Reliance
Industries Limited

25th National Award For Excellence in Energy Management 2024

Presenter: Reliance Corporate IT Park Limited

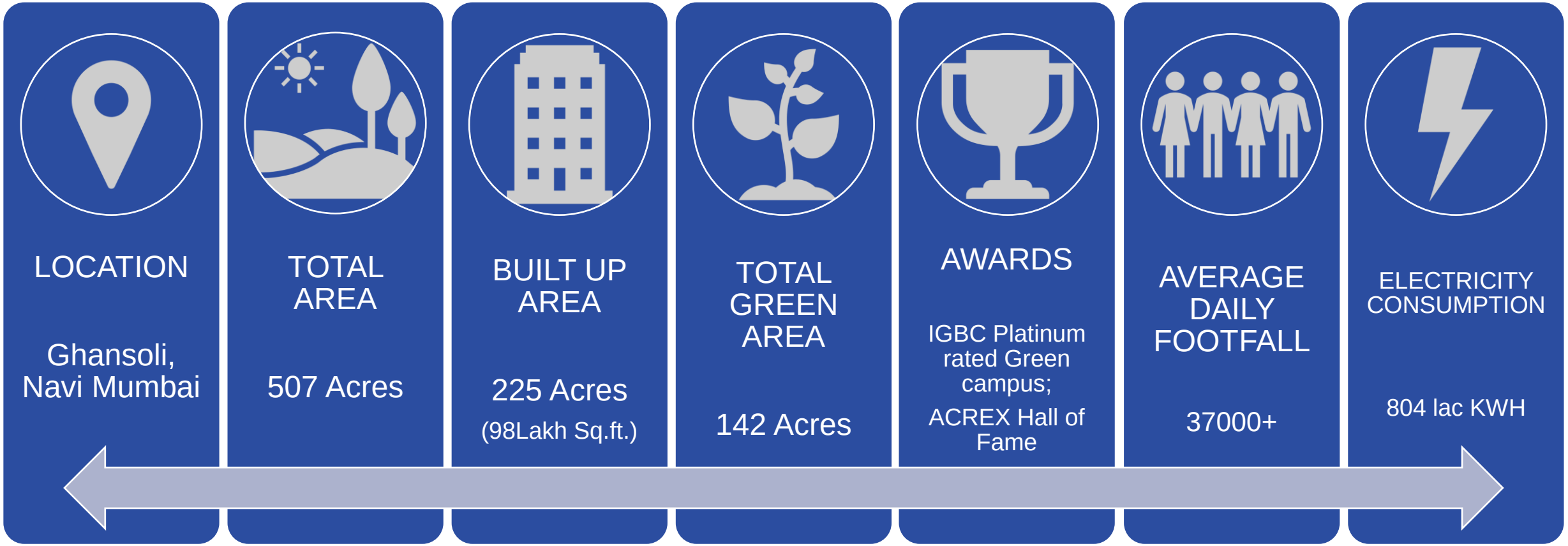
Contents

An Overview

Reliance Industries Limited

Reliance Corporate IT Park Limited (RCITPL) is a state-of-the-art facility and the headquarter of Reliance Industries Ltd. (RIL) and its various conglomerates located in Navi Mumbai – Ghansoli.

RCITPL is committed to sustainable development and eco-friendly practices. It employs renewable energy sources, waste management systems, and green building initiatives to minimize its environmental footprint.



Passive Design Features

Reliance Industries Limited

Energy-Efficient Building Design at RCITPL

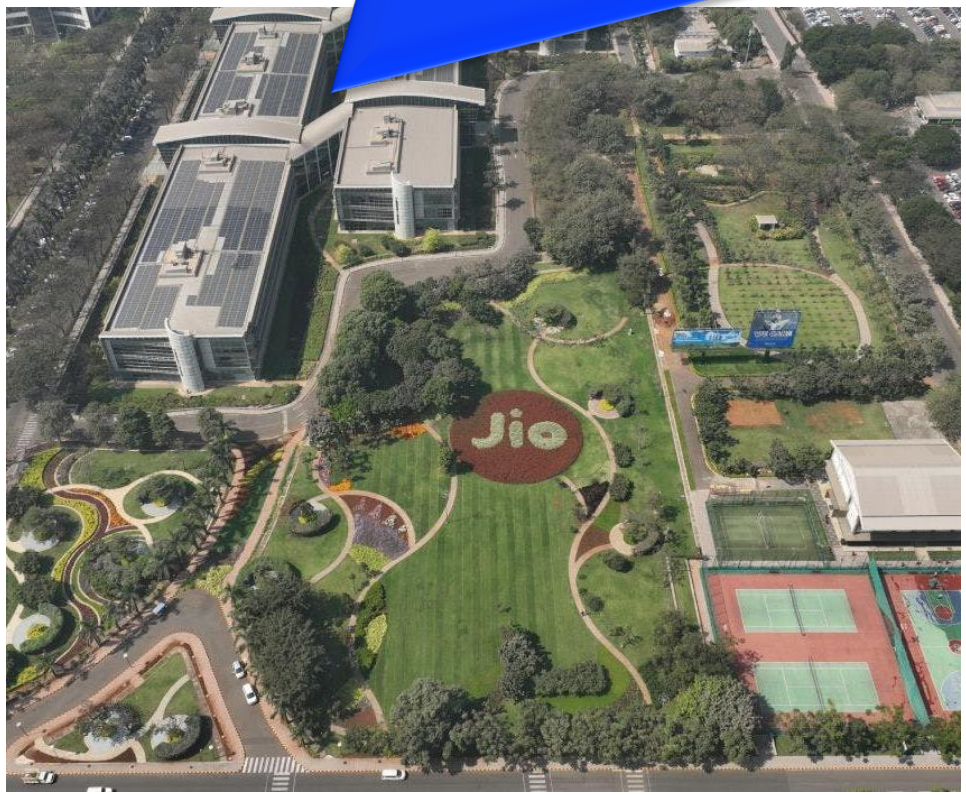
- **Maximized Natural Light:** Buildings designed to enhance daylight penetration.
- **Heat Reduction:** Utilizes Low-SHGC glass to minimize heat gain and maintain cooler indoor temperatures.
- **Climate Zone:** Warm & Humid
- **Orientation:** North lengthwise for optimal environmental response.
- **Key Statistics**
  - Employees: 27,710
  - Off-role Staff: 7,000+
  - Daily Visitors: 2,500/day
  - Energy Consumption: 270 MWh/day
  - Water Consumption*: 4,500 m^3/day

