**

In any industry, the three top operating expenses are often found to be energy (both electrical and thermal), labour and materials. If one were to relate to the manageability of the cost or potential cost savings in each of the above components, energy would invariably emerge as a top ranker, and thus energy management function constitutes a strategic area for cost reduction. Energy Audit will help to understand more about the ways energy and fuel are used in any industry and help in identifying the areas where waste can occur and where scope for improvement exists.

The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital for production and utility activities. Such an audit programme will help to keep focus on variations which occur in the energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc.

In an institute, Energy Audit is the translation of conservation ideas into realities, by lending technically feasible solutions with economic and other organizational considerations within a specified time frame.

The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. Energy Audit provides a “bench-mark” (Reference point) for managing energy in the organization and provides the basis for planning a more effective use of energy throughout the organization.

#### **18.1.4 TYPE OF ENERGY AUDIT**

The type of Energy Audit to be performed depends on:

- Function and type of industry / institute
- Depth to which final audit is needed, and
- Potential and magnitude of cost reduction desired

Thus, Energy Audit can be classified into the following two types.

- Preliminary Audit
- Detailed Audit

##### **18.1.4.1 PRELIMINARY ENERGY AUDIT METHODOLOGY**

Preliminary energy audit is a relatively quick exercise to:

- Establish energy consumption in the organization.
- Estimate the scope for saving.
- Identify the most likely (and the easiest areas for attention).
- Identify immediate (especially no-/low-cost) improvements/ savings.
- Set a 'reference point'.
- Identify areas for more detailed study/measurement.
- Preliminary energy audit uses existing, or easily obtained data

##### **18.1.4.2 DETAILED ENERGY AUDIT METHODOLOGY**

A comprehensive audit provides a detailed energy project implementation plan for a facility, since it evaluates all major energy using systems. This type of audit offers the most accurate estimate of energy savings and cost. It considers the interactive effects of all projects, accounts for the energy use of all major equipment, and includes detailed energy cost saving calculations and project cost. In a comprehensive audit, one of the key elements is the energy balance. This is based on an inventory of energy using systems, assumptions of current operating conditions and calculations of energy use. This estimated use is then compared to utility bill charges. Detailed energy auditing is carried out in three phases: Phase I, II and III.



## ***GREEN AUDIT REPORT, SLIET, LONGOWAL***

- Phase I - Pre-Audit Phase.
- Phase II - Audit Phase.
- Phase III – Post Audit Phase

### **18.1.5 OBJECTIVES OF ENERGY AUDIT**

The energy audit provides the vital information base for overall energy conservation programme covering essentially energy utilization analysis and evaluation of energy conservation measures.

- Assessing present pattern of energy consumption in different cost centres of operations
- Relating energy inputs and production output
- Identifying potential areas of thermal and electrical energy economy.
- Highlighting wastage in major areas
- Fixing of energy saving potential targets for individual cost centres
- Implementation of measures of energy conservation and realization of savings.

## 18.2 ELECTRICAL POWER CONSUMPTION IN SLIET

### 18.2.1 POWER CONSUMPTION

At present, a single bulk supply electricity connection is provided by PSPCL (Punjab State Power Corporation Ltd.) through 11 KV independent feeder for the institute vide PSPCL memo no. 5558/SO/PRC/LD/PC-257 dated 20.11.1997. There are 4 x 500 KVA + 3 x 250KVA distribution transformer installed at various locations in the Institute for all Academic, Administration and Hostel buildings. The electricity connection details are as follows.

Consumer Account No.	3007509804
Connected load:	2127 KW sanction by memo no. 55273 dated 29.10.2002
Sanctioned load contract demand:	2364 KVA

In case of power failure from PSPCL, 2 x 500 KVA Diesel Generator set are available to meet out emergency power needs. Further, the residential area is directly fed by PSPCL through their own distribution system.

#### 11 KV INDEPENDENT FEEDER



SANCTION LOAD OF INSTITUTE

Copy of Memo No. 2507 dated 29.12.2003 from Mr. Commercial, Faridkot District, Punjab to Mr. Dy. Commr. Faridkot, Punjab.

Subject - Sanction of 11 KV supply extension to Institute managed by Director, SLIET, Longowal, Dist. of Engineering & Technology, Longowal. Memo No. 2507.

Ref - Memo No. 2507 dated 27.12.03 and 21.12.03 on the above cited subject.

The matter has been considered by the competent authority and it has been decided to give the extension in sanctioned load without increase in sanctioned connected load 11 KV supply voltage as per details given below :-

1. Connected load .	2127.00 KW.
2. 11 KV capacity/contract demand.	2000 KVA
3. Supply voltage.	11 KV

The sanctioned work forms alongwith consumer name after retaining one copy in this office is forwarded to your office for taking further necessary action in the matter and another copy of the sanctioned work form is being forwarded to Dy. Commr. Faridkot, Punjab for filing purpose.

This is done with the approval of Mr. Commercial, Faridkot.

Yours faithfully,  
Mr. Dy. Commr. Faridkot.

Mr. Dy. Commr. Faridkot, Faridkot, Punjab.

Copy of this memo is forwarded to Mr. Dy. Commr. Faridkot for information and necessary action.

Yours faithfully,  
Mr. Dy. Commr. Faridkot.

Mr. Dy. Commr. Faridkot, Faridkot, Punjab.

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

Bill analysis for consumer SLIET, Longowal vide account number 3007509804 is presented in Table 2.1 for the year 2022-23.

**TABLE 20: ELECTRIC POWER CONSUMPTION IN FY 2022-23**

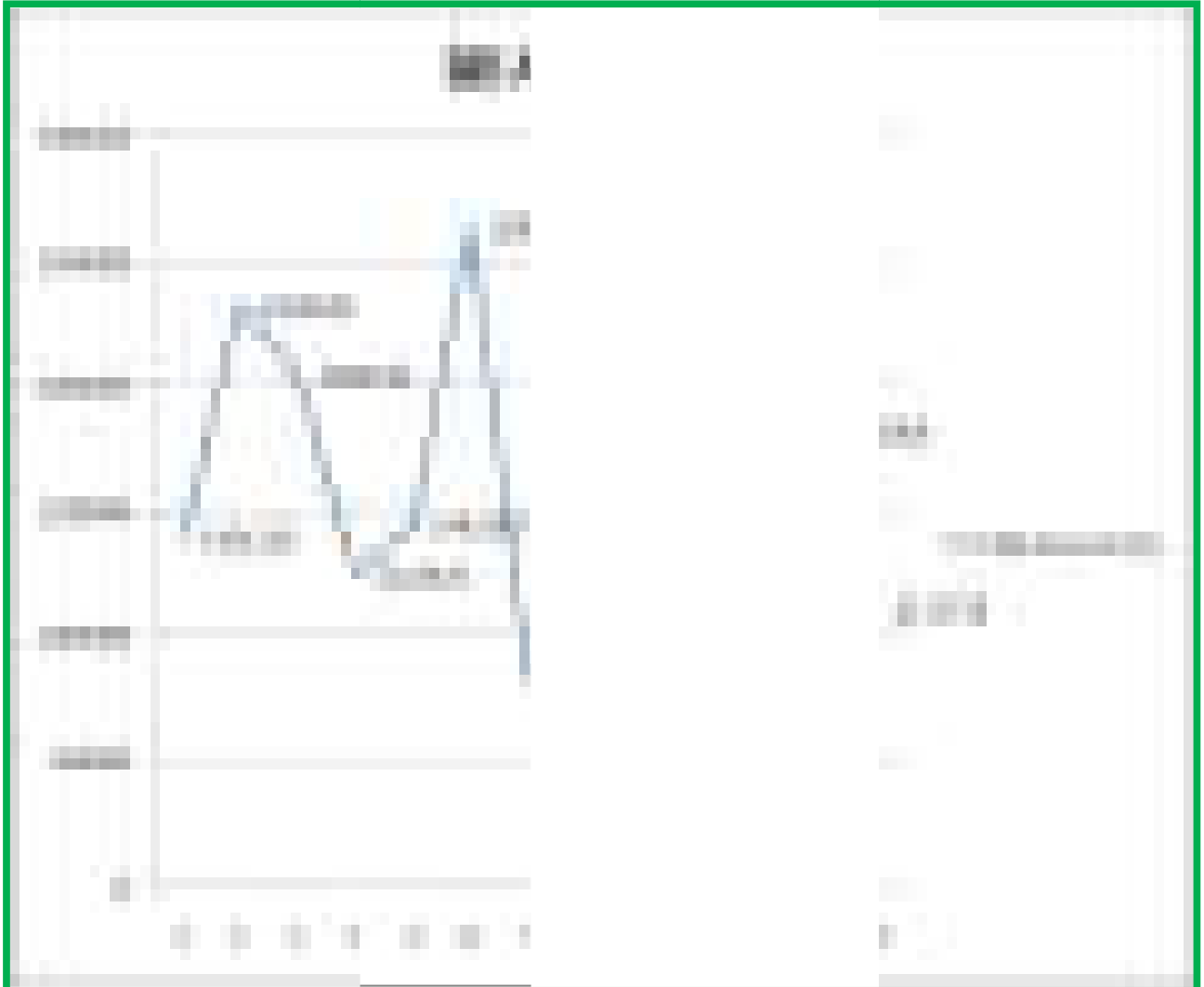
Period	Kvah Unit	Energy Charges (Rs.)	Fixed Charges (Rs.)	Power Factor	Bill Amount (Rs.)	Unit/Rate (Rs.) including all aspect
17.03.2022 18.04.2022	144280	1040048	248736	0.90	1391210	9.6
18.04.2022 18.05.2022	265080	1757480	233190	0.98	2326010	8.8
18.05.2022 17.06.2022	228900	1517607	233190	0.97	2046740	8.9
17.06.2022 19.07.2022	122400	811711	248736	0.95	1243920	10.2
19.07.2022 17.08.2022	151770	1006235	225417	0.94	1442350	9.5
17.08.2022 19.09.2022	302400	2004713	256509	0.95	2641700	8.7
19.09.2022 30.09.2022	94530	626933	85503	0.96	832430	8.8
30.09.2022 18.10.2022	113400	751643	139914	0.96	1043150	9.2
18.10.2022 18.11.2022	133500	885304	240963	0.95	1320220	9.9
18.11.2022 20.12.2022	176220	1168339	248736	0.96	1659070	9.4
20.12.2022 19.01.2023	213480	1415372	233190	0.98	1928670	9.0
19.01.2023 20.02.2023	197610	1310154	248736	0.97	1825000	9.2
20.02.2023 21.03.2023	109080	723200	225417	0.97	1113730	10.2
<b>Average</b>	<b>173281</b>	<b>1155288</b>	<b>220634</b>	<b>0.96</b>	<b>1601092</b>	<b>9.3</b>

**18.2.2 ELECTRICITY BILL**

The average electricity bill for the year 2022-23 is Rs.1601092/-. The graphs of the kvah, power factor, bill amount for the year 2022-23 are presented below.



**FIG. 26 ELECTRIC POWER CONSUMPTION IN FY 2022-23**



**FIG. 27 MONTHLY BILLED AMOUNT IN FY 2022-23**

From the above analysis, following are the observations.

- Monthly average energy consumption is 173281 kvah
- Monthly average power factor is 0.96.
- Monthly average electricity bill is Rs.1601092/-
- Avg. unit rate cost to SLIET is 9.3 Rs./kvah

## **18.3 METHODS APPLIED FOR ELECTRICAL POWER CONSERVATION**

### **18.3.1 REACTIVE ENERGY MANAGEMENT**

The objective of Reactive Energy management is improvement of Power Factor, or “Power Factor Correction”. The principle of “Power Factor Correction” (or “Reactive Energy compensation”) is to generate the reactive power close to the load, so that the supply source could be relieved when connected with the loads. Capacitors banks are most used in electrical network to supply reactive energy.

