Loughborough University

Loughborough Campus

Annual Energy Performance Report

August 2024 – July 2025

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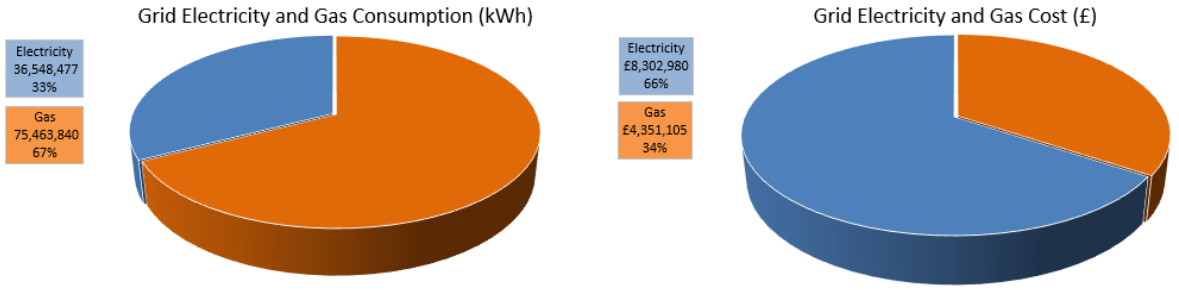
Management Summary

This report covers the energy performance for the Loughborough Campus for the 2024/25 academic year.

Energy Consumption and Cost Data

The annual energy consumption is presented in the following table:

Year	All 'Grid Electricity		All Gas		Total	
	kWh	£	kWh	£	kWh	£
2024/25	36,548,477	£8,302,980	75,463,840	£4,351,105	112,012,317	£12,654,085



The electricity consumption represents 33% of the consumption and 66% of the expenditure, with the gas consumption representing 67% of the consumption and 34% of the expenditure.

CHP Performance

The Combined Heat and Power (CHP) units continue to form an integral part of the University thermal and electrical infrastructure, providing 13% of the annual University electricity consumption and saving £777,458 in energy costs in 2024/25.

Carbon Emissions

The absolute scope 1 and 2 carbon emissions for the 2024/25 academic year were 21,490 tonnes, this represents a reduction of 36.5**%** compared to the 2010/11 baseline year.

The emissions relative to student numbers for the 2024/25 academic year have reduced by 45.54% compared to the 2010/11 baseline year.

Energy Costs

The global utility supply markets remain volatile due to the continued conflict in the Ukraine, the impact of the cost of both gas and electricity has lessened

during 2024/25 due to a reduced reliance of Russian gas and increased global competition for alternative energy sources like LNG.

Wholesale energy prices have reduced from the peaks seen in 2022/23 & 2023/24, but will continue to remain higher than pre crisis levels.

The University has hedged most of the forecast consumption (as of October 2025 circa 90% for both electricity and gas) for the 2025/26 financial year and is protected to a degree against the current market volatility. The energy costs for 2025/26 are forecast to be lower than the 2024/25 costs.

Non Energy Costs (NEC) make up a significant proportion of our electricity bills, in 2024/25 the NEC was around 46% for Electricity, this is expected to increase to over 50% in 2025/26

Decarbonisation Plan

The University has set a target of achieving “net zero” for scope 1 and 2 emissions by 2035.

The University is developing its decarbonisation plan and key projects that are being considered and implemented to support the net zero aspirations are:

- Connection of the existing gas fired district heating systems to the local energy from waste plant.
- Replacement of gas fired boilers with electric heat pump technology, with the first project of converting our Swimming pool to ASHP due to complete Autumn 2025
- Implementation of campus wide LED lighting project.

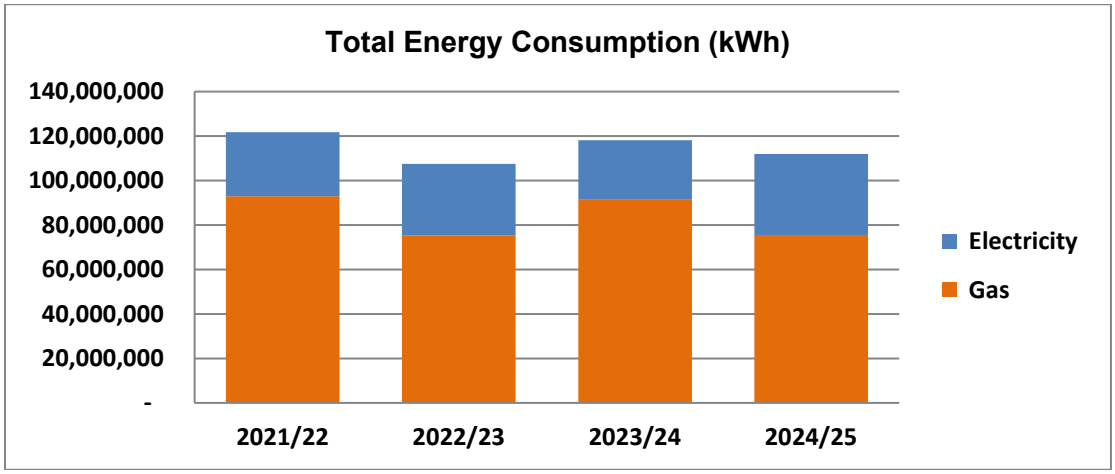
Without the implementation of transformational low carbon projects, the scope 1 and 2 emissions reduction targets will not be achieved.