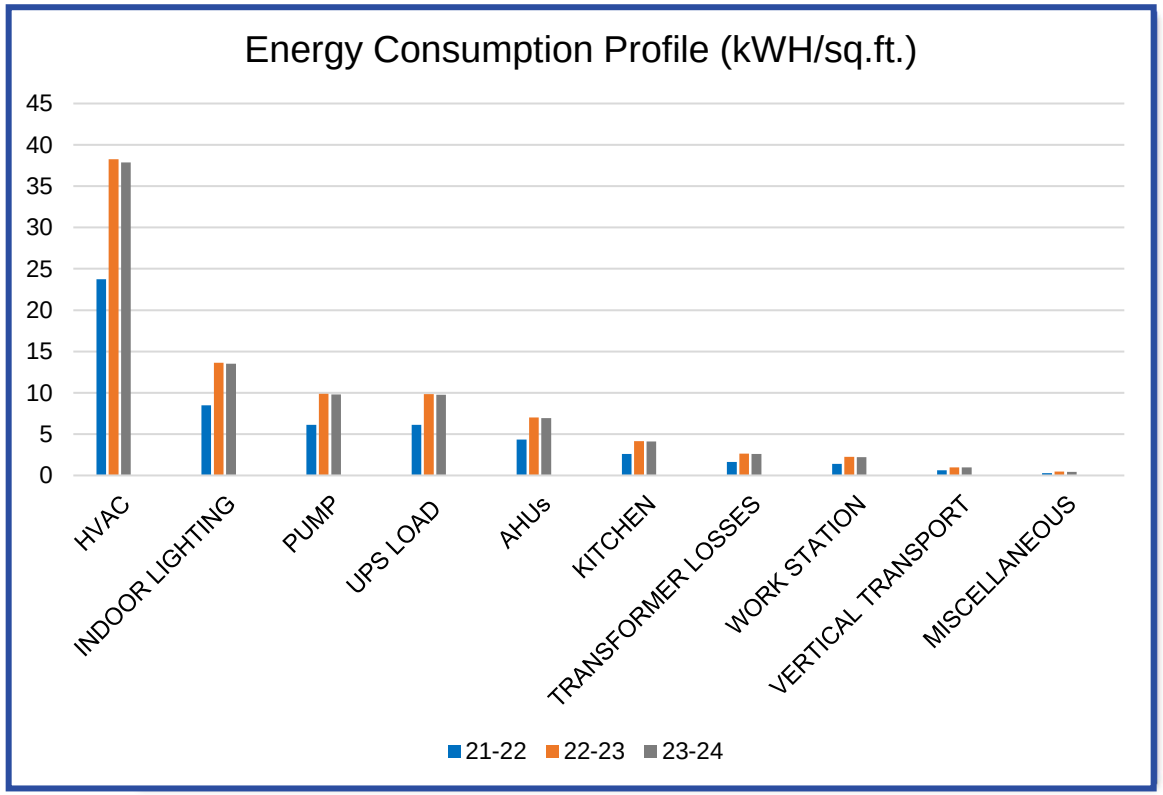
* - inc. Office consumption, Horticulture and Cooling Tower makeup

Energy Consumption Overview

Reliance Industries Limited

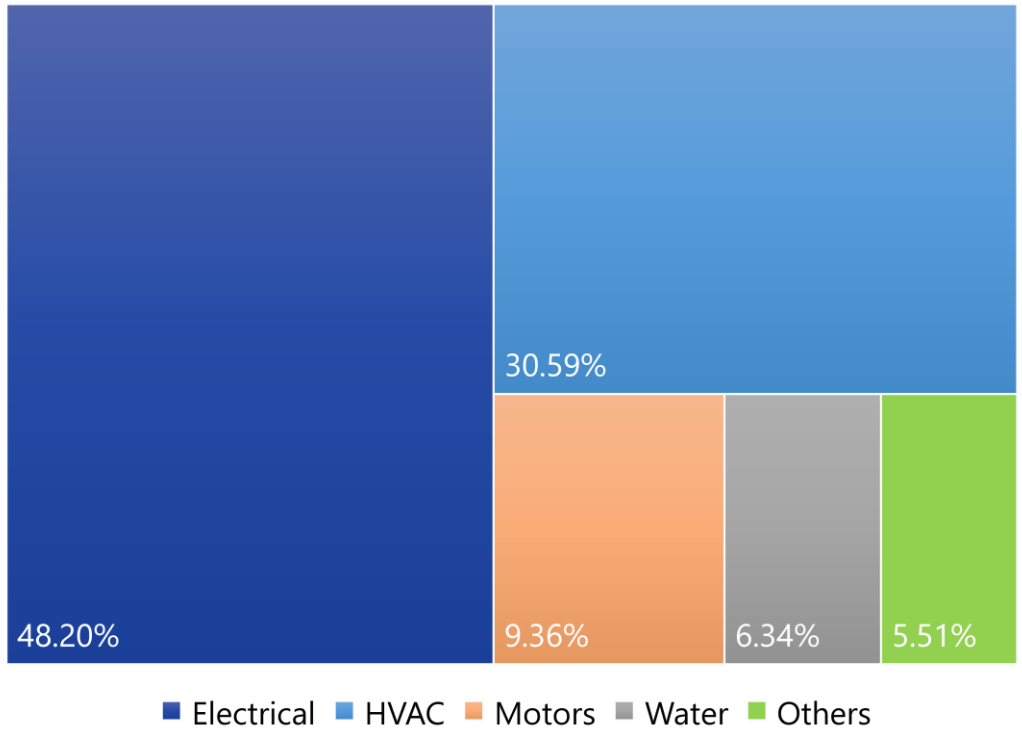
	2021-22*	2022-23	2023-24
Electrical Energy Consumption (MWh)	44,984	72,480	80,480
Area (sq. ft)	87,54,338	87,54,338	98,15,699
Occupants	21,432*	26,000	27,710