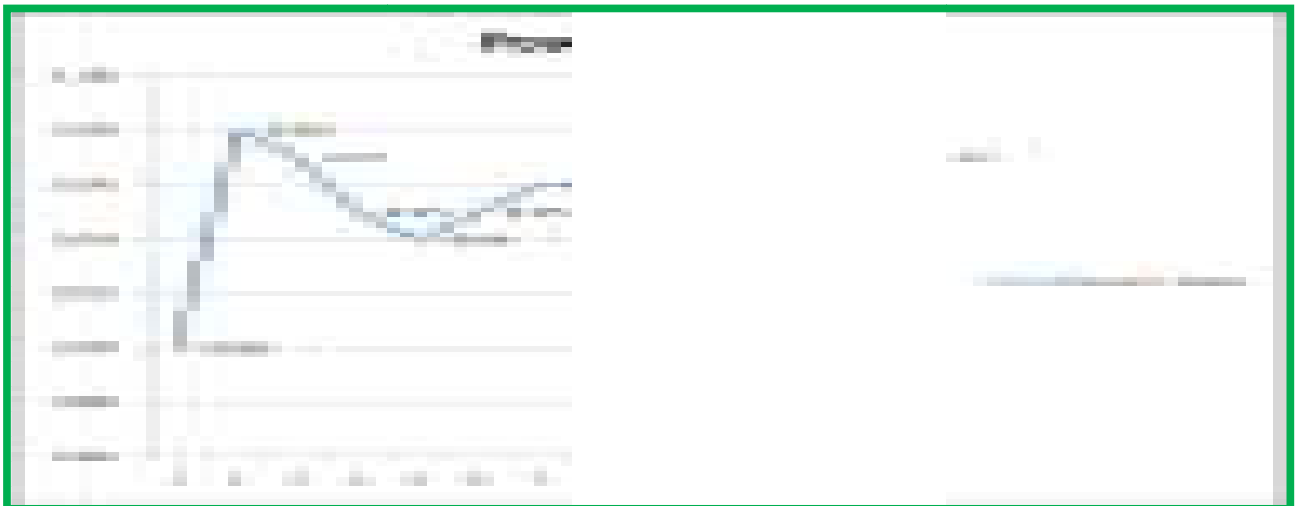
There are 4 automatic power factor correction controller relay (APFCR) panels installed in indoor 11 KV sub-station at Electrical Sub-station I and II. Out of four two are of capacity 2 x 160 KVAR installed in the year of 2009-10 at ESS-I and ESS-II and 2 x 200 KVAR APFCR panels installed in the year of 2014-15 and 2020-21 respectively. Apart from this, individual and dedicated capacitor bank has been installed on the submersible pump set, non-clog pump set and street light feeder panels. Hence, all these installations have improved the power factor of the Institute. Due to improvement in power factor, following are the major benefits:

- i. Reduced kVA (Maximum demand) charges in utility bill. Utility power bills are typically reduced by 5 % to 10 %
- ii. Reduced distribution losses within the system network.
- iii. Better voltage is available at distribution network. Hence there is improved performance of the motors and other electrical gadgets.
- iv. A high-power factor eliminates excess demand charges imposed when operating with a low power factor.
- v. Investment in system facilities such as transformers, cables, switchgears etc. for delivering load is reduced.
- vi. Due to improved power factor, the life of all the electrical gadgets is enhanced.
- vii. Availability of more energy at utilities ensures in the reduction of total CO<sub>2</sub> emissions for a sustainable future.



**FIG. 28: APFCR PANEL AT ESS-I AND ESS-II**

Automatic Power Factor Correction Relay (APFCR) is installed at various locations which resulted to maintain power factor of the Institute. The power factor is always more than 0.95 as in fig. 18.3.1.2



**FIG. 29 POWER FACTOR TREND IN FY 2022-23**



### **18.3.2 REPLACEMENT OF CONVENTIONAL LIGHTING SYSTEM WITH LEDS**

As per policy adopted in the Institute 2012 and vide circular no. F. No. 25(24)/E. Coord/2017 dated 04.08.2017 and F.No.917/05/LED/HRD-ID/2017 dated 03.11.2017 of Ministry of Finance (**Please refer Annexure A and B**) i.e. to replace the conventional lighting system by LED lighting. A large no. of conventional lighting has been replaced into LED in academic/residential area and the rest are in progress.

#### **A. STREETLIGHTS**

There are 451 street light pole having HPSV/MH Luminaries having 200/150 watt. All these conventional light fixtures have been replaced with LED light fixtures of 45 watt each in the whole campus including residential area also.

#### **B. TUBELIGHTS**

Apart from this, there are 6719 nos. fluorescent single and twin lights installed in the various academic and hostel buildings of the Institute. Out of this, 3455 nos. have been replaced with LED luminaries up to March 2023 i.e. 51.42%. Further, there is planning to convert all the remaining lights fixture into LED in future (in phase manner) to save the power. A detailed analysis of the SLIET is presented below:

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**Table 21 Replacement of Conventional Lighting System with LED Up to F/Y 2022-23**

Area	Type	ReplacedQty.	On Qty.	Wattage	Daily OpHr	Load (KW)	MthlyKWh	Replacementt with	ReplacedQty	New Load(KW)	Mthly Kwh	SavingKWh	Unit Rate(Rs.)	Saving inRs. per month	Saving inRs. per Annum	Investmentin Rs.	Paybackperiod in years	Remarks
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Street Light	HPSV Light 200 W	451	451	200	10	90	27060	Led fixture of 45 Watt	451	20	6089	20972	8	167772	2013264	1104950	0.55	T o t a l q t y 4 5 1
Hostel System (BH 1,2,5,6 and9)	Fluore scent Light	791	468	55	8	44	10441	Led fixture of 18 Watt	791	14	3417	7024	8	56193	674312	162155	0.24	
Hostel System (BH 3,4,7a nd8)		830	830	55	8	46	10956	Led fixture of 18 Watt	830	15	3586	7370	8	58963	707558	170150	0.24	
Acade mic Deptt.		666	666	55	8	37	8791	Led fixture of 18 Watt	666	12	2877	5914	8	47313	567752	136530	0.24	
Hostel System (GH)		410	410	55	8	23	5412	Led fixture of 12 Watt	410	5	1181	4231	8	33850	406195	427220	1.05	

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**Table 22 Replacement of conventional lighting system with LED till FY 2022-23**

Area	Type	Replaced	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacem	Replaced	New	Mthly Kwh	Saving KWh	Unit Rate	Saving in Rs.per	Saving in Rs.per	Investment inRs.	Payback period in	Remarks		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S		
						Dx	Gx			I x	K x F x	H - L		M x N	O x 12	J x rate of	Q / P			
Smart Class Rooms Hall 4,6,8	Fluorescent Light	177	177	110	8	19	4673	Recess mounted grid ceiling led light 2	177	7	1614	3059	8	24468	293622	556842	1.90			
Sciences Block, M 310 ME, E 329																				
EIE, LS 5 CSE, LC 3 FT/Chem, Digital Classroom ECE Phase - I																				
LCF 4																				
Chem, LCF land5/																				
FT, HS 1,5,3 Science, LC 6 CSE, E 333 ECE, LM 06 ME Phase - II																				
Labs & offices CSE Labs, Admn. Office, S&P, M-210, Accounts Department, Physics computational lab, IQAC office			340	340	110	8	37		8976		340	13	3101	5875	8	47002	564019	1069640	1.90	
Admn. Department, RAC Lab, Welding, Metallurgy lab, Director office, committee room, computational lab of EIE, TEQIP Lab, land2, HS-2 CSE Library and various labs			164	164	110	8	18		4330		164	6	1496	2834	8	22671	272056	442800	1.63	
Director office, committee room, computational lab of EIE, TEQIP Lab 1&2, HS-2 CSE Library & various labs			77	77	55	8	4		1016		77	3	702	314	8	2513.3	30159	207900	6.89	

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**Table 23 Replacement of Conventional Lighting System With LED**

Area	Type	ReplacedQty.	On Qty.	Wattage	Daily OpHr	Load (KW)	MthlyKWh	Replacementt with	ReplacedQty	New Load(KW)	Mthly Kwh	SavingKWh	Unit Rate(Rs.)	Saving inRs. per month	Saving inRs. per Annum	Investmentin Rs.	Payback period in	Remarks
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
						DxE / 1000	GxFx30 days			I x J / 1000	K x F x 30 days	H - L		M x N	O x 12 months	J x rate of item	Q / P	
Around academic and Hostel system	Fluorescent Light	205	205	55	8	11	2706	Led fixture of 18 Watt	205	2	590	2116	8	16925	203098	42025	.21	
														Total	5732035	4320212		

It is seen from the above table that there is approximately Rs. 57,32,035/- saving by the replacement conventional light fixture into LED fixture up to March 2023.



**FIG 30 LED FIXTURE (STREET LIGHT, ROAD-A NEAR H POLE)/ LED FIXTURE IN GIRLS HOSTELNO.1, FF (CORRIDOR) NEAR ROOM NO. 231**



**FIG- 31 LED FIXTURE IN ME ENTRANCE AND CENTRAL LIBRARY, FF (READING HALL)**



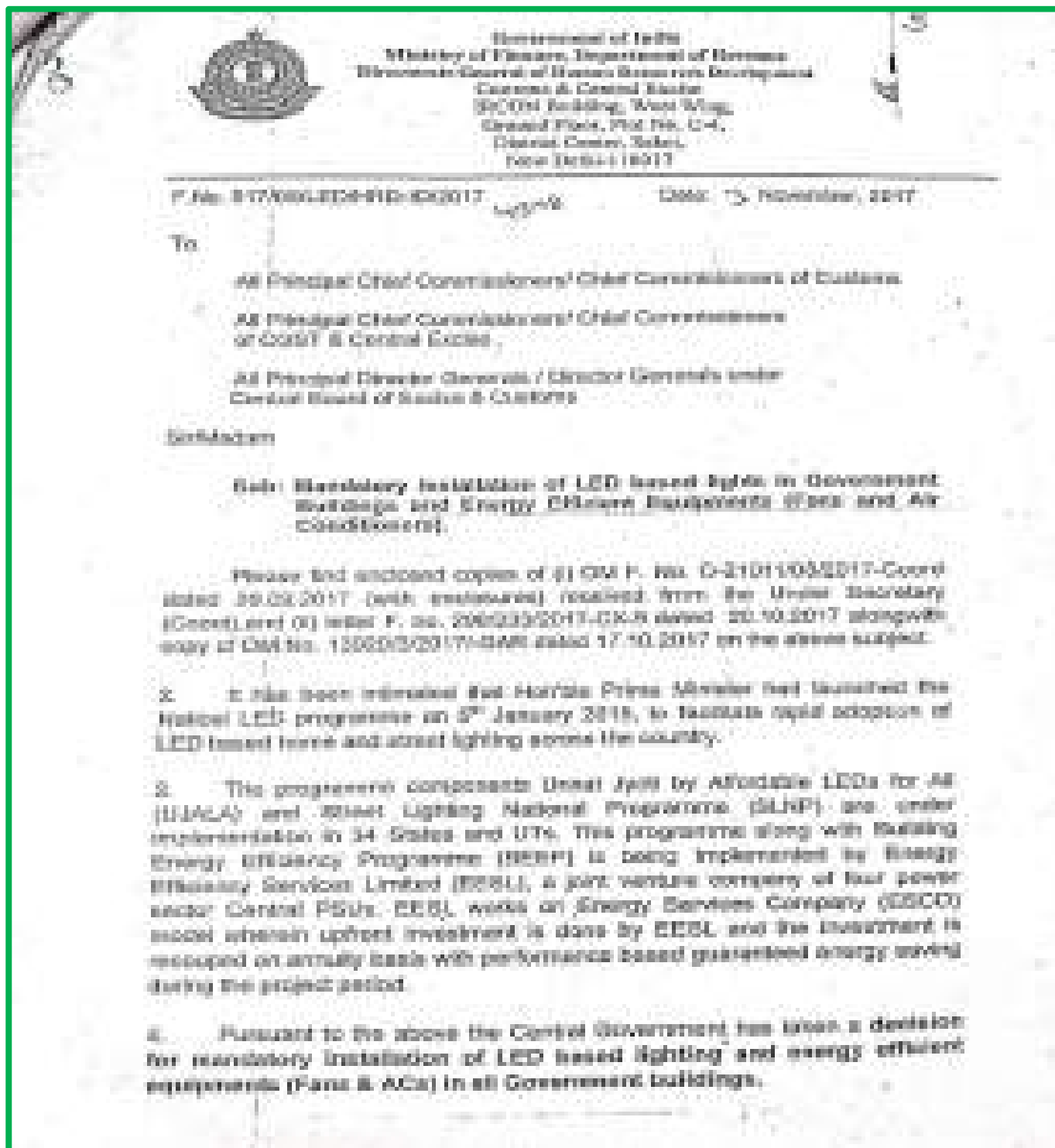
**FIG 32 LED FIXTURES IN SMART CLASSROOMS (CSE, SOFTWARE ENGINEERING AND PROGRAMMING LAB, FF) / SMART CLASSROOMS (SCIENCE HALL 4, FF)**