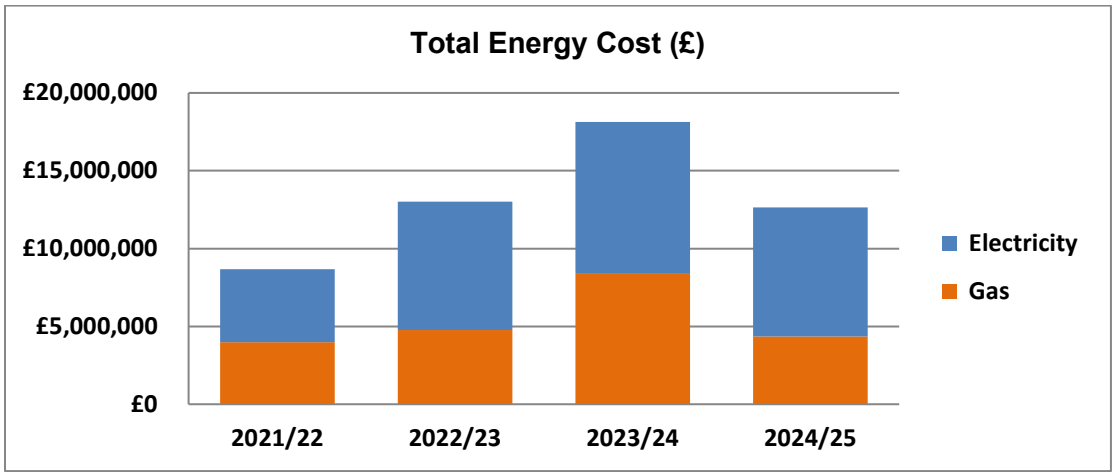
1.1 Total Energy Consumption and Cost

The annual energy consumption and cost is summarised in the following table:

Year	Electricity		Gas		Total	
	kWh	£	kWh	£	kWh	£
2021/22	28,833,534	£4,705,812	92,896,160	£3,977,582	121,729,694	£8,683,394
2022/23	31,975,205	£8,241,127	75,453,511	£4,767,284	107,428,716	£13,008,411
2023/24	26,834,452	£9,715,780	91,326,191	£8,420,524	118,160,643	£18,136,304
2024/25	36,548,477	£8,302,980	75,463,840	£4,351,105	112,012,317	£12,654,085

The energy consumption and costs are presented in the following graphs:

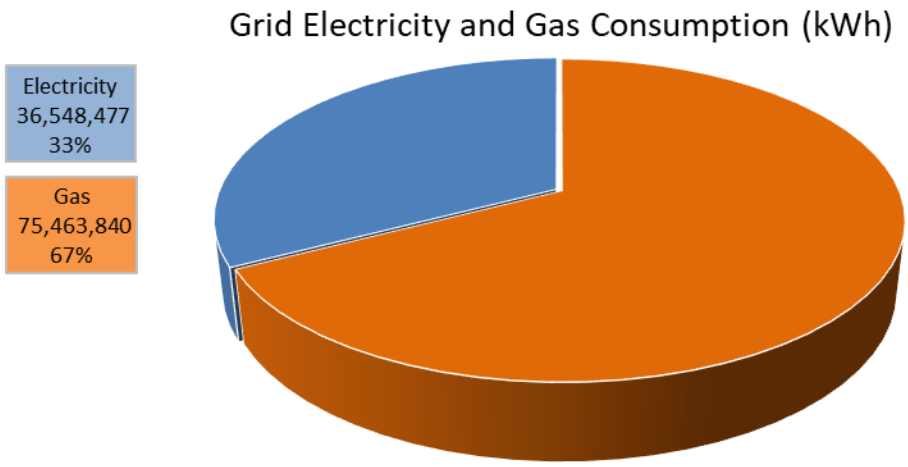




The combined grid electricity and gas consumption has reduced by 5% and the costs have decreased by 30.2% compared to the corresponding period in 2023/24.

1.2 Total Energy Consumption

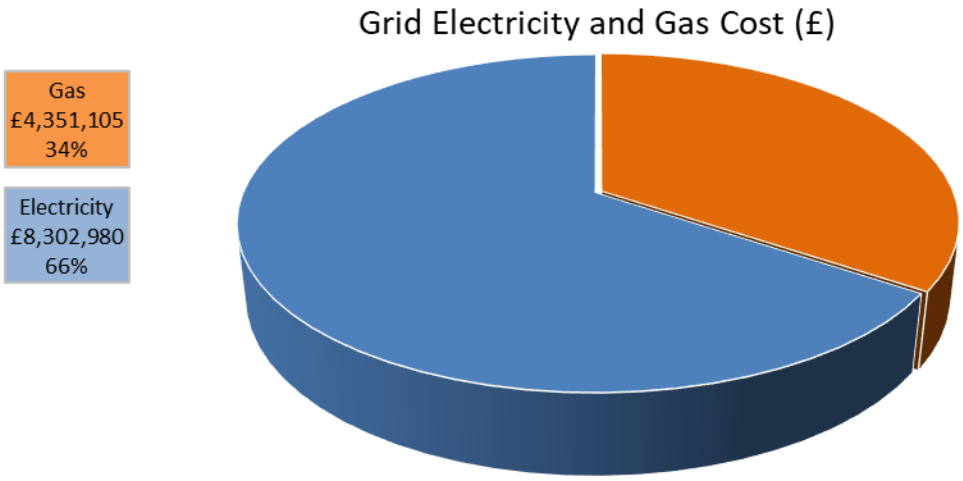
The total energy consumption breakdown for 2024/25 is presented in the following chart:



The “grid” electricity consumption represents 33% of the total annual energy consumption and the gas consumption represents 67% of the total annual energy consumption.