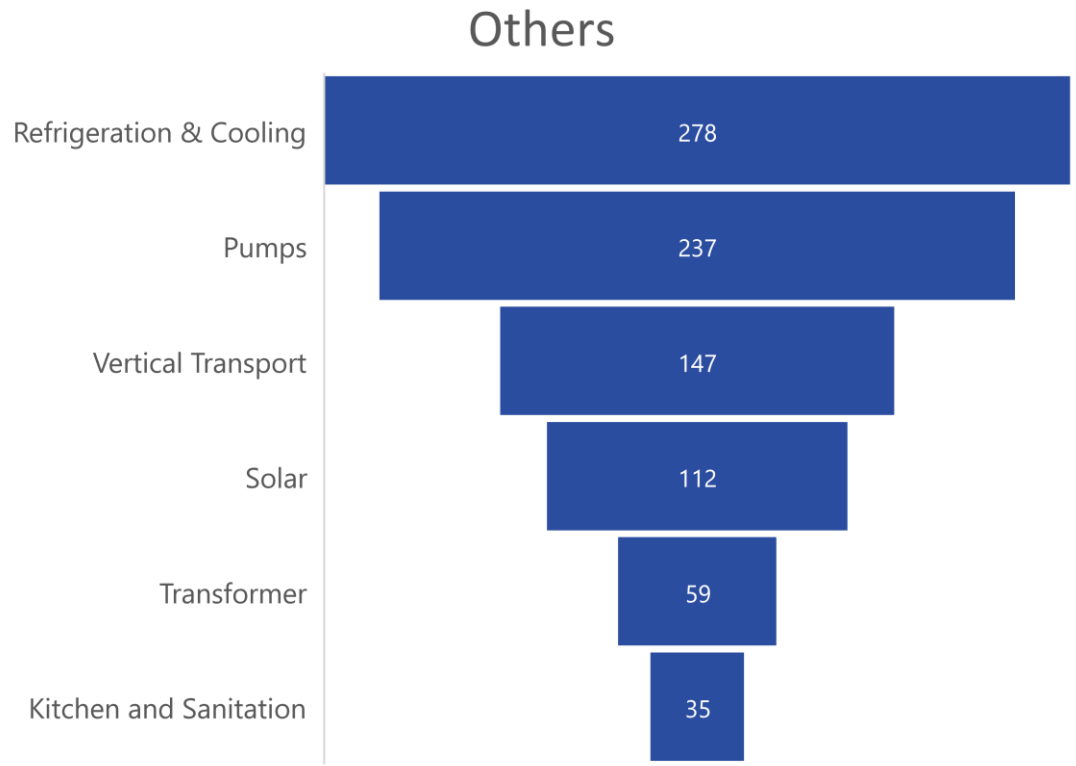




*: COVID-19 Period

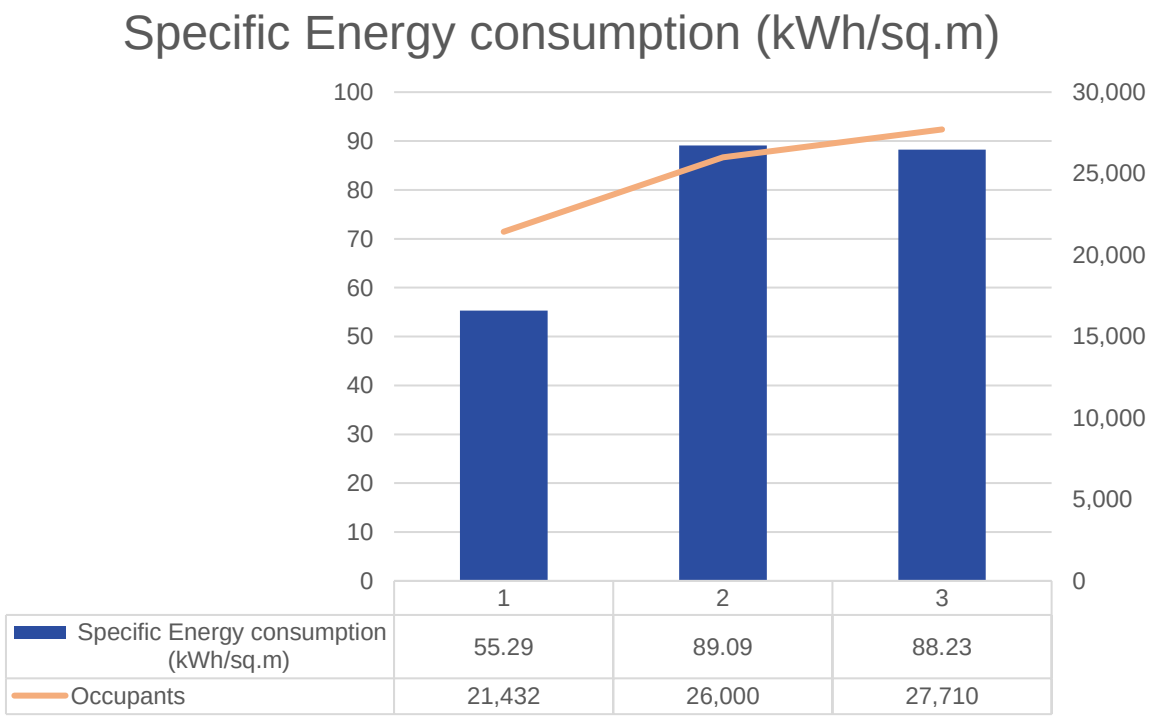
Equipment Details in RCITPL





Specific Energy Consumption For Last 3 Years

Sr.no.	Item	2021-22*	2022-23	2023-24
1	Specific Energy consumption (kWh/sq.m)	55.29	89.09	88.23
2	Area (sq. ft)	87,54,338	87,54,338	98,15,699
3	Occupants	21,432*	26,000	27,710



Notes:

1. Campus was partially open in 2021-22 due to COVID-19 lockdown.
2. Energy saving measures resulted in downward trend in 2023-24 even after perpetual complex landscape amplification.