**FIG 33 LED FIXTURES IN SMART CLASSROOMS (SCIENCE HALL 4, TF)**



**FIG 34 LED FIXTURES IN SMART CLASSROOMS (LCF I & II FOOD BLOCK)**





**GREEN AUDIT REPORT, SLIET, LONGOWAL**

D. In view of the above, it is requested to initiate action in terms of O.M. No. 2524/HR/Cooperation dated 04.08.2017 and Background Note issued vide letter No. 2544/HR/Cooperation dated 27.8.2017 (copies enclosed) for installation/conversion of LED based lights & energy efficient equipments and also ensure that the existing non-LED based lightings are replaced with LED lights in order to save energy and cut down on the electricity consumption in all Govt. buildings (Offices & Quarters) under your control. Model Energy Performance Agreement to be signed between the CLS&IT and EEEU, can be downloaded from EEEU's web-site ([http://www.environmentalaffairs.mil.in/officeofthechiefsecretary/HR/SP4\\_0.pdf](http://www.environmentalaffairs.mil.in/officeofthechiefsecretary/HR/SP4_0.pdf)).

E. As per the O.M. No. 13005/HR/7A-2400 dated 17.10.2017, progress of this project will be monitored by the Honorous Secretary on fortnight basis, accordingly an action taken report on fortnight basis has to be submitted to the Military for updating the status.

F. In view of the above, it is requested to take appropriate necessary action on priority basis and submit the fortnightly reports in the format given below to this office. Reports for the 1<sup>st</sup> Fortnight should reach by 10<sup>th</sup> of the month and for the 2<sup>nd</sup> fortnight, report should reach by 20<sup>th</sup> of the corresponding month. Reports may also be sent by e-mail at [eeeu@environment.mil.in](mailto:eeeu@environment.mil.in).

**[FOURTH QUARTER REPORT]**

Name of the Zone/Component: \_\_\_\_\_

Report for the fortnight ending: \_\_\_\_\_

**1.a) Report regarding installation of LED based lighting**

Number of the LED-Lights installed		Capacity of the LED-Lights installed (in Watts)		Approx. energy saved (in Watts)		Number of equipments entered	
During the fortnight	Up to the fortnight	During the fortnight	Up to the fortnight	During the fortnight	Up to the fortnight	During the fortnight	Up to the fortnight
1	2	3	4	5	6	7	8

1.b) Status of completion of the project (Pending/Completed) \_\_\_\_\_

**1.c) Action taken report regarding conversion of Energy Efficient Equipments (Green and Air Conditioners)**

Number of energy efficient equipments converted		Capacity of the air-conditioning equipment converted (in Tons)		Approx. energy saved (in Watts)		Number of equipments entered	
During the fortnight	Up to the fortnight	During the fortnight	Up to the fortnight	During the fortnight	Up to the fortnight	During the fortnight	Up to the fortnight
1	2	3	4	5	6	7	8

1.d) Status of completion of the project (Pending/Completed) \_\_\_\_\_

Name: As Above

Your faithfully,  
 M. J. S. D. D.  
 (MANOJ KUMAR)  
 Joint Director (EEU)  
 No. 1035-2000017

F.No. 25(24)E.Coord/2017  
Ministry of Finance  
Department of Expenditure  
(E.Coord)

North Block, New Delhi  
Date: 01 August, 2017

**OFFICE MEMORANDUM**

**Subject: Economy Measures - Mandatory installation of LED based lighting in all Government buildings - regarding**

The Hon'ble Prime Minister on 08 January 2016 launched the National LED programme to facilitate rapid adoption of LED based home and street lighting across the country. The programme components, Unnat Jyoti by Affordable LEDs for All (UJALA) and Street Lighting National Programme (SLNP) are under implementation in 24 States and UTs. This programme along with Building Energy Efficiency Programme (BEEEP) is being implemented by Energy Efficiency Services Limited (EESL), a joint venture company of four power sector Central PSUs. EESL, works on Energy Services Company (ESCO) model wherein upfront investment is done by EESL and the investment is recouped on annuity basis with performance based guaranteed energy saving during the project period.

2. Pursuant to the above the Central Government has taken a decision for mandatory installation of LED based lighting and energy efficient equipments (Fans & ACs) in all Government buildings.

3. Government buildings is a major source of energy consumption. Usage of LED based lightings and energy efficient equipments in Government buildings will lead to economy in expenditure and savings in the long run through reduction in energy consumed.

4. Keeping in view the economy in expenditure and savings that will ensue, all Ministries/Departments are requested to convert the existing lightings/equipments into LED based lightings and energy efficient equipments on priority utilizing the services of CPWD/EESL.

- 1 -



5. The model Agreement/Contract to be entered in to between the Client Ministry/Department and EEEL is enclosed for reference. The Client Ministry/Department and EEEL on mutual agreement can modify/amend the provisions of the Model Agreement/Contract to suit their specific requirements.

6. In respect of those Government buildings maintained by CPWD but where the electricity bill is borne/paid by the respective Ministries/Departments, CPWD (as third party) will countersign the agreement to provide comfort to the Ministry/Department as well as extending help for implementing the contract.

7. Action taken in this regard be reported to Ministry of Power and Department of Expenditure by 15.08.2017 for monitoring purposes.

  
Sh. Atharj  
Director

To

All Secretaries of Ministries/Departments

Copy to

1. Cabinet Secretary, Government of India
2. Prime Ministers' Office, South Block

### **18.3.3 ENERGY CONSERVATION BY OCCUPANCY SENSORS**

In the newly constructed building of EDP, the provision of 14 nos. occupancy sensors (motion sensor-based lightening) has been made in the washrooms. These sensors which are normally in open mode and the circuit of lights is not in operational mode. However, when there is human movement or motion the circuit gets closed and lights glow. Now, as and when no human movement/motion is there again lights goes off automatically due to occupancy sensor. In this way, electrical energy is saved.



**FIG 35 OCCUPANCY SENSOR INSTALLED IN THE WASHROOMS OF NEWLY CONSTRUCTED EDP BLOCK**

**18.3.4 REPLACEMENT OF OLD / NON-STAR RATED CEILING FANS WITH ENERGY EFFICIENT 5 STAR RATED CEILING FANS**

A policy has been adopted in 2012 i.e. to replace the non-efficient / star rated electrical gadgets into energy efficient / star rated electrical gadgets. At present there are 4315 ceiling fans installed in the various Academic/Hostel buildings of the Institute. As per policy of 2012, 1270 non-star rated ceiling fans have been replaced with energy efficient ceiling fans in Academic and hostel area. Further, there is emphasis to replace the old/non-working, non-star rated ceiling fans with energy efficient fans. Further, the copy of supply order of procurement energy efficient, star rated enclosed.



**FIG 36 ENERGY EFFICIENT 5 STAR RATED CEILING FAN**

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

<b>Table 24: Replacement of Old/Non-Star Rated Ceiling Fans with Energy Efficient 5 Star Rated Ceiling Fans</b>																	
Area	Type	Total Qty.	On Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement with	ReplacedQty	New Load(KW)	Mthly Kwh	SavingKWh	Unit Rate(Rs.)	Saving in Rs. Permonth	Saving inRs. Per Annum	Investmentin Rs.	Paybackperiod in
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
All academic and Hostel system	Non energy efficient ceiling fan	1270	1270	80	8	101.6	24384	Energy efficient 5 Star rated Fans 40 Watt	1270	50.8	12192	12192	8	97536	1170432	1841500	1.57
													<b>Total</b>	1170432	1841500		

It is seen from the above table that there is **Rs. 11,70,432/-** saving in energy consumption cost in a year with the replacement of Old/non star rated ceiling fans into Energy efficient 5 Star rated ceiling Fans.

GREEN AUDIT REPORT, SLIET, LONGOWAL



**MAST LABORATORY, INSTITUTES OF ENGINEERING & TECHNOLOGY**  
 LONGOWAL - 151013, DISTT. BANGALUR, PUNJAB, INDIA  
 ESTABLISHED BY GOVT. OF INDIA  
 (MINISTRY OF EDUCATION)  
 (REG. NO. SC/72-200000)  
 (11/04/2002)

**Form No. BAST/FORM/SLIET/000001/2017-18** Date: 11/07/2017

**Dr. Gupta Shreshth Kumar**  
 Head, BAST/SLIET/Longowal  
 Phone: 919815110117

**Statement: Supply of Electrical Material for Annual Repair & Maintenance of SLIET, Longowal for the year 2017-18**

Kindly refer to my order dated no. BAST/FORM/SLIET/000001/2017-18 dated 02/07/2017. You are requested to supply the material specified in your attached form.

Sl. No.	DESCRIPTION OF ITEM	UNIT	QTY	RATE	AMOUNT
1	100W Fluorescent Tube 5 FT. 5000 Voltage (100W/5000V) 1000 Nos.	No.	1000	150.00	150000.00
2	100W Fluorescent Tube 5 FT. 5000 Voltage (100W/5000V) 1000 Nos.	No.	1000	150.00	150000.00
3	100W Fluorescent Tube 5 FT. 5000 Voltage (100W/5000V) 1000 Nos.	No.	1000	150.00	150000.00
4	100W Fluorescent Tube 5 FT. 5000 Voltage (100W/5000V) 1000 Nos.	No.	1000	150.00	150000.00
5	100W Fluorescent Tube 5 FT. 5000 Voltage (100W/5000V) 1000 Nos.	No.	1000	150.00	150000.00
6	100W Fluorescent Tube 5 FT. 5000 Voltage (100W/5000V) 1000 Nos.	No.	1000	150.00	150000.00
			<b>TOTAL</b>	<b>600000.00</b>	<b>600000.00</b>

Signature  
Date  
Name of Head  
Name of Institute  
Address

Form No. BAST/FORM/SLIET/000001/2017-18

Kindly refer to my order dated no. BAST/FORM/SLIET/000001/2017-18 dated 02/07/2017. You are requested to supply the material specified in your attached form.

Signature of Head

Form No. BAST/FORM/SLIET/000001/2017-18

Kindly refer to my order dated no. BAST/FORM/SLIET/000001/2017-18 dated 02/07/2017. You are requested to supply the material specified in your attached form.

Signature of Head

Date: 11/07/2017

Signature of Head

**GREEN AUDIT REPORT, SLIET, LONGOWAL**



**SHRI LAKSHMI INSTITUTE OF ENGINEERING & TECHNOLOGY  
LONGOWAL - DISTT. BANGLORE, PUNJAB, INDIA  
(Established by Govt. of Punjab)  
Approved University  
(U.P. No. 2320/AS/2003  
T.I. (Longowal))**

Date: 22/11/2009

Sl. No. 2320/AS/2003/T.I. (Longowal)

Mrs. Sandhya Kataria,  
Officer in Charge,  
Central Board, Longowal - 148001

**Subject:** Study of Electrical Material for Various Types & Applications in SLIET, Longowal for the P.T. 2009-10.

The following is the bill sent to SLIET/Longowal/2320/AS/2003/T.I. (Longowal) for the purchase of various electrical material for the purpose mentioned above.