1.3 Total Energy Expenditure

The total energy cost breakdown for 2024/25 is presented in the following chart:

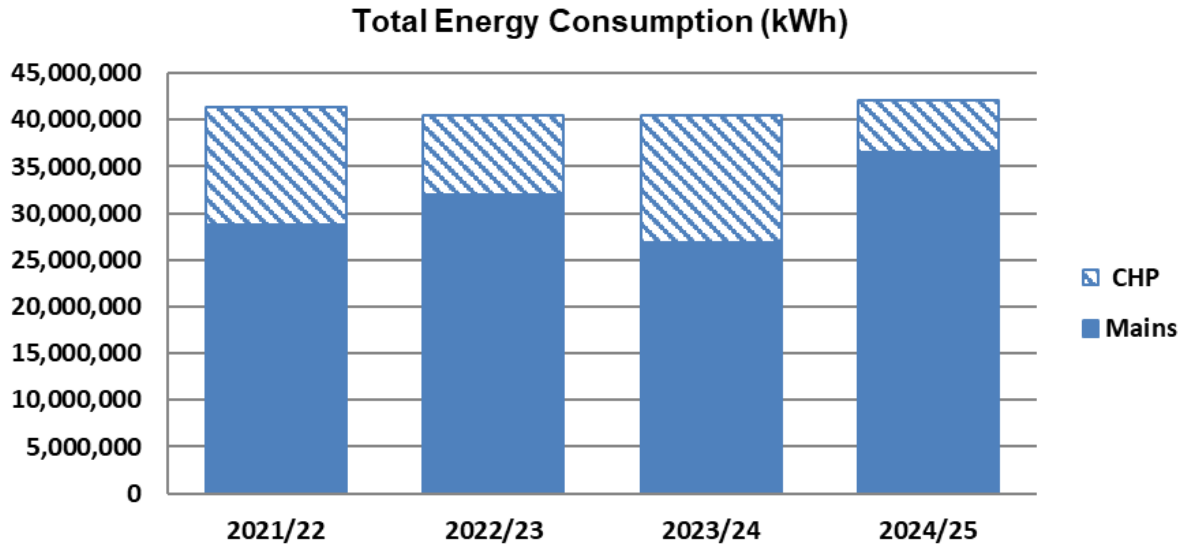


The “grid” electricity costs represent 34% of the total annual energy expenditure and the gas costs represent 66% of the total annual energy expenditure.

1.4 Electricity Consumption

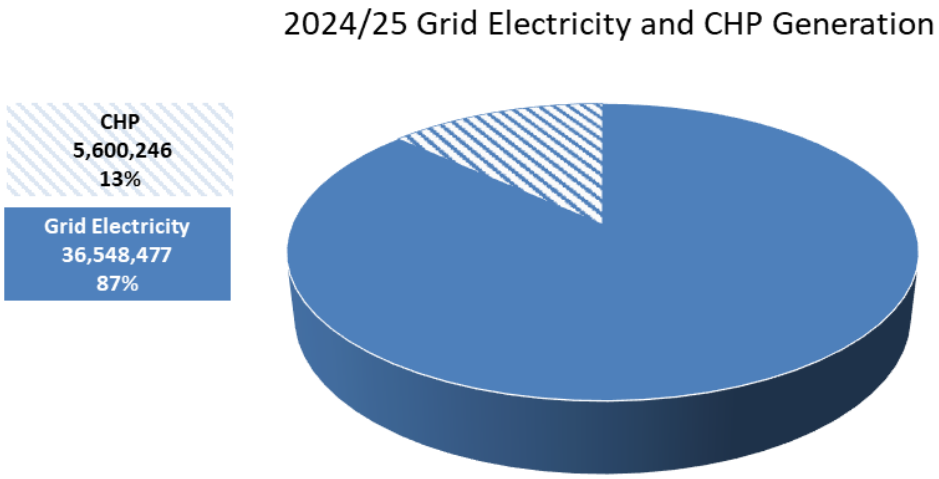
The total electricity consumption represents the electricity that the University consumes across the Loughborough Campus.

The total electricity consumption comprises a combination of electricity that is purchased from the National Grid and electricity that is generated on-site from the Combined Heat and Power (CHP) plants.



The total electricity consumption for 2024/25 was 42,148,723 kWh.

The breakdown between the "grid" electricity and the CHP generated electricity is presented in the following Chart:



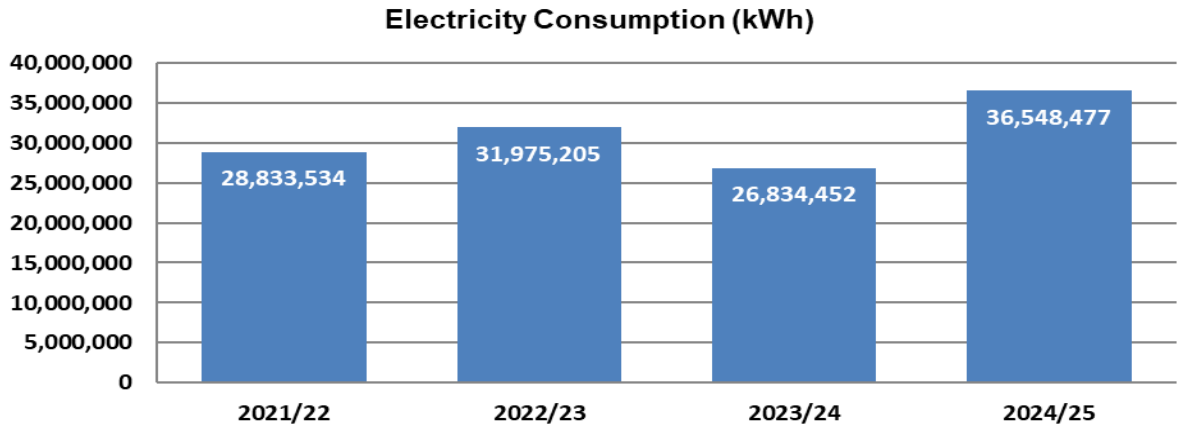
The grid electricity represents 87% of the total electricity consumption and the CHP generation 13% of the total electricity consumption.