*: COVID-19 Period

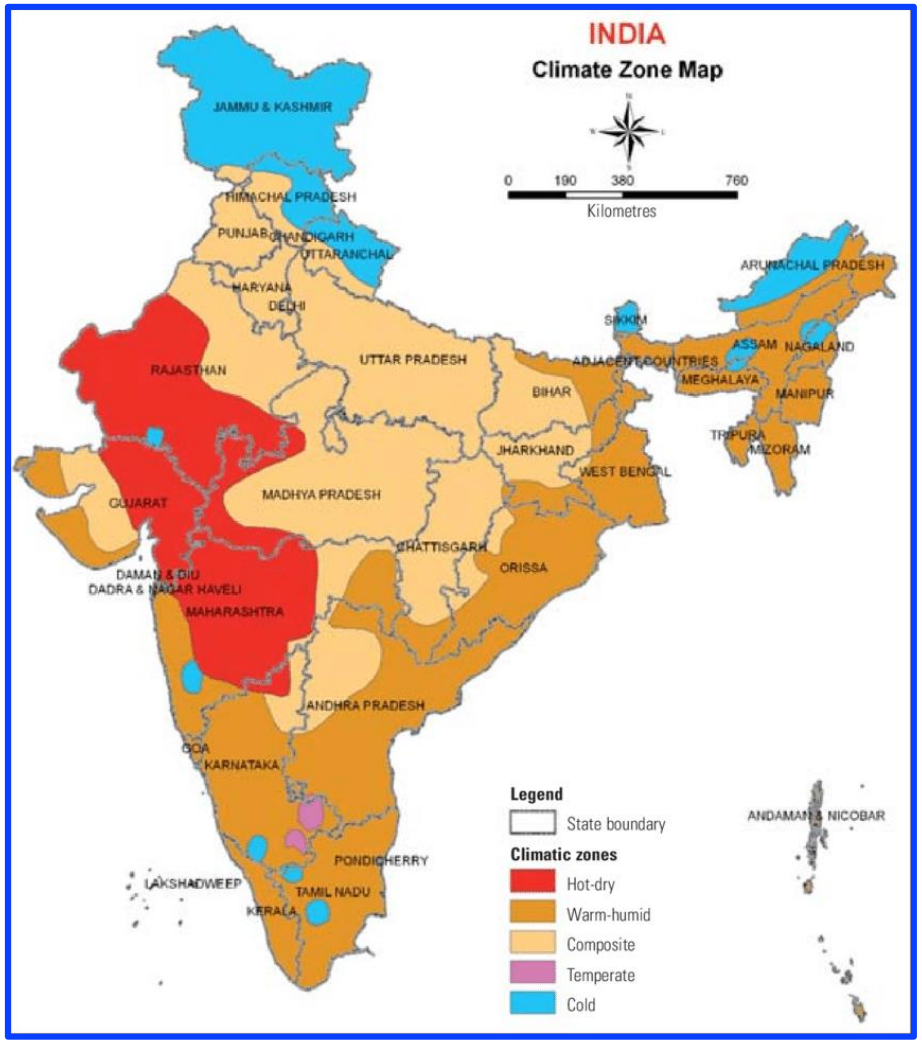
Basis National & Global Benchmarking

Reliance Industries Limited

Sr. no	Benchmark for Commercial buildings	Climate zone	EPI (kwh/sqm) for more than 50% Air Conditioning
1	GRIHA	Warm & Humid	90
2	National (BEE)	Warm & Humid	182

Building	EPI (kwh/sqm)
Reliance Corporate IT Park	**88.23**

BEE Star Rating (Warm & Humid)	
EPI (kwh/sqm/year)	**Star Rating**
200-175	**1**
175-150	**2**
150-125	**3**
125-100	**4**
Below 100	**5**



Energy Savings Projects Implemented in Last 3 Years

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2021-22

- Underground Pipeline replacement Project
  - Annual savings of 86,048 KWH

2022-23

- 4.8 MW Solar Panel installation
  - Annual savings of INR 5.7 Cr.

2023-24

- Replacement of old HVAC (DX Unit) with Centralized Chilled water AHU
  - Annual savings of INR 57.2 lacs

2024-25

- Energy Efficient VRV Replacement
  - Annual savings of INR 2 Cr.

S.No.	Title of the Project	Categories	Annual Electrical Saving	Annual KWH saving (kWh)	Annual Cost saving (Rs million)
1	Underground Pipeline replacement	Energy savings through passive design changes	2021-2022	86,048	0.75
2	Solar panel installations (4.8 MWp)	Energy savings through operational optimization	2022-2023	64,87,959	56.76
3	Replacement of old HVAC (DX Unit) with Centralized Chilled water AHU	Energy Saving through technology retrofit. Centralized Chilled water System instead of Manually operated old and absolute module of R22	2023-2024	5,54,400	5.72
4	Energy Efficient VRV Replacement	Energy Saving through technology retrofit. Energy efficient VRV with SMMS-7 Model.	2024-2025	20,00,000	19.9

ENCONs

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Encon Project 1: Underground Pipeline Replacement

Water conservation through UG Pipeline replacement (2021-22).

Concept of Re-designing :-

- Coupled with absence of coating on joints and movement of vehicles on road, heavy leakages in UG network were observed.
- At road crossing MS sleeves provided to protect the line from heavy earth moving equipment .
- For water consumption monitoring water flow meters introduced in the system for each services.

Value Stream Enhancement:	Savings per year (Lacs.)
Water Saving 507 M3 /day	Rs. 41.6
Power Saving 10 kW	Rs. 07.5
Total Saving/ year (Water +Power)	Rs. 49.1

Encon Project 2: Solar Panel Installation

- Currently **4.8 MW** system is operational.
- Laying of water connection lines for cleaning solar module.
- This is having potential of approx.. 9% of our total Maximum consumption.

Value Stream Enhancement:

- Reduction in carbon footprint.
- Renewal Energy.
- Part of green initiative for commitment towards net carbon zero and Process efficiency.

ENCONs (contd.)