Sl. No.	Description of Material	Unit	Rate	Quantity	Amount
1.	1000 Nos. 1/2" Dia. Aluminum Rod (for use in various types of electrical applications)	1000 Nos.	2400.00		2400.00
2.	1000 Nos. 1/2" Dia. Aluminum Rod (for use in various types of electrical applications)	1000 Nos.	2400.00		2400.00
3.	1000 Nos. 1/2" Dia. Aluminum Rod (for use in various types of electrical applications)	1000 Nos.	2400.00		2400.00
				<b>Total No.</b>	<b>7200.00</b>

**Notes:**  
1. The above bill is for the purpose mentioned above.  
2. The above bill is for the purpose mentioned above.  
3. The above bill is for the purpose mentioned above.  
4. The above bill is for the purpose mentioned above.  
5. The above bill is for the purpose mentioned above.

Sl. No. 2320/AS/2003/T.I. (Longowal)

For the purpose mentioned above, please  
1. 2320/AS/2003/T.I. (Longowal)  
2. 2320/AS/2003/T.I. (Longowal)

*[Signature]*  
For the purpose mentioned above

*[Signature]*  
For the purpose mentioned above



## GREEN AUDIT REPORT, SLIET, LONGOWAL

### **18.3.5 REPLACEMENT OF AIR CONDITIONING SYSTEM WITH STAR RATED**

A decision has been taken in the 11<sup>th</sup> BWC held on dated 30.08.2019 vide item no. 11.12 (A) regarding replacement of Electromechanical type (after effective life span), non star rated AC's installed on the various locations in the Institute in a phased manner with energy efficient star rated AC. Presently, there are 564 AC's installed in the Institute of various types like Window, High wall and Tower AC. The capacity of these AC's varies from 1 TON to 3.5 TON. Apart from this, there is two central AC plant available in CSE and Main Auditorium of the Institute of capacity 121 Ton and 140 Ton (156 HP) respectively installed in the year of 2011 and 2016. Out of 564 AC's, 432 AC's are energy efficient, star rated and having eco-friendly refrigerant. The copy of supply order on GeM enclosed



**FIG 37 STAR RATED AIR CONDITIONING IN SMART CLASSROOMS (ME, M-117, GF)/ SMARTCLASSROOMS (HALL NO. 3, TF)**



**FIG. 38: STAR RATED AIR CONDITIONING IN SMART CLASSROOMS (FOOD BLOCK, LCF-I)**

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

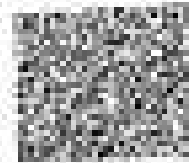
<b>Table-25 Replacement of Air conditioning system with Star rated Air Conditioning as per BEE norms</b>																	
Area	Type	Total Qty.	Qty.	Wattage	Daily Op Hr	Load (KW)	Mthly KWh	Replacement t with	Replaced Qty.	New Load (KW)	Mthly Kwh	Saving KWh	Unit Rate (Rs.)	Saving in Rs. per month	Saving in Rs. per Annum	Investment (Rs.)	Payback period in months
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
						DxE / 1000	GxFx 30			I x J / 1000	K x F x 30days	H - L		M x N	O x 12 months	J x rate of item	Q / P
Guest House	W/High wall AC non energy efficient 1.5 T	10	10	1900	3	19	1710	Star rated AC 1300 Watt	10	13.0	1170	540	8	4320.00	51840.00	325000	6.27
CAD CAM Lab	W AC non energy efficient 1.5 T	6	6	1900	6	11.4	2052	Star rated AC 1300 Watt	6	7.80	1404	648	8	5184.00	62208.00	195000	3.13
HOD CSE	W AC non energy efficient 1.5 T	1	1	1900	6	1.9	342	Star rated AC 1300 Watt	1	1.30	234	108	8	864.00	10368.00	32500	3.13
Numerical Lab	W AC non energy efficient 1.5 T	4	4	1900	6	7.6	1368	Star rated AC 1300 Watt	4	5.20	936	432	8	3456.00	41472.00	130000	3.13
Estate Officer, Dean (Academic), Dean (P&D), Registrar, HOD (Chemical), HOD (CSE)	W AC non energy efficient 1.5 T	6	6	1900	6	11.4	2052	Star rated AC 1300 Watt	6	7.80	1404	648	8	5184.00	62208.00	195000	3.13
														<b>Total</b>	<b>228096.00</b>	<b>877500</b>	

It is seen from the above table that there is approximately **Rs. 2,28,096/-** saving in energy consume cost in a year with the Replacement of Air conditioning system to Star rated Air Conditioning as per BEE norms. Since 2012, a policy decision has been taken to procure new AC's/other Electrical Gadgets like water heaters, ceiling fans etc. having star rating (energy efficient) as per BEE norms. Further, the AC's are being procured having eco-friendly refrigerant since 2012.

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**Table-26 List of Star Rated Conditioning System as per BEE Norms**

Area	Type	Tonnage Capacity	Total Qty.	Wattage	DailyOp Hr Avg	Load (KW)	Mthly KWh	Remarks
ECE/EIE Block	WindowAC	1.5	24	1500	4	36	4320	
	Split AC	1.5	10	1500	4	15	1800	
CSE Block	WindowAC	1.5	8	1500	4	12	1440	
	Split AC	1.5	20	1500	4	30	3600	
Science Block	WindowAC	1.5	36	1500	4	54	6480	
	Split AC	1.5	9	1500	4	13.5	1620	
Food Block	WindowAC	1.5	21	1500	4	31.5	3780	
	Split AC	1.5	4	1500	4	6	720	
ME Block	WindowAC	1.5	42	1500	4	63	7560	
	Split AC	1.5	17	1500	4	25.5	3060	
Kendriya Vidyalaya	WindowAC	1.5	3	1500	4	4.5	540	
	Split AC	1.5	2	1500	4	3	360	
SET office	WindowAC	1	9	1000	4	9	1080	
Admn Block	WindowAC	1.5	50	1500	4	75	9000	
	Split AC	1.5	2	1500	4	3	360	
Guest House	WindowAC	1.5	14	1500	3	21	1890	
	Split AC	1.5	12	1500	3	18	1620	
Library GF	WindowAC	1.5	1	1500	4	1.5	180	
	Split AC	1.5	8	1500	4	12	1440	
EDP FF (Library)	WindowAC	1.5	5	1500	4	7.5	900	
	Split AC	1.5	15	1500	4	22.5	2700	
Estate Office	WindowAC	1.5	4	1500	4	6	720	
Transit Accommodation	Window AC	1.5	7	1500	3	10.5	945	
Workshop	Window AC	1.5	1	1500	4	1.5	180	
	Split AC	1.5	2	1500	4	3	360	
Faculty Club	Window AC	1.5	2	1500	1	3	90	
Hostel System	Window AC	1.5	9	1500	4	13.5	1620	
JC Bose Hall	Split AC	1.5	10	1500	1	15	450	
Main Auditorium	HVAC System	156	1	116376	1	116.376	3491.28	
AC in Faculty offices	Window AC	1	77	1000	1	77	2310	
	Split AC	1	7	1000	4	7	840	
<b>Total</b>			<b>432</b>					



## Invoice

**SELLER DETAILS:**

Address: Market Trader  
 Shop no. 4, Chander market, Camp 3, Bafra, Haryana  
 151001  
 Email: shankarshankar@gmail.com  
 Contact No: 9800185072  
 GSTIN: 06AHTK1234G1Z

GeM Invoice No: 0609-07-00111  
 Issue Invoice Date: 14-JUL-2020

Order No: 0609-07-001110010000  
 Order Date: 09-JUL-2020

[Click here to download order confirmation](#)

**BUYER DETAILS:**

Category Name: Reg Goods  
 Address: 0001 Longowal Institute of Engineering & Technology,  
 Longowal HARYANA  
 PIN/STATE: 151001  
 Contact No: 9800185072

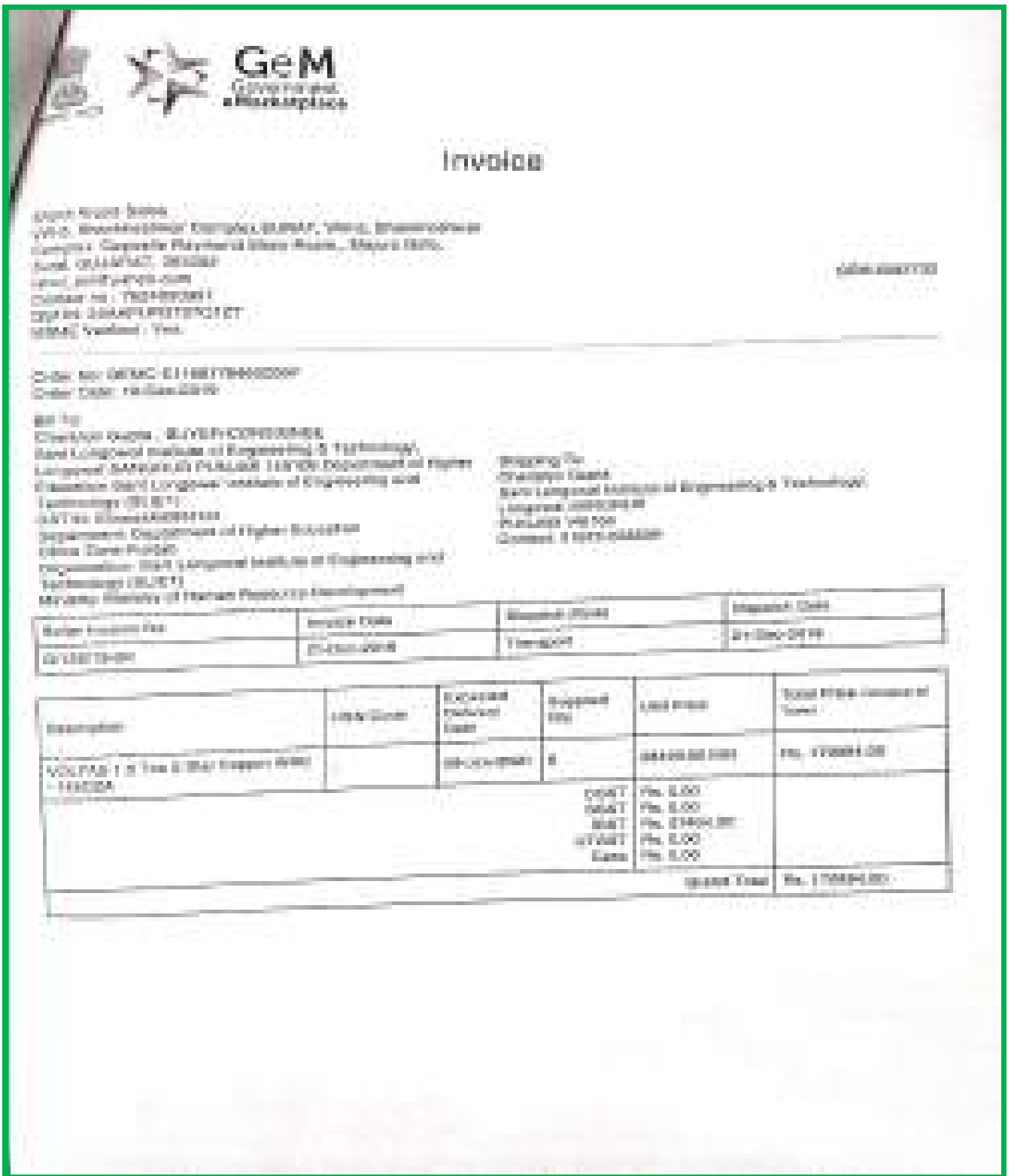
**BILL TO:**

Buyer Name: Reg Buyer - 0609-07-001110010000  
 Address: 0001 Longowal Institute of Engineering & Technology,  
 Longowal HARYANA PIN/STATE: 151001 Department of Higher  
 Education 0001 Longowal Institute of Engineering and  
 Technology (SLIET)  
 GSTIN: 06AHTK1234G1Z  
 Department: Department of Higher Education  
 Office: Longowal  
 Organization: 0001 Longowal Institute of Engineering and  
 Technology (SLIET)  
 Ministry: Ministry of Human Resource Development