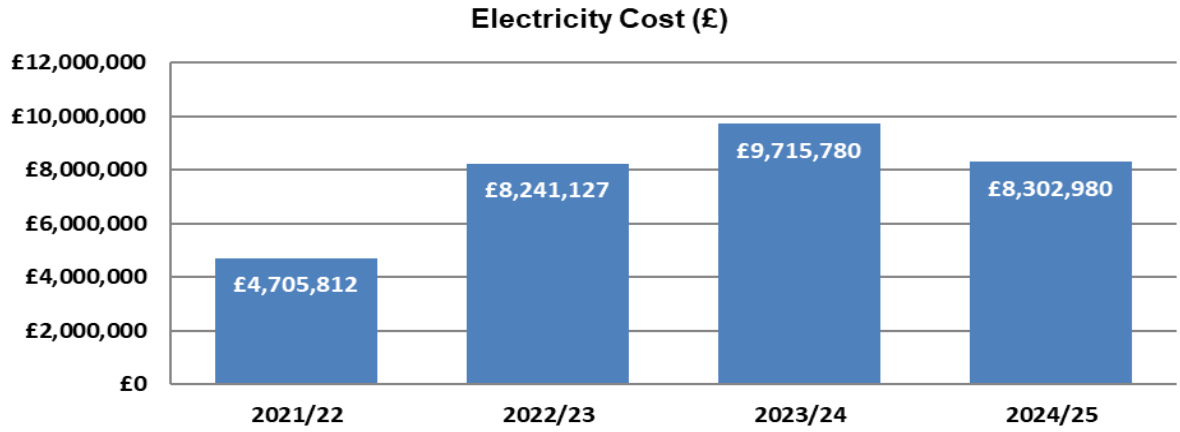
1.4.1 Grid Electricity

The “grid” electricity consumption and cost data are presented in the following graphs:

The total grid electricity consumption was 36,548,477 kWh

The electricity consumption and cost data is presented in the below graphs:





The consumption of “grid” electricity for 2024/25 has **increased by 9,714,025 kWh**, when compared to the corresponding period in 2023/24.
This represents an **increase** in consumption of **26.5%.**

The costs for 2024/25 have **decreased by £1,421,800**, when compared to the corresponding period in 2023/24.
This represents a **reduction** in costs of **14.5%.**

1.4.2 Factors Contributing Towards the Electricity Performance

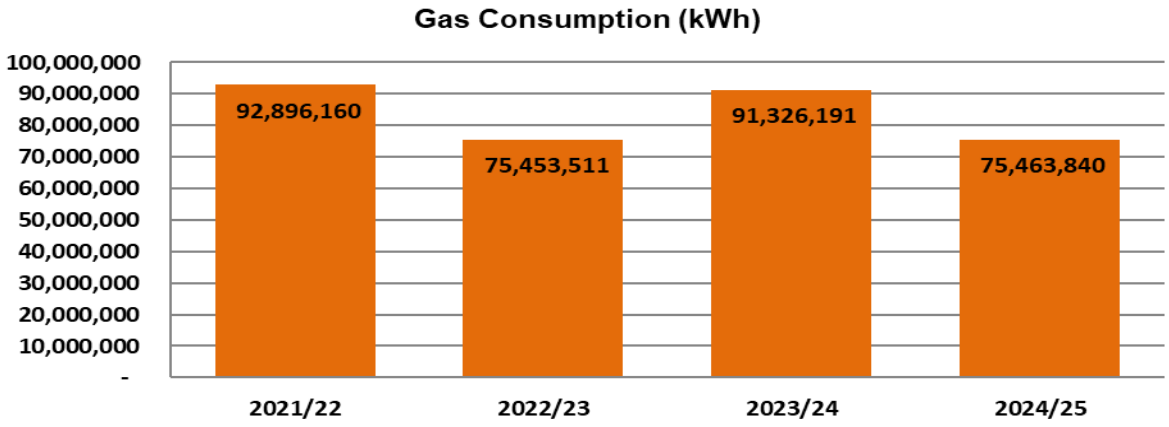
The main factor contributing towards the increase in “grid” electricity consumption is the reduction in the electricity supplied by the three “on-site” CHP units, the electricity supplied by CHP represented 13% of the total electricity consumption compared to 34% in 2023/24.

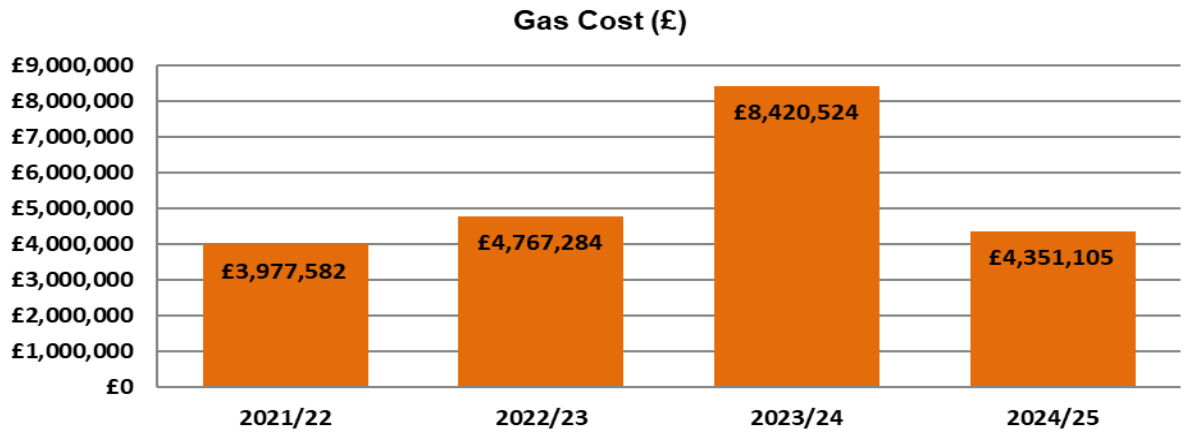
1.5 Gas Consumption

The total gas consumption represents the gas that the University consumes across the Loughborough Campus

The total gas consumption was 75,463,840 kWh.