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Encon Project 3: Replacement Of HVAC DX Unit With Chilled Water AHU
• Existing 12 Nos 40TR of old manually operated direct expansion system having iKW more than 1.3. • This units are absolute in the market due to aging of 40years. • New Energy Efficient 14Nos of 20TR compact Air Handling Units with PLC control systems installed with dedicated 500TR Chiller.

Value Stream Enhancement:	Savings per year (Lacs.)
Water Saving 25 M3 /day	INR 2.05
Power Saving 46200 kWh/Month	INR 55.16
Total Saving/ year (Water +Power)	INR 57.21

Encon Project 4: Energy Efficient VRV Replacement
• Existing VRV units are SMMS-1 model which consumes more power and aged 16 years. • New Energy efficient VRV with SMMS-7 Model installation. • VRV system replacement is in progress.

Value Stream Enhancement:	Savings per year
Energy Saving (kWh)	20,00,000
Cost Saving (Lacs)	INR 199

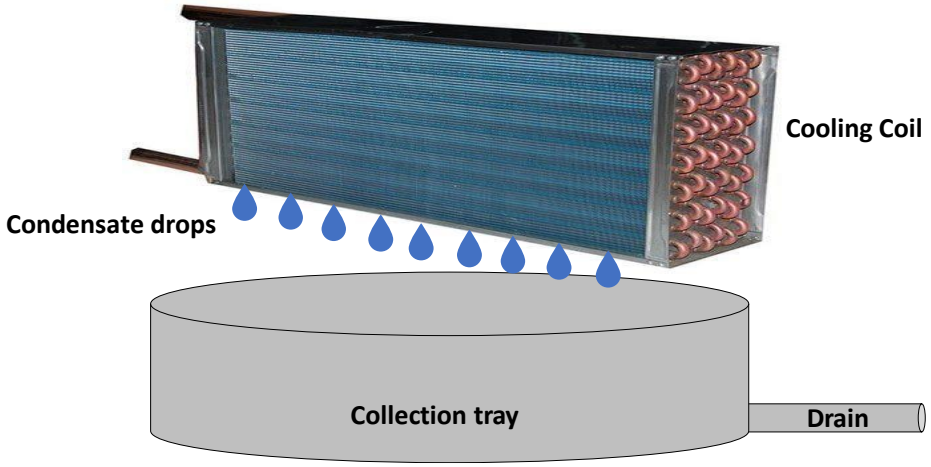
Innovative Projects Implemented: Integrated Operations Center (IOC)

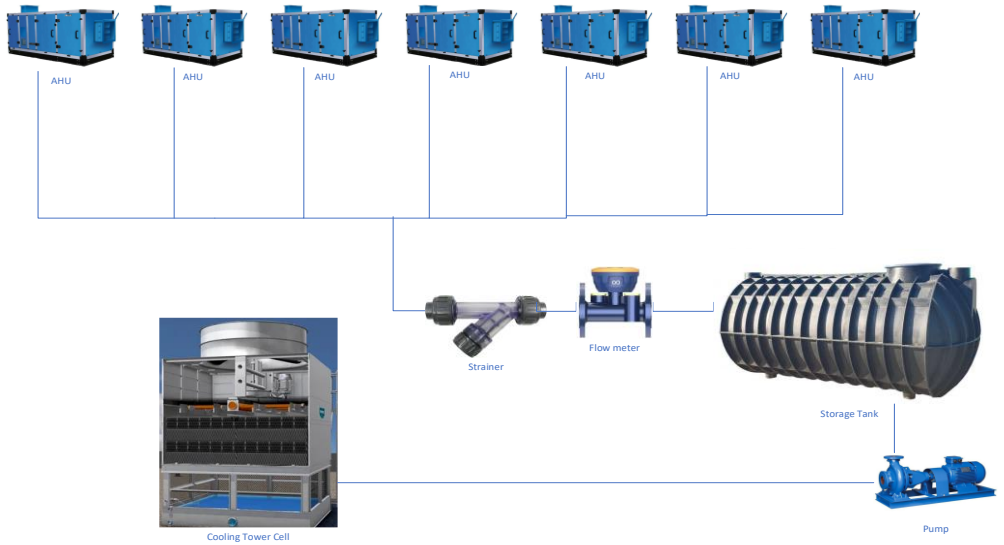
Reliance Industries Limited

- The state-of-the-art **Integrated Operations Centre (IOC)** at RCITPL provides real time monitoring of all the equipment and facilities .
- It manages and monitors the entire campus ensuring 24x7 oversight of energy assets.
- With its IoT-based architecture, the IOC provides real-time insights helping optimize energy use and enhancing operational efficiency.

Innovative Projects Implemented: Condensate Water Harvesting

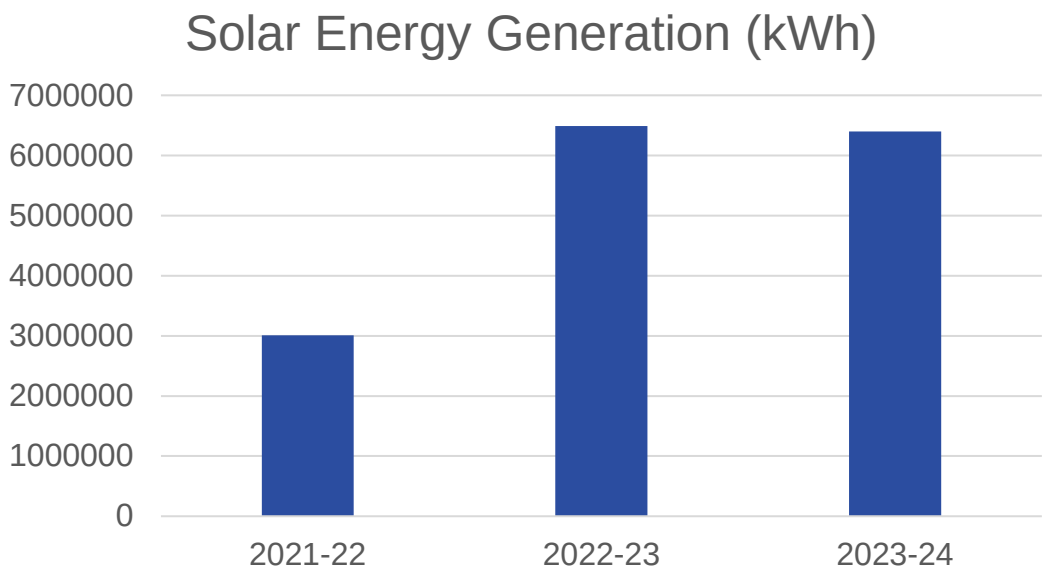
- All condensate water generated in AHU's is channeled through pipes.
- The Condensate then passes with gravitational flow through strainer and measured in flowmeter before getting stored in collection tank.
- This condensate is without any impurities and hence is used to charge cooling towers cells.
- Total 5,030 m^3 of condensate water was collected and utilized as makeup water for cooling tower cells in FY. 2023-24.