Buyer Tax Invoice Number	Buyer Tax Invoice Date	Payment Mode	Payment Date
2021124	14-JUL-2020	Normal	14-JUL-2020

Description	HSN Code	Expected Delivery Date	Quantity	Unit Price	Total Price (quantity x unit price)
LL000 - 18 Ton / 4000kwhrs Power PC 0-000		01-Aug-2020	01	34000.00 INR	Rs. 34000.00
			CGST	Rs. 0.00	
			SGST	Rs. 0.00	
			IGST	Rs. 70820.120	
			NTGST	Rs. 0.00	
			Grand	Rs. 0.00	
			<b>Grand Total</b>		<b>Rs. 104820.120</b>

**GREEN AUDIT REPORT, SLIET, LONGOWAL**



**GREEN AUDIT REPORT, SLIET, LONGOWAL**



**Invoice**

**SELLER DETAILS:**

Address: **GALAXY DIGITAL**  
 E-5/1, Ajay tower, Arera commercial complex bittan market,  
 opp habibganj police station, Bhopal, MADHYA PRADESH,  
 462016  
 Email Id: galaxy.bp14@gmail.com  
 Contact No : 09981949980  
 GSTIN: 23AAQPT4171P1ZX

GeM Invoice No: GEM-23522472  
 GeM Invoice Date: 01-Oct-2022

Order No: GEMC-511687772913902  
 Order Date: 23-Sep-2022

[Click here to download seller invoice](#)

**SHIPPING TO:**

Consignee Name: Raj Kumar  
 Address: Sant Longowal Institute of Engineering & Technology,  
 Longowal SANGRUR  
 PUNJAB 148106  
 Contact No: 01672-253339-  
 GSTIN: 03aaaa16685r1zz

**BILL TO:**

Buyer Name: Raj Kumar , BUYER-CONSIGNEE  
 Address: Sant Longowal Institute of Engineering & Technology,  
 Longowal SANGRUR PUNJAB 148106 Department of Higher  
 Education Sant Longowal Institute of Engineering and  
 Technology (SLIET)  
 GSTIN: 03aaaa16685r1zz  
 Department: Department of Higher Education  
 Office Zone: Punjab  
 Organisation: Sant Longowal Institute of Engineering and  
 Technology (SLIET)  
 Ministry: Ministry of Education

Seller Tax Invoice Number	Seller Tax Invoice Date	Dispatch Mode	Dispatch Date
97	30-Sep-2022	Transport	29-Sep-2022

Type of Transport	Tracking No	Tracking URL	Type & No of Packages
Road/Truck	GEMC-511687772913902	<a href="#">Click here for tracking</a>	Box 44

Place of Supply	Place of Supply State (State/UT Code)	Supply Type	Consignee GSTIN Number
Consignee Location	Punjab / 03	Inter-State	03aaaa16685r1zz

Product Description	HSN Code	Measurement Unit	Supplied Qty	Unit Price	Total Price Inclusive all Taxes
LLOYD 1.5 Ton AC - With 3 BEE Star Rating	8415	pieces	22	Rs. 35960.00	Rs. 791120.00
				Taxable Amount	Rs. 618062.50
				Tax Rate (%)	28
				IGST	Rs. 173057.50
				Cess Rate (%)	0.000
				Cess Amount	Rs. 0.00

### **18.3.6 SOLAR POWER PLANT INSTALLATION**

Solar energy is produced by the sun's light - photovoltaic energy offers many benefits that make it one of the most promising energy.

- Renewable,
- Inexhaustible,
- Non- polluting,
- Avoids global warming,
- Reduces use of fossil fuels,
- Reduces energy imports, v
- Contributes to sustainable development.

The Ministry of New and Renewable Energy (MNRE), Govt. of India has been promoting the aim to develop and deploy New and Renewable energy for supplementing the energy requirement of the country.

The Institute signed Power Purchase Agreement on 21.08.2020 with M/s Sukhbir Agro Energy Limited, New Delhi (Solar Energy Corporation of India Empanelled bidder for Punjab state under Zone-3) for the installation of 1 MW Rooftop solar power project on RESCO model. The work of installation initiated in the month of December 2020 and completed in March 2021. The term of project is 25 years and after that period the ownership of this plant will be of Institute as per Agreement. All the installation and repair/maintenance costs are on the part of SAEL as per PPA. The Institute is bound to pay Rs.3.33 per KWH to SAEL which is fixed for 25 years. The Solar power plant is made operational w.e.f. 03.05.2021 i.e. 1<sup>st</sup> joint meter reading taken by Institute and M/s SAEL is locked for billing purposes. There is around Rs. 6 Lacs saving in monthly Electricity bill as per today applicability of tariff of PSPCL.

**Table-27 Installed Capacity of Solar System (Building Wise)**

<b>PROJECTS</b>	<b>BUILDING NAME</b>	<b>CAPACITY</b>
Sant Longowal Institute of Engineering and Technology (SLIET-01)	Mechanical Block	340 KW
	Workshop 2	
Sant Longowal Institute of Engineering and Technology (SLIET-02)	Science Block	340 KW
	Chemical Block	
	Workshop 1	
Sant Longowal Institute of Engineering and Technology (SLIET-03)	Boys Hostel 2	320 KW
	Boys Hostel 4	
	Electronic Block	
<b>Total Capacity</b>		<b>1000 KW</b>



**GREEN AUDIT REPORT, SLIET, LONGOWAL**

The details of solar power plant energy generated and saving of last three months is as under:

**TABLE-28 Energy Generated by Solar Power Plant and Saving of Last Two Years**

Sr. No.	Month	Production of Solar Energy in kwh	Rate (Rs.)/Unit	Amount paid toSAEL (Rs.)	Avg. unit rate of PSPCL(Rs.)	Cost of Energy if purchase from PSPCL (Rs.)	Saving(Rs.)
A	B	C	D	E	F	G	H
						<b>C x F</b>	<b>G-E</b>
1	Apr-21	141026	3.33	469617	8.3	1170516	700899
2	May-21	127725	3.33	425324	8.3	1060118	634793
3	Jun-21	132631	3.33	441661	8.3	1100837	659176
4	Jul-21	126777	3.33	422167	8.3	1052249	630082
5	Aug-21	129932	3.33	432674	8.3	1078436	645762
6	Sep-21	117104	3.33	389956	8.3	971963	582007
7	Oct-21	124018	3.33	412980	8.3	1029349	616369
8	Nov-21	84230	3.33	280486	8.3	699109	418623
9	Dec-21	90869	3.33	302594	8.3	754213	451619
10	Jan-22	47506	3.33	158195	8.3	394300	236105
11	Feb-22	105371	3.33	350885	8.3	874579	523694
12	Mar-22	145159	3.33	483379	8.3	1204820	721440
13	Apr-22	149675	3.33	498418	8.3	1242303	743885
14	May-22	124214	3.33	413633	8.3	1030976	617344
15	Jun-22	138813	3.33	462247	8.3	1152148	689901
16	Jul-22	112861	3.33	375827	8.3	936746	560919
17	Aug-22	134489	3.33	447848	8.3	1116259	668410
18	Sep-22	122958	3.33	409450	8.3	1020551	611101
19	Oct-22	125190	3.33	416883	8.3	1039077	622194
20	Nov-22	90234	3.33	300479	8.3	748942	448463
21	Dec-22	86063	3.33	286590	8.3	714323	427733
22	Jan-23	73996	3.33	246407	8.3	614167	367760
23	Feb-23	110833	3.33	369074	8.3	919914	550840
24	Mar-23	140153	3.33	466709	8.3	1163270	696560
<b>Total saving in rupees for two years</b>							<b>13825680</b>
<b>Total saving in rupees per annum</b>							<b>6912840</b>
<b>Average saving in Rs. Per month</b>		<b>115909</b>		<b>385978</b>		<b>962049</b>	<b>576070</b>

Note: The unit rate of PSPCL (Rs. 8.3) includes energy charges, ED, IDF (it does not having the cost in lieu of Fix charges, meter rent, GST on meter rent.

## GREEN AUDIT REPORT, SLIET, LONGOWAL

Further, this solar power plant abated 1450 Ton CO<sub>2</sub> / annum. This plant is equivalent to planting of 23809 trees (Annexure A6).

The detail of Energy consumptions after the installation of Solar Power Plant.

**TABLE-29 Energy Consumption after the Installation of Solar Power Plant**

Period	kvahUnit	Energy Charges (Rs.)	Fixed Charges (Rs.)	Power Factor	Bill Amount (Rs.)	Unit/Rate(Rs.)
18.05.2021-31.05.2021	16980	110879	88923	0.90	235930	7.35
31.05.2021-16.06.2021	17100	113373	124368	0.90	281480	9.17
16.06.2021-19.07.2021	80580	534444	256509	0.90	930354	8.4
19.07.2021-17.08.2021	76770	508786	225417	0.90	863180	8.30
Average	47858	316871	173804	0.90	577736	8.29