The gas consumption and cost data is presented in the following graphs:





The consumption of gas for the 2024/25 has decreased **by 15,862,351 kWh**, when compared to the corresponding period in 2023/24.
This represents a **decrease** in consumption of **48.3%.**

The costs for 2024/25 have **decreased by £4,069,419**, when compared to the corresponding period in 2023/24.
This represents a **reduction** in costs of **77%.**

1.5.1 Factors Contributing Towards the Gas Performance

The main factor contributing towards the reduction in gas consumption is the reduction in gas consumption associated with the CHP units. The CHP units suffered significant operational failures during 2024/25 resulting in an reduction in gas consumption to generate “on-site” electricity and utilise the waste heat to support the thermal infrastructure.

2. Utility Supply Markets and Costs

There has been a reduction in both electricity and gas costs, with both electricity and gas unit rates are 63% lower than the exceptionally high 2024/25 rates

The global utility market, although still volatile, is settling as there is a reduced reliance on Russian gas and good storage levels across Europe. Trading conditions remain challenging, but we are seeing a reduction in wholesale utility rates.

We are anticipating seeing an increase in Non Energy Costs over the coming year, NESCO (National Energy Systems Operator) have announced a new 5 year price control period starting April 2026, the forecast rates will potentially push our NEC costs to over 50% of the total cost of our electricity.

The University operates a flexible procurement strategy which allows forward hedging of future supply requirement.

Most of the forecast gas and electricity demand for 2024/25 was secured or “hedged” at competitive rates. The forward purchasing over the past 2 years has allowed us to minimise the overall impact of the market volatility and record high energy rates, providing a degree of budget protection against the significant market volatility and record high prices.

The University works with The Energy Consortium (TEC). TEC are specialist energy brokers supporting the Higher Education sector in the development and delivery of bespoke energy procurement strategies.

Current Electricity Supply Contract

The current electricity contract run to 30th of September 2026
Electricity is supplied by EDF Energy under the “Zero Carbon for Business” tariff.

All electricity supply companies must disclose their electricity production fuel mix and product fuel labels on an annual basis.
The 2024 EDF fuel mix is presented in the following table:

EDF’s fuel mix per tariff or product	Coal	Gas	Nuclear	Renewable	Other	C02 g/kWh	Radioactive waste g/kWh
Zero carbon (1)	0.0%	0.0%	100%	0.0%	0.0%	0	0.0060
Renewable (2)	0.0%	0.0%	0.0%	100%	0.0%	0	0.0000
All other (3)	8.0%	37.0%	50.5%	0.8%	3.7%	254	0.0030

3. CHP Performance

The University has three Combined Heat and Power (CHP) Units:

- Central Park Energy Centre
- Holywell Park Energy Centre
- Claudia Parsons/ EAC Energy Centre

The CHP units continue to form an integral part of the University's thermal and electrical infrastructure, providing **13% of the annual University electricity consumption and saving £777,458 in energy costs in 2024/25.**

The annual electricity consumption data and financial savings associated with the CHP is summarised in the following table:

Unit	Unit Rating	Electricity Generation	Savings
	MWe	kWh	£
Central Park	1.60	4,556,690	£665,737
Holywell Park	1.00	719,650	£66,856
Claudia Parsons	0.23	283,769	£44,865
Total	2.83	5,560,109	£777,458

CHP Operation and Carbon Emissions

The investment in CHP technology has historically produced both carbon and financial benefits for the University.

The units continue to provide significant financial savings due the difference in the unit cost of electricity to gas (spark spread), however with the de-carbonisation of the national grid (2010/11 Electricity Carbon intensity of 0.52114 kg CO2/kWh, compared to 2024 Electricity Carbon Intensity of 0.20705 kgCO2/kWh – *Department of Energy Security and Net Zero Data*), the carbon benefits associated with CHP operation have demised over the years as the electricity carbon emission factors approach parity with the gas carbon emission factors, as such CHP technology can no longer be considered a "low carbon" technology.

The CHP plant will continue to operate to support the University infrastructure until the units are life expired, at which point the options for low carbon energy generation to support the University thermal and electrical infrastructure will be reviewed in line with the University Energy Strategy and decarbonisation plan.