Utilization Of Renewable Resources - Solar

Sr.no.	Item	2021-22*	2022-23	2023-24#
1	Solar Energy Generation (kWh)	30,09,311	64,87,959	63,96,836



- Increase in generation is due to increased installed capacity of the Solar panels.
- Proper cleaning and maintaining schedule is defined.
- Future Roadmap of increasing the solar generation capacity by 2 MW/year.

*: COVID-19 Period
#: Effect of VRV augmentation work on solar rooftop.

Utilization Of Renewable Resources: Biogas & Natural Manure

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S.No.	Name of the Fuel	Year	Quantity of waste Fuel used (MT/year)	GCV of fuel (kCal/kg)	Heat Value (million kcal/year)
1	Biogas	2021-2022	9.165	4,980	45.6
2	Biogas	2022-2023	38.16		190.03
3	Biogas	2023-2024	37.29		185.7

Natural Manure

S.No.	Year	Total Production (kg)	Avg. Production per month (kg)	Approx. cost saving (INR Lakh)
1	2021-2022	49,273	4,106	3.45
2	2022-2023	1,05,717	8,809	7.40
3	2023-2024	1,12,596	9,383	7.88

- Food waste, Green vegetables & Bio gradable waste utilized for generation of biogas (3 TPD capacity) and used for back in food courts.
- Dry vegetation coming out from landscaping is converted into vermicomposting for use as manure with the help of biogas waste slurry.

GHG Emissions And Indoor Air Quality

S.No.	Year	Scope 1 emissions Tons	Scope 2 emissions Tons	Tons of CO2 equivalent
1	2021-22	116	33,160	33,276
2	2022-23	167	46,855	47,022
3	2023-24	256	49,557	49,813

INDOOR AIR QUALITY MONITORING

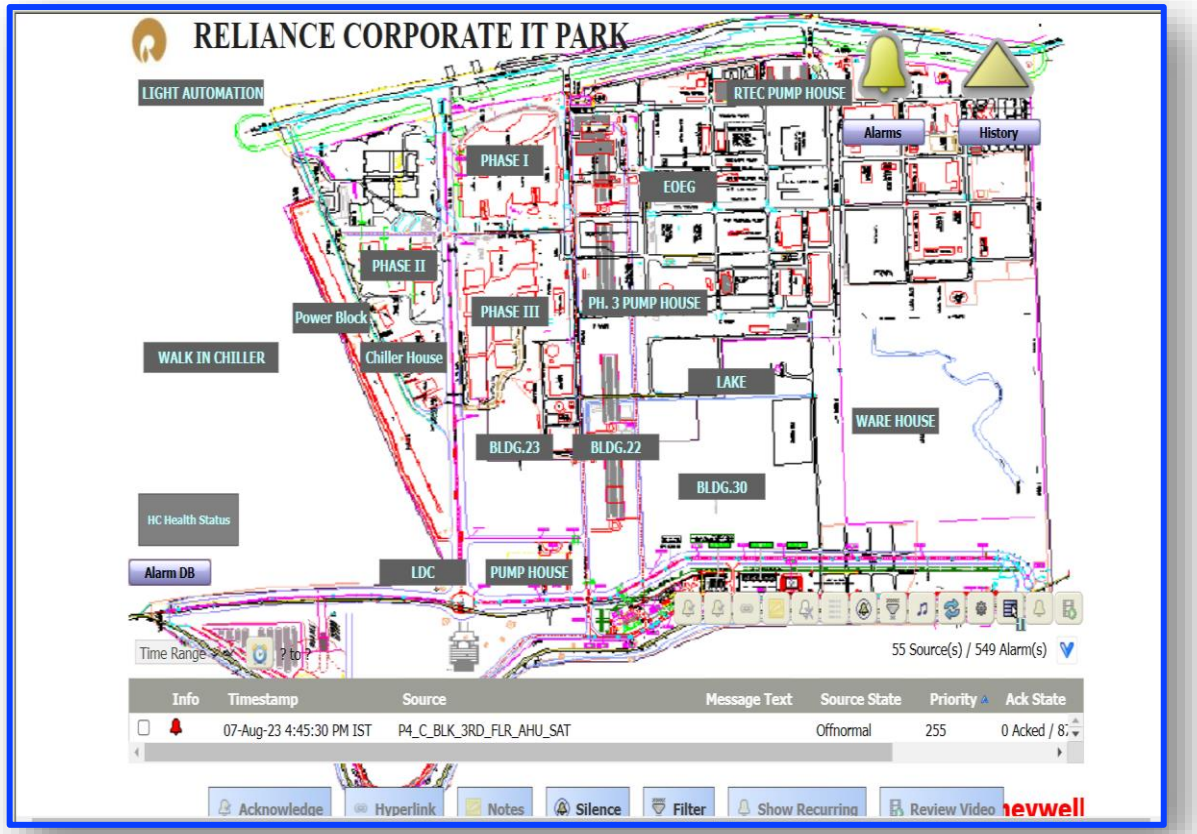
Sr.No.	Date	Phase/Bldg No.	Floor	Location WS-No.	PM 2.5	CO 2 (PPM)	CO (PPM)	PID	TEMP.	Relative Humidity	Average Occupancy
1)	2/01/24	TC-23/04	'A' = AHU-1	WS-106	0·273	444	0	2·82	24·0°c	46·6%	10
			11th	WS-148	0·277	461	10	2·69	24·2°c	46·9%	08
			Floor	WS-191	0·280	450	0	2·60	24·3°c	45·2%	19
				WS-209	0·323	412	0	2·48	24·6°c	47·4%	09
	2/01/24	04 /TC-23	'A' = 11th	CU-314	0·354	434	1	2·38	24·7°c	41·8%	13
			AHU=02	CU-277	0·332	447	1	2·37	24·3°c	41·0%	07
				CU-256	0·326	446	0	2·38	24·3°c	41·2%	07
				CU-223	0·361	412	0	2·32	24·5°c	41·2%	11
	2/01/24	04 /TC-23	'A' = 10th	WS-107	0·272	503	1	1·87	25·0°c	43·2%	02
			AHU=01	WS-141	0272	547	0	1·91	24·9°c	44·5%	01
				WS-160	0·280	504	1	1·90	24·8°c	44·5%	38
				WS-214	0·304	511	0	1·90	24·9°c	45·7%	10
	2/01/24	04 /TC-23	A = 10th	WS-244	0·284	499	1	2·01	24·6°c	39·7%	07
			AHU=02	WS-266	0·294	513	0	2·04	24·7°c	40·0%	18
				WS-297	0·299	508	1	2·05	24·7°c	39·5%	13
				WS-309	0·293	534	0	2·06	24·7°c	39·9%	06
	2/01/24	04 /TC-23	A = 9th	WS-117	0·349	726	0	2·68	24·2°c	46·3%	09
			AHU=01	WS-141	0·338	713	1	2·79	24·1°c	47·6%	14
				WS-180	0·327	715	0	2·81	24·3°c	45·7%	11
				WS-212	0·330	682	1	2·70	24·3°c	46·3%	10
	3/01/24	04 /TC-23	A = 9th	WS-242	0·344	705	0	2·50	25·4°c	44·1%	24
			AHU=02	WS-264	0·333	700	0	2·41	26·0°c	41·9%	33
				WS-287	0·327	642	0	2·35	25·5°c	42·8%	22