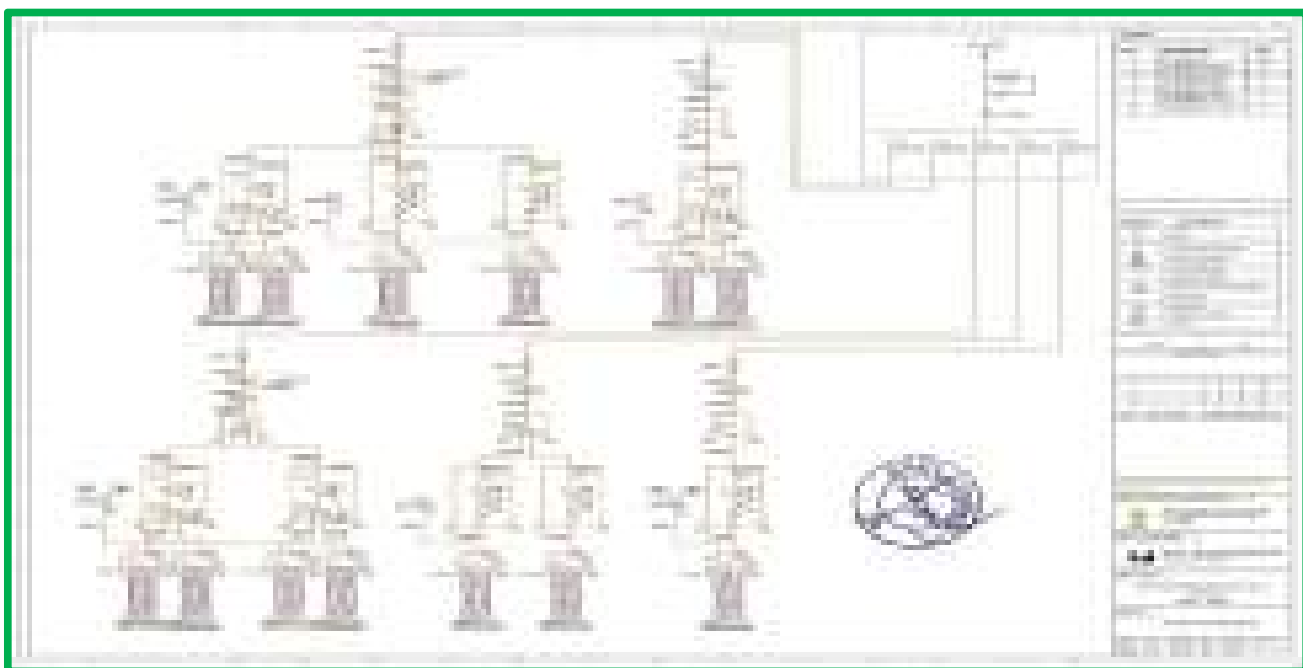
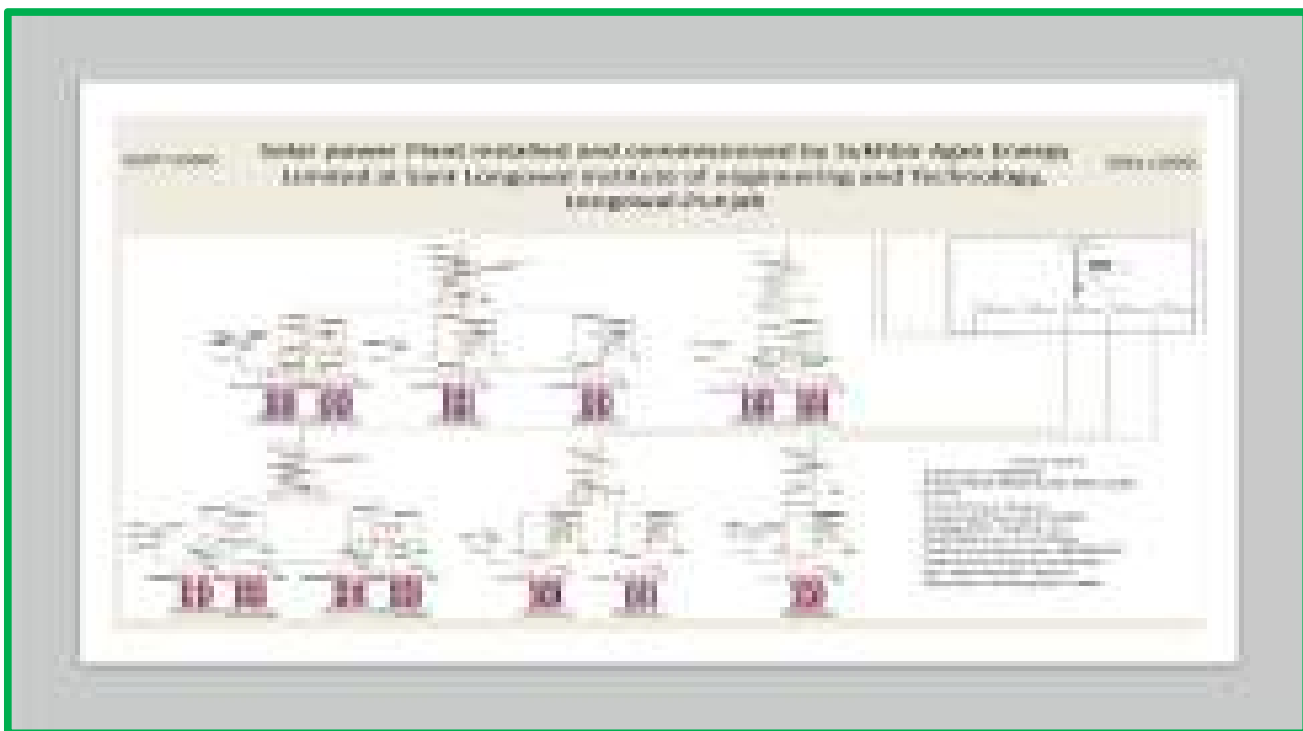
**Note:** It can be seen that after installation of PV solar power plant of capacity 1 MW, the average bill has been reduced by 53% i.e. from Rs. 12,43,211/- to Rs. 5,77,736/-.



**FIG. 39 SOLAR PANEL INSTALLED ON THE ROOF TOP OF BUILDINGS  
(SCIENCE AND MECHANICAL BLOCK)**



**FIG 39 SOLAR PANEL INSTALLED ON THE ROOF TOP OF BUILDINGS**



**18.3.7 DG SET**

There are two (2) nos. of DG sets with capacity of 500 kVA each to meet out any emergency and in case of power failure and shutdown from PSPCL 66 KV sub-station Longowal. It is worth mentioning here that DG running time is very small as Institute is having 11 KV independent feeders from 66 KV sub-station Longowal. It can be seen from the facts that during the last year, the DG Set running period was 112 hrs. only, which is only 1.27% hrs in a year. Further, the DG Sets having canopy and follows all norms of CPCB and Ministry of Environment and forests, GOI notification GSR No. 371(E) dated 17.05.2002.

**TABLE-30 ENERGY EFFICIENCY ASSESSMENT OF DG SETS**

Parameter	Unit	Value		Remarks
		ESS-II	ESS-I	
DG set capacity	KVA	500	500	
Start Time		09:25 AM	09:40 AM	Specimen data of DG set (ESS-II) of dated 13.08.2022 of logbook & Specimen data of DG set (ESS-I) of dated 01.07.2022 of logbook
End Time		04:06 PM	12:10 PM	
Running hours	Hrs	06:41	02:30	
kWh generated	kWh	2205	875	
Diesel consumed	Ltr.	401	150	
Average power factor		0.8	0.8	
Specific energy consumption	Kwh/ltr.	5.49	5.83	
Running load in KVA	kva	413	438	

During energy efficiency study, it was also observed that during summer season the DG set load goes beyond its rated capacity. This may result in failure of DG operation. Hence, it is suggested to run the DG at the optimum level i.e. 80-85% of its rated capacity. This will ensure the breakdown free operation of DG sets.

GREEN AUDIT REPORT, SLIET, LONGOWAL

Month of July-2022 F/Y-2022-23

LOG BOOK FOR GENERATOR (DG SET 500KVA) INSTALLED AT ESS-I AT SLIET, LONGOWAL

Page No. \_\_\_\_\_

Date	Starting Time of DG Set	Ending Time of DG Set	Time-Period (Hour:Minute)	Hour Meter Reading of DG Set	Connected Load (KW)	Reading of DG Set (KWh)	Balance of Diesel at the Time of Starting the DG Set (Litres)	Consumption of Diesel (Litres)	Final Balance of Diesel (Litres)	Average of DG Set (KWh/Litres)	Signature of Contractor / Auth. Representative	Signature of Tech. (E)	Signature of AE (EP or EN) (District F.I.D)	Reason
01/07/22	09:40Am	12:10Pm	2h30min	49:20	350		324	150	174		G.Sid	[Signature]		SLIET FAUC
01/07/22	Diesel Loaded		Wide Bill no:- 21494											Receipt no:- 107019663, Dated-01/07/2022
			200Ltr Wide Gate Bus no:- 5116				374	—	374		G.Sid	[Signature]		Book no:- 163 (200+174)
05/07/22	08:40Am	08:50Am	10min	49:30	110		374	10	364		G.Sid	[Signature]		
26/07/22	Diesel Loaded		Wide Bill no:- 21509											Receipt no:- 1072604169, Dated-26/07/22
			400 Ltr Wide Gate Bus no:- 5117				764	—	764		G.Sid	[Signature]		Book no:- 106 (400+364)
27/07/22	11:15Am	11:26Am	11min	49:41			764	10	754		G.Sid	[Signature]		Testing
28/07/22	11:00Am	11:23Am	23min	50:04			754	22	732		G.Sid	[Signature]		Testing
29/07/22	08:00Am	08:10Am	10min	50:14			732	10	722		G.Sid	[Signature]		Testing
29/07/22	06:06Pm	06:50Pm	46min	51:00	130		722	46	676		G.Sid	[Signature]		PSPCL Cut

LOGBOOK OF GENRATOR

GREEN AUDIT REPORT, SLIET, LONGOWAL

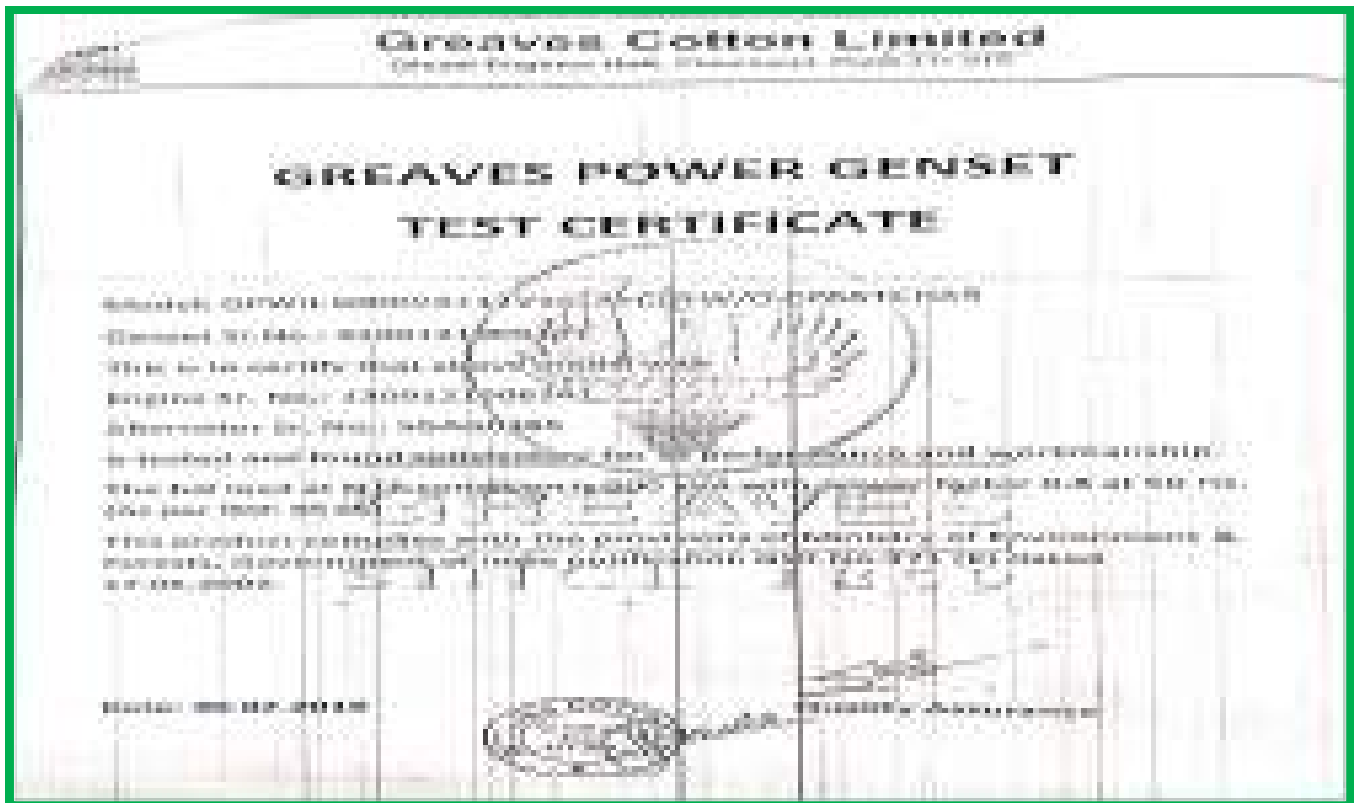
Month of Aug-2023 27/7-2023-24

LOGBOOK FOR GENERATOR USE BY SUPPLY INSTALLATION ES&AT UNIT, LONGOWAL

No.	Starting meter reading	Stopping meter reading	Running hours	Hour meter reading	Consumption (kWh)	Navigation rate	Actual Consumption per hour (kWh)	Consumption per hour	Cost of fuel (₹)	Energy cost (₹/kWh)	Efficiency of Generator (%)	Efficiency of unit (%)	System efficiency (%)	Notes
01-01-23	0000	0000	00:00	0000	000	000	000	000	000	000				
	0000	0000	00:00	0000	000	000	000	000	000	000				
02-01-23	0000	0000	00:00	0000	000	000	000	000	000	000				
	0000	0000	00:00	0000	000	000	000	000	000	000				
03-01-23	0000	0000	00:00	0000	000	000	000	000	000	000				
	0000	0000	00:00	0000	000	000	000	000	000	000				

LOGBOOK OF GENRATOR







**FIG. 40 DG SET INSTALLED IN ELECTRICAL WING AND ESTATE OFFICE**

**18.3.8 ENERGY CONSERVATION DUE TO BIFURCATION OF ELECTRICAL LOAD IN ESSENTIAL AND NON-ESSENTIAL CATEGORY.**

A decision has been taken in the 8th BWC vide item no. 8.13 held on dated 08.12.2017 (**Annexure- D and E**) regarding bifurcation of Electrical load in essential and non-essential category in a phased manner. Accordingly, the electrical load of buildings like ME, Food and Chemical, Science and EIE Block has been bifurcated into essential and non-essential category.