4. Carbon Reporting

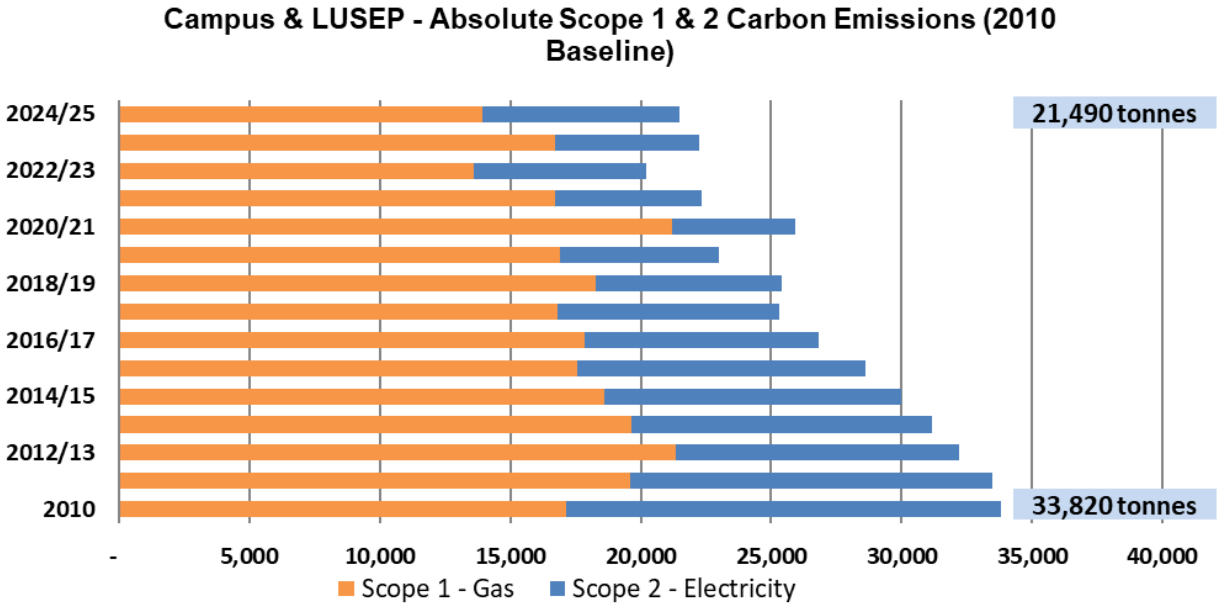
The University tracks its scope 1 and 2 carbon emissions against a 2010/11 baseline.

- Scope 1: Natural Gas used for Combustion in Boilers and CHP.
- Scope 2: Grid Electricity

The absolute carbon emissions and emissions relative to student numbers are presented in the following table:

Scope 1 & 2 Carbon Emissions – Loughborough Campus	Year	Scope 1 Emissions	Scope 2 Emissions	Total Scope 1 & 2 Emissions	Student Numbers	Scope 1 & 2 Emissions per Student
	2010/11	17,135	16,685	33,820	16,106	**2.10**
	2011/12	19,603	13,891	33,494	16,703	**2.01**
	2012/13	21,351	10,843	32,194	16,237	**1.98**
	2013/14	19,654	11,517	31,171	17,008	**1.83**
	2014/15	18,609	11,382	29,992	16,557	**1.81**
	2015/16	17,547	11,082	28,628	17,314	**1.65**
	2016/17	17,827	8,976	26,803	17,505	**1.53**
	2017/18	16,828	8,501	25,330	17,101	**1.48**
	2018/19	18,280	7,104	25,384	17,519	**1.45**
	2019/20	16,917	6,065	22,982	17,524	**1.31**
	2020/21	21,179	4,735	25,914	18,012	**1.44**
	2021/22	16,721	5,590	22,312	18,759	**1.19**
	2022/23	13,582	6,621	20,203	19,012	**1.06**
	2023/24	16,704	5,556	22,260	18,633	**1.19**
	2024/25	13,922	7,567	21,489	18,790	**1.14**

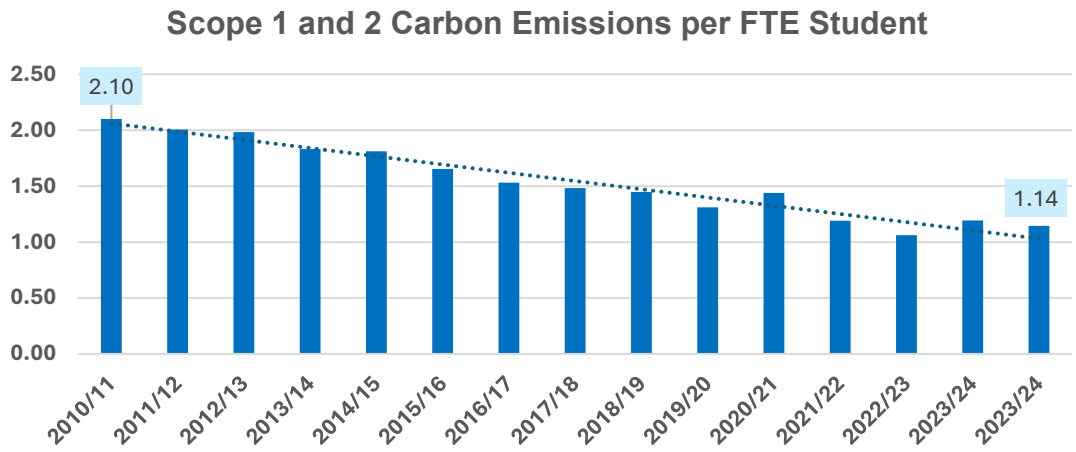
The following graph represents the absolute scope 1 and 2 carbon emissions:



The absolute emissions for the 2024/25 academic year have **reduced by 36.5%** compared to the baseline year.