Adobe Acrobat Document

- Round the year, Indoor air quality monitoring is carried out for knowing air quality across complex with the use of multi factor monitor- 3M- EVM7.
- ASHRAE standards are followed for office building IAQM limits.

BMS and Certifications

RCITPL has an integrated building management system for monitoring and controlling the campus. The monitoring & analysis of the BMS is 24x7.



The BMS offers several significant advantages for our campus:

- **Energy Optimization:**
  - Energy optimization by controlling HVAC systems based on occupancy and environmental conditions.
- **Safety and Security:**
  - BMS integrates fire alarm systems to enhance building security and safety measures.
- **Centralized Monitoring and Control:**
  - Single platform for managing multiple systems, streamlining facility management and reducing manual intervention.
- **Sustainability:**
  - BMS plays a crucial role in achieving sustainability goals by optimizing resources.

Awards and Recognition

Reliance Industries Limited

2012

Confederation of Indian Industry

2016

IGBC Green Campus Platinum Rating

2017-2018

ACREX Hall of Fame award

2019

INFHRA Award for FM excellence awards

2021

Renewed IGBC Green Campus Platinum Rating

2023

INFHRA Award for Excellence in Sustainability

2023

Confederation of Indian Industry

2023

INFHRA Award for Excellence in ESG

Microsoft Excel Worksheet

Net Zero Commitment

Reliance Industries Limited

2020
Announced Net Carbon Zero by 2035 target

2023
2.53 million GJ energy savings; 120% increase Y-o-Y

6.73 million GJ Renewable energy consumption; 115% increase Y-o-Y

Waste biomass utilization at Dahej & Hazira form 7% & 4.7% of respective site's energy consumption

2024
10 GW solar PV factory to commence production in Jamnagar
Start production of battery packs and scale up to a fully integrated 5 GWh annual cell to pack manufacturing facility

2025
Establish 20 GW solar capacity for captive needs of RTC power and intermittent energy for Green Hydrogen
Commence transition from grey to green hydrogen

2026
Jamnagar PV factory scaled to 20 GW in a phased manner

2027
Expansion of cell-to pack manufacturing facility to 50 GWh annually

2030
Establish and enable 100 GW of Solar Energy

2035 Net Carbon Zero

Reliance has made a strong start on the ambitious journey to become Net Carbon Zero by 2035. The Company envisions becoming one of the world's leading **New Energy** and **New Materials Company** over a period of 15 years through a strategic focus on:

Clean energy transition	Making CO_2 a recyclable resource	Replacing transportation fuel	Others include
			• Improving energy efficiency • Upgrading syngas to high-value chemicals • Converting transportation fuels to valuable petrochemicals and material building blocks

Roadmap To Net Zero in RCITPL

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Sustainability. What does it really mean to us?

- The answer is found in the ancient science of **Pancha Bhoota**, five basic elements: **earth, water, fire, air, and space**.
- Sustainability is achieved through and optimum **“Balance of these 5 elements in nature and the human self”**

Sustainability practices at RCITPL

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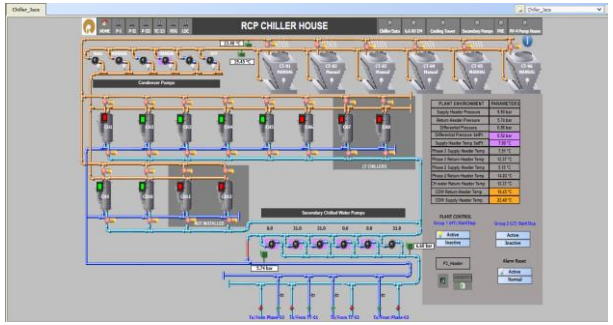
1) Solar Power Generation

- 4.8 MWp solar power panels on rooftops at RCITPL result in reduced heat gain and electricity generation.



2) IBMS

- All the Lights and HVAC systems are integrated and monitored via the integrated BMS resulting in optimized operations and energy savings.

3) EV Charging stations

- 14 fast charging points for EVs set up in the campus.
- Done with the purpose of encouraging users to switch to EVs.

4) Bio Gas

- Food waste and other biodegradable waste in the food courts are utilized for generation of biogas
- The present Biogas Plant Capacity stands at 3 TPD.