Now, as and when there is power failure from PSPCL, the DG sets are made operational to cater the need of essential load only. In this way, consumption of fuel reduced which further lessens the abate of CO<sub>2</sub>.



**FIG 41 AC DB ATTACHED IN MECHANICAL BLOCK FOR ESSENTIAL AND NON-ESSENTIAL LOAD**

Sl. No.	Agenda items	Agreement of Executive
Item No. 8.11	<p><b>INSTALLATION OF PIPES &amp; MANHOLES OF CDD IN NEAR ENVIRONMENTAL AREA IN A PLANNED MANNER.</b></p> <p>The CDD has installed its own drains (after approval of work from the sewerage department) over the area and pipes installed over the area. It is suggested that the area should be developed in a planned manner. It is suggested to install 4 inch dia. pipes in the area. It is suggested to install 4 inch dia. pipes in the area. It is suggested to install 4 inch dia. pipes in the area.</p> <ul style="list-style-type: none"> <li>• CDD of 4 inch dia. above 100 level for 100 ft. in surrounding area.</li> <li>• CDD of 4 inch dia. above 100 level for 100 ft. in surrounding area.</li> </ul> <p>The cost of work is suggested to consider &amp; approve the same.</p>	<p>The proposal was considered and approved.</p>
Item No. 8.12	<p><b>REPAIR WORK IN THE CDD SYSTEM.</b></p> <p>The area CDD has been installed at the site which is having provision of rain water. The CDD is in a state of repair. It is suggested that the area should be developed in a planned manner. It is suggested to install 4 inch dia. pipes in the area. It is suggested to install 4 inch dia. pipes in the area.</p> <p>The cost of work is suggested to consider &amp; approve the same.</p>	<p>The proposal was not considered for the time being and delayed.</p>
Item No. 8.13	<p><b>INSTALLATION &amp; MAINTENANCE ELECTRICAL WORKS IN VARIOUS BUILDINGS CONTROL BY TRANSFORMER &amp; OTHER ELECTRICAL LOADS.</b></p> <p>The electrical infrastructure upgrade, addition &amp; alteration is required to provide the load into two categories i.e. essential &amp; non-essential. It is suggested that the area should be developed in a planned manner. It is suggested to install 4 inch dia. pipes in the area. It is suggested to install 4 inch dia. pipes in the area.</p> <p>The cost of work is suggested to consider &amp; approve the same.</p>	<p>The proposal was considered and approved.</p>

Sl. No.	NATURE OF WORK	STATUS OF WORKING
Sl. No. 4.10	<p>Sl. No. 4.10. The committee work on Green House has been completed by Mr. H.S. &amp; Company. Having this completion the status of work has been carried through the labors of staff working for the provision of air conditioning but they do not work. It report has been received by staff office from the charge Const. House for maintenance &amp; addition of air conditioning in Green House, Green House Association &amp; Faculty Club.</p> <p>Further, there is not better possible of air conditioning work in Green House Association &amp; Faculty Club. The AC's available in each of the room of the Green House is of electric type which were installed in the year of 1999-2000. Hence, these AC's are not working properly due to breakdown of the fan motor during operation, and old &amp; more water body has been added. It is mentioned in para 4.10.11 General Specification for Electrical Works Part-I, Section 20.3, Table 20.3. In this AC's the required capacity of the motor will be 1.5 HP. Hence, there is not the possibility available in the existing building area. However, if any AC's of 1.5 HP will be used in green condition then will be suitable in the room of Green House Association after laying of air ducts. The lighting available in each of the room of Green House is of fluorescent type. It may be replaced with LED tubes to provide light energy efficient &amp; long life span. Hence, it is proposed to replace the old AC's, provision of LED lighting &amp; addition of air conditioning in Green House. The approximate cost is Rs. 12 Lacs.</p> <p>The cost of AC's, wiring, accessories of installation and including repair pipe, wiring, earth installation &amp; packing etc. is Rs. 12,00,000.</p> <p>The cost of foundation, slab work, etc. painting, installation &amp; etc. is Rs. 12,00,000.</p> <p>Further, it is mentioned in para 4.10.12.</p> <p>The committee is requested to consider &amp; approve the same.</p>	<p>The proposal was considered and approved.</p>
Sl. No. 4.11	<p>Sl. No. 4.11. The committee work on Green House has been completed by Mr. H.S. &amp; Company. Having this completion the status of work has been carried through the labors of staff working for the provision of air conditioning but they do not work. It report has been received by staff office from the charge Const. House for maintenance &amp; addition of air conditioning in Green House, Green House Association &amp; Faculty Club.</p> <p>Further, there is not better possible of air conditioning work in Green House Association &amp; Faculty Club. The AC's available in each of the room of the Green House is of electric type which were installed in the year of 1999-2000. Hence, these AC's are not working properly due to breakdown of the fan motor during operation, and old &amp; more water body has been added. It is mentioned in para 4.10.11 General Specification for Electrical Works Part-I, Section 20.3, Table 20.3. In this AC's the required capacity of the motor will be 1.5 HP. Hence, there is not the possibility available in the existing building area. However, if any AC's of 1.5 HP will be used in green condition then will be suitable in the room of Green House Association after laying of air ducts. The lighting available in each of the room of Green House is of fluorescent type. It may be replaced with LED tubes to provide light energy efficient &amp; long life span. Hence, it is proposed to replace the old AC's, provision of LED lighting &amp; addition of air conditioning in Green House. The approximate cost is Rs. 12 Lacs.</p> <p>The cost of AC's, wiring, accessories of installation and including repair pipe, wiring, earth installation &amp; packing etc. is Rs. 12,00,000.</p> <p>The cost of foundation, slab work, etc. painting, installation &amp; etc. is Rs. 12,00,000.</p> <p>Further, it is mentioned in para 4.10.12.</p> <p>The committee is requested to consider &amp; approve the same.</p>	<p>The proposal was considered and approved.</p>

#### **18.4 BEST PRACTICES FOLLOWED TO SAVE THE ELECTRICAL ENERGY**

To save the electrical energy and environment, following actions have been taken:


1. Institute observes natural light day on every Thursday (notice no. SLIET/DIR/1182-84 dated 19.07.2019). Hereby every official is encouraged to remove curtains and use natural light in the office/labs **(Refer Annexure F)**.
2. Institute observes no motor vehicle day on every Friday (notice no. SLIET/DIR/1182-84 dated 19.07.2019). Hereby every official is encouraged to use bicycle/walk on foot. It helps a lot to abate CO2 emission.
3. Periodically circulars have been issued by the concerned Institute authorities to use AC's with a temperature set point no. 25-26 Celsius. It saves a lot of electrical energy and reduces the heat emission to the atmosphere by the Air conditioner **(Refer Annexure G)**.
4. During the COVID-19 pandemic, a circular has been issued (ref. no. SLIET/EW/EST/07/20/110-112, dated 27.05.2020) regarding modalities to use Air Conditioning facility available in offices/labs in line with GOI, CPWD O/o CE (CSEQ) (E), New Delhi vide OM No. EC.CSQ (E)/COVID-19/2020/028 dated 30.05.2020 **(Refer Annexure H)**.
5. A decision has been taken in the 9th BWC held on dated 20.06.2018 vide agenda item no 9.16 to plant 5 trees in the Institute against 1.5 Ton AC to compensate the environment **(Refer Annexure I)**.
6. Save energy display boards (for switch off lights/fans/AC's when not in use) are installed in the offices, labs, hostels and other academic buildings to aware the users **(Refer Annexure J)**.

**18.5 OUTCOMES OF ENERGY AUDITS**

By adopting the various means of energy conservation, significant economy is saved as highlighted in earlier chapters. The average saving in kWh along with the reduction in CO<sub>2</sub> emission is achieved as shown in table 5.1.

**Table -31 Outcome of energy audit (Reduction in CO<sub>2</sub> Emission)**

<b>Sr. No.</b>	<b>From various sources Saving of energy inkwh</b>	<b>Average No. of kwh saving (monthly)</b>	<b>Average No. of kwh saving (yearly)</b>	<b>Factor</b>	<b>Reduction in Co<sub>2</sub> emission yearly (kg)</b>	<b>Equivalence no. of plant</b>	<b>Remarks</b>
1.	Replacement of conventional lighting system by LED	24788	297456	0.9	267710	12	
2.	Replacement of Old/non star rated ceiling fans into Energy efficient 5 Star rated ceiling Fans	11904	142848	0.9	128563	6	
3.	Replacement of Air conditioning system to Star rated Air Conditioning as per BEE norms	1728	20736	0.9	18662	1	
4.	Production of Solar Energy in kwh	129045	1548540	0.9	1393686	63	Average production by the Solar plant of 1 MW capacity in a month



**SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY  
LONGOWAL - 148 106, DISTT. BANGRUH (PUNJAB)  
(ASSIGNED TO BE UNIVERSITY)  
OFFICE OF THE DIRECTOR**

Ref. No. SLET/DIR/1152 - 2019 Date: 27-07-2019

### CIRCULAR

#### "NATURAL LIGHT DAY"

To promote Energy Conservation, Institute will observe "Natural Light Day" on every Thursday.

All the faculty, staff members, and students are requested to promote use of natural light, to the extent possible, by practicing following -

1. Keep lights of Offices/Lab/Class Rooms off, if not required.
2. Keep windows open/ remove curtains to allow natural light.


It is once again requested to please use ACs around 25-28 °C, as an effective measure of energy conservation.

Further, following committee will visit various department/ sections to increase awareness on Energy Conservation, use of ACs as per circular no. SLET/DIR/DIR/1152-14 Dated 22.07.2019.

1. Mr. Anshu Kumar, AsP (EE)
2. Dr. Charanjeet Datta, AsP (EE) & IT (Electron)
3. Dr. Rakesh Datta, IC (Electrical Eng)

**Note**  
This is to remind all that the Institute observes every "Friday" as "No Motor Vehicle Day"

Cooperation from all is highly solicited.

  
**Director**

Copy to:

1. All Organ. HODs/ Section In-charges- With it request to circulate among all faculty and staff
2. Registrar
3. Committee members listed above- Please arrange message display in the form of File at important locations.

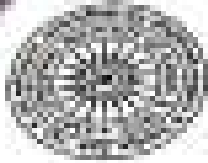
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**"Proud To Be Part of Team SLET"**









**SLIET LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY**  
 LONGOWAL - 148011, DISTT. SANGRUR, PUNJAB, INDIA.  
 (Established by Govt. of India)  
 Chartered to be University  
 [U-104-AB-2007/2008 (Government)]  
 U-104-AB-2007/2008  
 [1988-2008]

Sl. No. SLIET/BA/2008/0304-48  
**REGISTERED POST**      Date: 20-06-2018

1.	Prof. Shashendra Kumar Jain, Director, SLIET, Longowal	Chairman
2.	Joint Secretary & Financial Advisor, Government of India, MHRD, Department of Higher Education, U/ Division, Shyama Bhasin, New Delhi	External Member
3.	Deputy Secretary, Govt. of India, Ministry of Human Resource, Department of Higher Education, Section - III, Shyama Bhasin, New Delhi	External Member
4.	Director, Technical Education & Industrial Training, Punjab, Chandigarh	External Member
5.	Superintending Engineer, Industrial Control Circle, CPWL, 1A, Lakh Road, Jalandhar	External Member
6.	Superintending Engineer (Electrical), CPWL, Postale Circle, Patiala	External Member
7.	Prof. Harish Chopra, Dean (Planning & Development), SLIET, Longowal	Member
8.	Dr. Sukdev Singh, Basic Office, SLIET, Longowal	Member
9.	Dr. Anilash Thakur, Faculty Incharge (DSE), SLIET, Longowal	Special In-charge
10.	Dr. Chander Gupta, Faculty Incharge (Electrical), SLIET, Longowal	Special In-charge

**SUBJECT: MINUTES OF THE 9th MEETING OF THE BUILDING & WORKS COMMITTEE,  
 SLIET-LONGOWAL.**

Dear Sir/Members,

Please find enclosed herewith a copy of the approved minutes of 9th meeting of the Building & Works Committee, SLIET, Longowal held on 20.06.2018 under the Chairmanship of Dr. Shashendra Jain, Director, SLIET, Longowal for information and further necessary action.