Scope 1 and 2 Carbon Emission Relative to Student Numbers

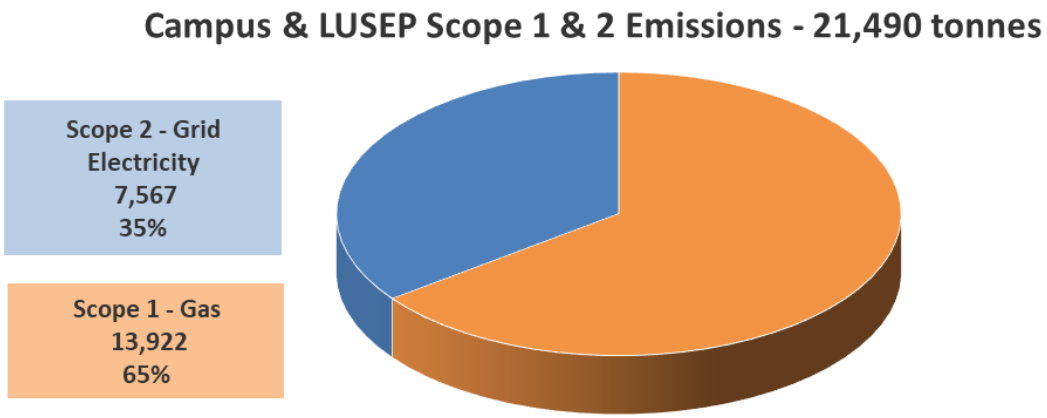
The following graph illustrates the emissions 'relative' to student numbers:



The emissions relative to student numbers for the 2024/25 academic year have **reduced by 45.4%** compared to the baseline year.

Carbon Emissions Breakdown

The following graph illustrates the split in absolute scope 1 and 2 carbon emission between the grid electricity and gas consumption:

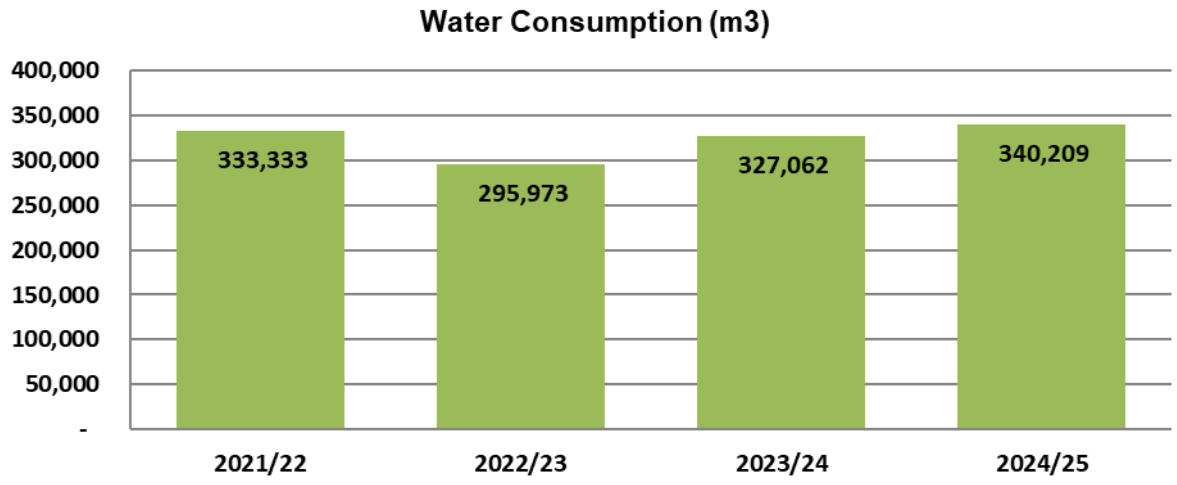


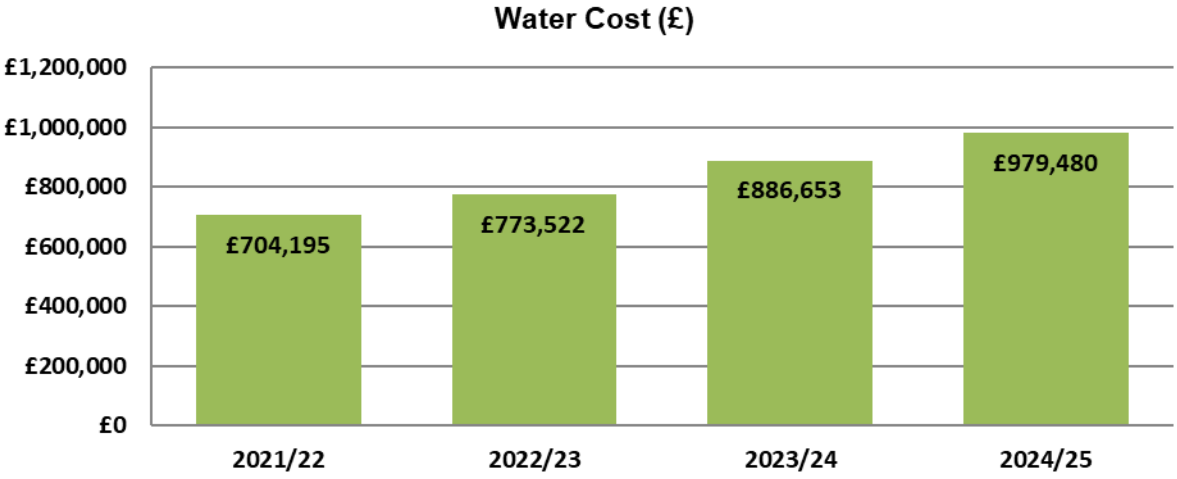
The gas consumption represents 65% of the total emissions and the grid electricity represents 35% of the total scope 1 and 2 carbon emissions.

5. Water Consumption

The total water consumption represents the water that the University consumes across the Loughborough Campus

The total water consumption was 340,209 m3.
The water consumption and cost data are presented in the following graphs:





Water Plus have been awarded the contract for the water supply and waste-water removal across the campus.