Sustainability practices at RCITPL

Reliance Industries Limited

5) Water Harvesting

- RCITPL has an artificial Lake spanning over an area of 7-acre with a capacity of 45,000 m^3 helping drastically reduce long-term negative environmental impacts and is also promote biodiversity.
- Rainwater is also used in cooling towers resulting in water conservation.
- Total Catchment Area : 27,211 sq. m.

6) Effluent Treatment Plant (ETP)

- **50 M3/Day** is the capacity of the Effluent Treatment plant for treating wastewater generated from the in-house Labs.

7) Sewage Treatment Plant

- STP of **2,050 m^3/day** capacity treats domestic wastewater generated which is then utilized for gardening and flushing purpose.

Sustainability practices at RCITPL

Reliance Industries Limited

8) Landscape and Horticulture

- Keeping sustainability at the center of our core principles.
- Recycling helps in preserving the resources and indirectly reducing the emissions and multiple benefits.
- Use of old bicycles being repurposed as pieces and construction of Zen Gardens using waste material like rock, gravel, sand and wood are examples of sustainability practices at RCITPL.

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Annexure – 1: Building wise Consumption

Building Wise Energy Consumption

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Sr.No	Buildings	Total Consumption (KWH) 22-23	Total Consumption (KWH) 23-24
1	Building 1	16,84,001	18,56,395
2	Building 2	15,50,364	19,26,120
3	Building 3	14,91,410	15,84,043
4	Building 4	8,90,650	16,45,613
5	Building 5	16,49,152	17,88,055
6	Building 6	8,22,065	8,30,242
7	Building 7	10,21,252	11,95,754
8	Building 8	20,66,543	13,81,063
9	Building 9A	23,13,590	41,06,341
10	Building 9B	13,15,831	31,00,393
11	Building 10	6,52,142	5,53,881
12	Building 11	6,94,453	7,58,208
13	Building 12	2,44,058	2,61,759
14	Building 22	39,25,781	44,43,792
15	Building 23	37,13,331	36,48,664
16	Building 30	37,75,724	45,18,145
17	LDC	14,38,574	16,84,020
18	R-Tech	9,71,239	13,51,264

Energy Data

Building Wise Energy Consumption Trend – 2022-23 to 2023-24

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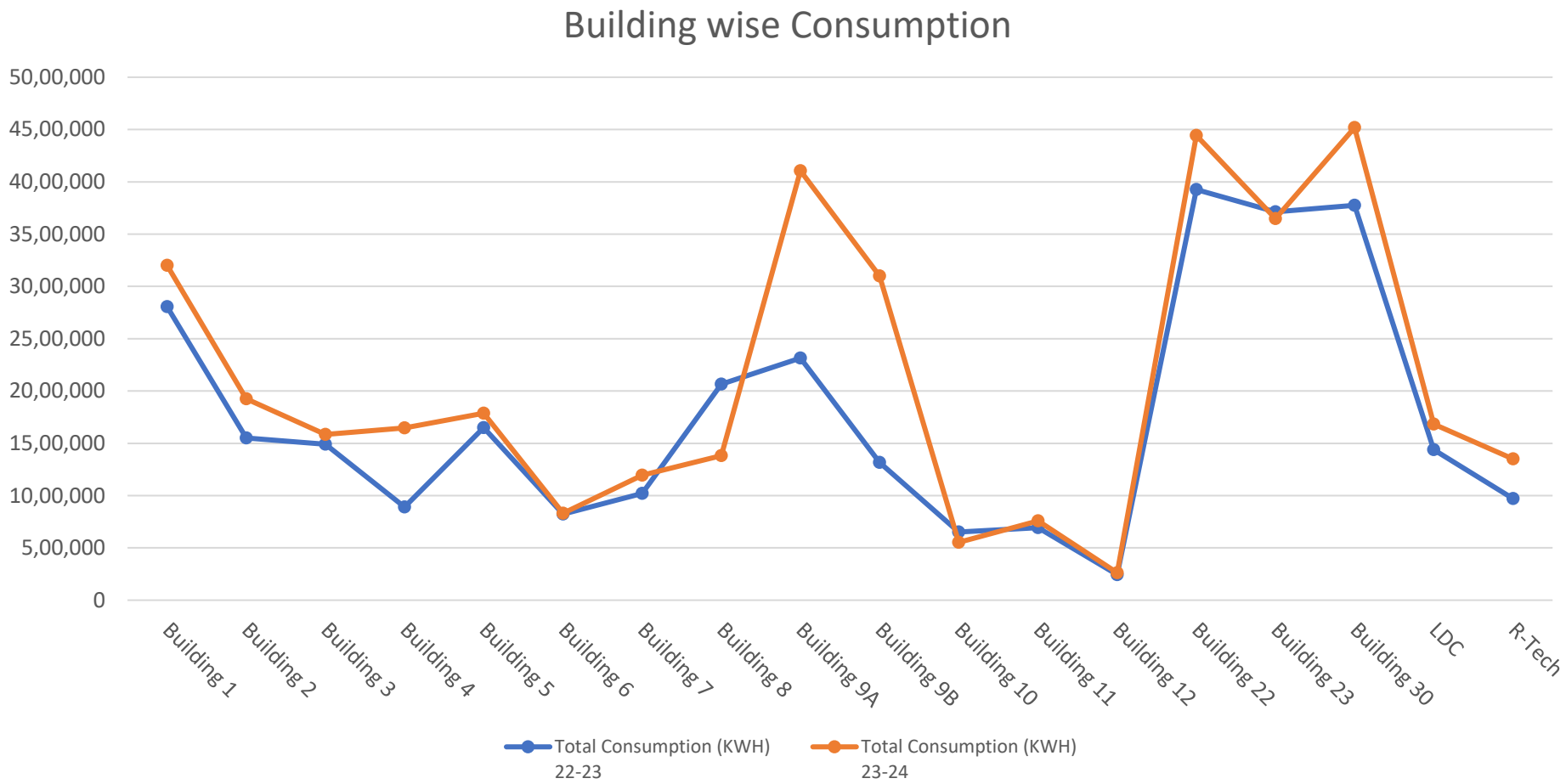

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Go Green is a Trend , Sustainability is a Mindset!