With regards,

  
 Dr. Harish Chopra  
 Registrar & Member Secretary  
 E-Mail: registrar@sliet.ac.in

Encl: Approved Minutes (21 copies)



**MINUTES OF 11<sup>th</sup> BOARDING BOARD COMMITTEE MEETING HELD ON 28.02.2017**

	<p>and also the committee will be held till the stated duration &amp; upon their recommendations, the respective authority approve the recommendations of committee &amp; ensure implementation of the same as per the</p> <p>Res. P.1000/11/2017 dated 28.02.2017 for the replacement of the existing electrical wiring of the existing building at P.1000/11/2017. The committee will be held till the stated duration &amp; upon their recommendations, the respective authority approve the recommendations of committee &amp; ensure implementation of the same as per the</p> <p>The committee please refer to the minutes of the meeting dated 28.02.2017.</p> <p>Res. P.1000/11/2017 regarding replacement of the existing electrical wiring of the existing building at P.1000/11/2017.</p>
<p>Res. P.1000/11/2017</p>	<p>Res. P.1000/11/2017 regarding replacement of the existing electrical wiring of the existing building at P.1000/11/2017.</p>
	<p>The committee will be held till the stated duration &amp; upon their recommendations, the respective authority approve the recommendations of committee &amp; ensure implementation of the same as per the</p> <p>Res. P.1000/11/2017 regarding replacement of the existing electrical wiring of the existing building at P.1000/11/2017.</p> <p>The committee please refer to the minutes of the meeting dated 28.02.2017.</p> <p>Res. P.1000/11/2017 regarding replacement of the existing electrical wiring of the existing building at P.1000/11/2017.</p>

  
 Member & Chairman,  
 Boarding & Hostel Committee



**19. MISCELLANEOUS INITIATIVES**

- i) Following initiative has been undertaken by the Institute for the perseverance of ecosystem.
1. An open oxidation pond for the treatment of wastewater.
  2. Use of wastewater for irrigation of forest area of Institute.
  3. Use of polythene is banned in the Institute.
  4. Organization of seminars for providing cleaning awareness around the Institute and surrounding village area.
  5. One day (Thursday) in a week is observations natural light day, wherein minimum utilization of electric appliances is ensured in the various working place of Institute.

ii) **AUCTION OF FIREWOOD**

FY 2020-21 (Total Qty. = 4999.75 Quintal) and amounting to Rs 15,74,924/-

iii) **SUMMARY of maintenance of lawn area, Hedge, and pot plants at different locations**

SR. NO.	LOCATIONS	LAWN AREA	HEDGE	POT PLANTS
1.	Hostels Buildings	926100 Sq. ft	5000 Rmt	195
2.	Academic Buildings	781368 Sq. Ft	3000 Rmt	207
3.	Residential Area	307012 Sq. Ft	3000 Rmt	--
4.	Public Park	393676 Sq. ft	1000 Rmt	--
5.	Herbal Park	56760 Sq. ft	500 Rmt	--
6.	Karnal Technology	9990 Sq. ft	--	--
7.	Nursery	--	500 Rmt	500

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**PHYSICAL STATUS OF PLANTS PLANTED DURING LAST 5 YEARS**

Sr. no.	Location	SPECIES														
		Garden ia	Durant a	Chand ni Dwarf	Pulmer ia	Sukhcha in	Rajai n	Bougainvill ea	Cole us	Naagma ni	Jamu n	Nee m	Farm a	Orang e	Tikom a	Bo ttle br us h
1	Administrative Block-1	1060	200	240	10	11										
2	Auditorium	200	180		12		12	100								
3	Food & Chemical Block		435	250					60							
4	Computer Block	70							410	80						
5	Science Block	220	150						26							
6	ME Block	40	200	350					50							
7	Workshop		100				1									
8	KV School	70									12	65		10		
9	Student Activity Centre	70	100			60										
10	Water Tank No.1	152	25													
11	Coffee Ground					60										
12	In front of Director's Residence				5											
13	Guest House	133	30		14		3						13		41	39
14	Faculty Club	235														
15	Estate Office		100	55												
16	Swimming Pool												29			
17	Sports Ground						20									
18	Mango Park					18										
19	Type-IV Park-1												4			4
20	Type-IV Park-2	30														
21	Type-III Park-1															2



22	Type-III Park-2												1			3
23	Transit Accommodation		55												88	
24	Health Centre to Duggan Gate (Road warm)					300		450								
25	Boys Hostel no.1							130								
26	Boys Hostel no.3				1	26			15		3			3		
27	Boys Hostel no.4		205		1		5								6	
28	Boys Hostel no.7	130														
29	Boys Hostel no.8	80														
30	Boys Hostel no.9	100	65						70		4					
31	Boys Hostel no.10	50									4					
32	Girls Hostel no.2	17					10									
33	Girls Hostel no.3					50	30									
34	Nursery						18								20	
35	Herbal Park	300				70					4					
36	Type-I Back Side					60					50					
37	Electrical Block	140														
38	Longowal Gate	25														
39	Duggan Gate	25			12											
40	Round About	170	105	30					245							
41	Library	435		220	3											
42	Informal Garden				5											
43	Bee Farm					13										18
<b>Total</b>		<b>3752</b>	<b>1950</b>	<b>1145</b>	<b>63</b>	<b>668</b>	<b>99</b>	<b>680</b>	<b>876</b>	<b>80</b>	<b>23</b>	<b>119</b>	<b>47</b>	<b>13</b>	<b>155</b>	<b>66</b>

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**PHYSICAL STATUS OF PLANTS PLANTED DURING LAST 5 YEARS**

Sr. no.	Location	SPECIES														
		Aamltas	Guava	Chandni	Hibiscus	Kaner	Casuarina	Kachnar	Sohanjna	Mehndi	Mango	Harsingar	Alstonia	Casia Semiya	Peepal	Galuka
1	Workshop			5												3
2	Health Centre		2	3												
3	KV School				210											
4	Student Activity Centre							5								
5	Water Tank No.1	20														
6	In front of Director's Residence	7														
7	Guest House				120	6	9					4				
8	Faculty Club							10								
9	Estate Office		1			12		9			1					
10	Swimming Pool							3								
11	Sports Ground			27												
12	Type-III Park-1						1									
13	Type-III Park-3									100						
14	Type-III Park-4			15		25		4								
15	Type-II Park									180						
16	Transit Accommodation		3		120											
17	Health Centre to Duggan Gate (Road warm)	25		20												
18	Boys Hostel no.3		4	11	43	5					1	3				
19	Boys Hostel no.4		1			23				86	3	3				
20	Boys Hostel no.7				15	15										
21	Boys Hostel no.8					18										
22	Boys Hostel no.9		8							260			20			
23	Boys Hostel no.10	15	3			8				270						
24	Girls Hostel no.1		6								7					
25	Girls Hostel no.2		9		65			12		9	15					
26	Girls Hostel no.3		5								15		30			
27	Nursery		15					8							2	
28	Herbal Park	55	3			200		4	1000	3	7					
29	Longowal Gate			10												
30	Duggan Gate			28												
31	Informal Garden			10		15	20									
32	Type-III Boundary Wall					70										
<b>Total</b>		<b>122</b>	<b>60</b>	<b>129</b>	<b>573</b>	<b>397</b>	<b>30</b>	<b>31</b>	<b>24</b>	<b>1896</b>	<b>24</b>	<b>47</b>	<b>20</b>	<b>30</b>	<b>2</b>	<b>3</b>

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**PHYSICAL STATUS OF PLANTS PLANTED DURING LAST 5 YEARS**

Sr. no.	Location	SPECIES														
		Plum	Apple	Gulmohar	Ashoka	Dhak	Rukhbanjni	Bottle Plum	Sugar Apple	Lemon	Anjeer	Mosmi	Pomegranate	Peach	Arjun	Amla
1	Workshop			1												
2	Health Centre								1							
3	KV School															3
4	Estate Office								2	1						
5	Transit Accommodation								1	1		1	2	1		
6	Boys Hostel no.3				87				2	1						
7	Boys Hostel no.4				74				1	1		4				
8	Boys Hostel no.8				19											
9	Boys Hostel no.10	1	1									2				
10	Girls Hostel no.1									2	3		3	3		
11	Girls Hostel no.2	1										6				
12	Girls Hostel no.3											1	4			
13	Nursery								1		2					
14	Herbal Park					3			4	4	3		4		4	4
15	Round About				7											
16	Library						12	8								
17	Informal Garden					30										
<b>Total</b>		<b>2</b>	<b>1</b>	<b>1</b>	<b>187</b>	<b>33</b>	<b>12</b>	<b>8</b>	<b>6</b>	<b>13</b>	<b>11</b>	<b>13</b>	<b>12</b>	<b>5</b>	<b>5</b>	<b>7</b>

**GREEN AUDIT REPORT, SLIET, LONGOWAL**

**PHYSICAL STATUS OF PLANTS PLANTED DURING LAST 5 YEARS**

Sr. no.	Location	SPECIES														
		Ficus	Rose	Tamarind	Khair	Rind	Dheu	Bhumi Amla	Bel Patra	Bahera	Gurmar	Tulsi	Datura	Puthkanda	Lemon Grass	Aloe Vera
1	Boys Hostel no.1		10													
2	Boys Hostel no.2		10													
3	Boys Hostel no.7	2														
4	Boys Hostel no.9	15														
5	Girls Hostel no.1			4												
6	PG Hostel	15														
7	Nursery		80													
8	Herbal Park			4	4	4	3	25	4	7	20	189	7	10	42	61
9	Longowal Gate	15														
10	Duggan Gate	30														
<b>Total</b>		<b>77</b>	<b>100</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>25</b>	<b>4</b>	<b>7</b>	<b>20</b>	<b>189</b>	<b>7</b>	<b>10</b>	<b>42</b>	<b>61</b>

Sr. no.	Location	SPECIES									
		Ashwagandha	Aak	Murraya	Shankh Namoli	Ratti	Stevia	Grapes	Staver	Lechi	Jatropha
1	Herbal Park	33	19	42	21	21	8	7	12	8	19
<b>Total</b>		<b>33</b>	<b>19</b>	<b>42</b>	<b>21</b>	<b>21</b>	<b>8</b>	<b>7</b>	<b>12</b>	<b>8</b>	<b>19</b>

**FEW PHOTOGRAPHS OF PLANTS PLANTED DURING LAST 5 YEARS**



**FIG 42 PHOTOGRAPHS OF DEVELOPED TREES IN SLIET CAMPUS**



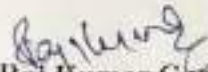
**FIG 42 PHOTOGRAPHS OF DEVELOPED TREES IN SLIET CAMPUS**

*GREEN AUDIT REPORT, SLIET, LONGOWAL*

**GREEN AUDIT COMMITTEE**



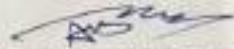
(Dr. Nikhil Prakash)



(Dr. Raj Kumar Garg)



(Dr. Indraj Singh)



(Prof. Avinash Thakur)

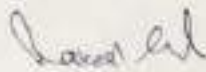


(Prof. C.S. Riar)

**CO-OPTED MEMBERS:**



(Er. Prabhdeep Singh)



(Er. Rakesh Goyal)



(Er. Mandeep Singh)

**CHAIRMAN:**



(Dr. Sanjay Marwaha)