Under the contract, Automatic Meter Reading (AMR) devices have been installed on all the incoming water meters, this will allow half hour consumption data to be captured, and this will assist in assessing water consumption profiles, performance monitoring and provide early indication of water leaks at a local level.

Wholesale water costs rose by 30% from April 2025, this has already shown a significant impact on our water spend and will continue to do so, with further wholesale costs rises expected over the next 3 years.

6. Statutory Reporting

The University is captured by several statutory reporting schemes that have been introduced in recent years in relation to energy and carbon emissions.

These include:

- UK Emission Trading Scheme (UKETS)
- Display Energy Certificates (DECs)
- Energy Performance Certificates (EPCs)
- Good Quality CHP (CHPQA).

7. Decarbonisation Plan

Climate Change and Net Zero is a key theme within the current Loughborough University Strategy – Creating Better Futures – Together.

The University has set a target of achieving net zero for scope 1 and 2 emissions by 2035 and scope 3 emissions by 2045.

The University is developing its decarbonisation plan to support the scope 1 and 2 net zero transition and projects that will be considered and implemented within the plan are:

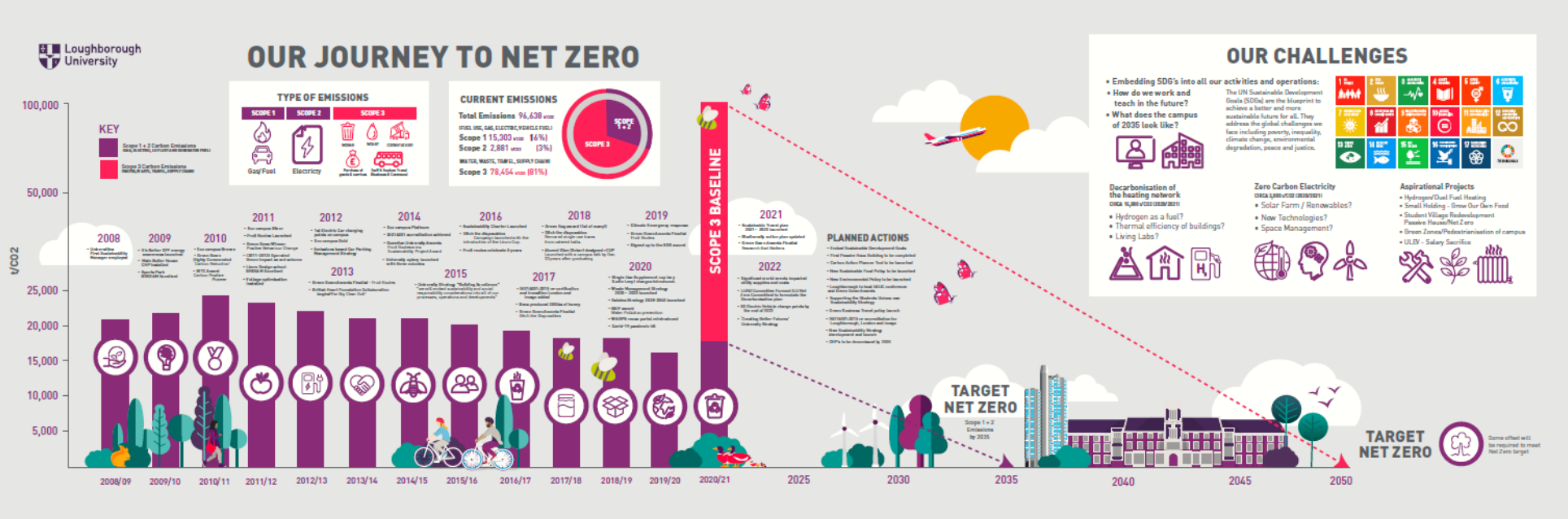
- Connection of the gas fired district heating systems to the local Newhurst “Energy from Waste” plant.

- Replacement of gas fired boilers with electric heat pump technology.

- Implementation of a campus wide LED lighting project.

- Demolition of “life expired” legacy buildings.

Without the implementation of transformational low carbon projects to support the campus electrical and thermal infrastructure, the scope 1 and 2 reduction targets will not be realised.


Loughborough University
OUR JOURNEY TO NET ZERO
TYPE OF EMISSIONS
SCOPE 1
SCOPE 2
SCOPE 3
Gas/Fuel
Electricity
CURRENT EMISSIONS
Total Emissions 96,638 tCO2e
Scope 1 15,303 tCO2e (16%)
Scope 2 2,881 tCO2e (3%)
Scope 3 78,454 tCO2e (81%)
SCOPE 1+2
SCOPE 3
KEY
Scope 1 + 2 Carbon Emissions
Scope 3 Carbon Emissions
t/CO2
100,000
50,000
25,000
20,000
15,000
10,000
5,000
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
SCOPE 3 BASELINE
PLANNED ACTIONS
TARGET NET ZERO
Scope 1 + 2 Emissions by 2035
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20
2020/21
2025
2030
2035
2040
2045
2050
OUR CHALLENGES
Embedding SDG's into all our activities and operations:
How do we work and teach in the future?
What does the campus of 2035 look like?
The UN Sustainable Development Goals (SDGs) are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face including poverty, inequality, climate change, environmental degradation, peace and justice.
Decarbonisation of the heating network
Hydrogen as a fuel?
Thermal efficiency of buildings?
Living Labs?
Zero Carbon Electricity
Solar Farm / Renewables?
New Technologies?
Space Management?
Aspirational Projects
Hydrogen/Duel Fuel Heating
Small Holding - Grow Our Own Food
Student Village Redevelopment Passive House/Net Zero
Green Zones/Pedestrianisation of campus
ULEV - Salary Sacrifice
TARGET NET ZERO
Some offset will be required to meet Net Zero target