Net Zero Progress Report 2022-23

University of Hertfordshire

EXECUTIVE SUMMARY

Climate change continues to be one of the biggest challenges facing humanity to date. Despite significant progress in many areas to reduce carbon outputs, greenhouse gases are at a record high, and 2023 has been confirmed as the warmest calendar year since 1850. As the impacts of global warming continue to cause devastation across the globe, including here in the UK, pressure is mounting to accelerate the scale and pace of climate action.

A recent study has found that the UK Higher Education sector emitted 18.1 $MtCO^2e$ in 2021-22, 4.5% of UK territorial emissions in 2022 (406.21$MtCO^2e$)[1]. Recognising its role as an education institution, a regional anchor institute, and a contributor to global emissions a large estate owner with multi-disciplined activities, the University of Hertfordshire launched its Net Zero Action Plan in 2023, detailing its commitments and approach to reaching Net Zero By 2050. The plan, which is based on the United Nations Race to Zero campaign, sets out targets to reduce emissions within its direct control (Scope 1 & 2) and those outside its direct control, but that arise as a result of the university's operations (Scope 3).

Progress against the university's Net Zero targets is detailed in this 2022-23 Net Zero Progress Report. While progress has been quicker in some areas more than in others, the university has made significant reductions to its emission outputs against the 2018/19 baseline, particularly within the built environment.

Key findings include:

- Total Scope 1 & 2 have fallen 27% compared to 2018/19
- Emissions from energy have fallen by 23% in the same period
- Emissions from fuel have fallen by 36% since 2018/19
- Scope 3 procurement emissions have increased slightly against baseline figures but fallen significantly when considered against the growth in staff and student numbers (-29% per FTE)
- Staff and Student commuting Scope 3 data is incomplete and not reported on
- Energy emission targets are still possible, provided gas reduces by an average 1,280 MWh per year (around 6% of 22-23 gas consumption), electricity increases by no more than 1,000 MWh per year, and the grid decarbonises at a rate of 20% per year.

While progress against targets has been encouraging, there is still work to be done, both in terms of implementing carbon reduction interventions and improving the quantity and quality of data collected. Both of these issues are being addressed through the various relevant working and steering groups, and the 2023/24 progress report should show continued progress across the board.

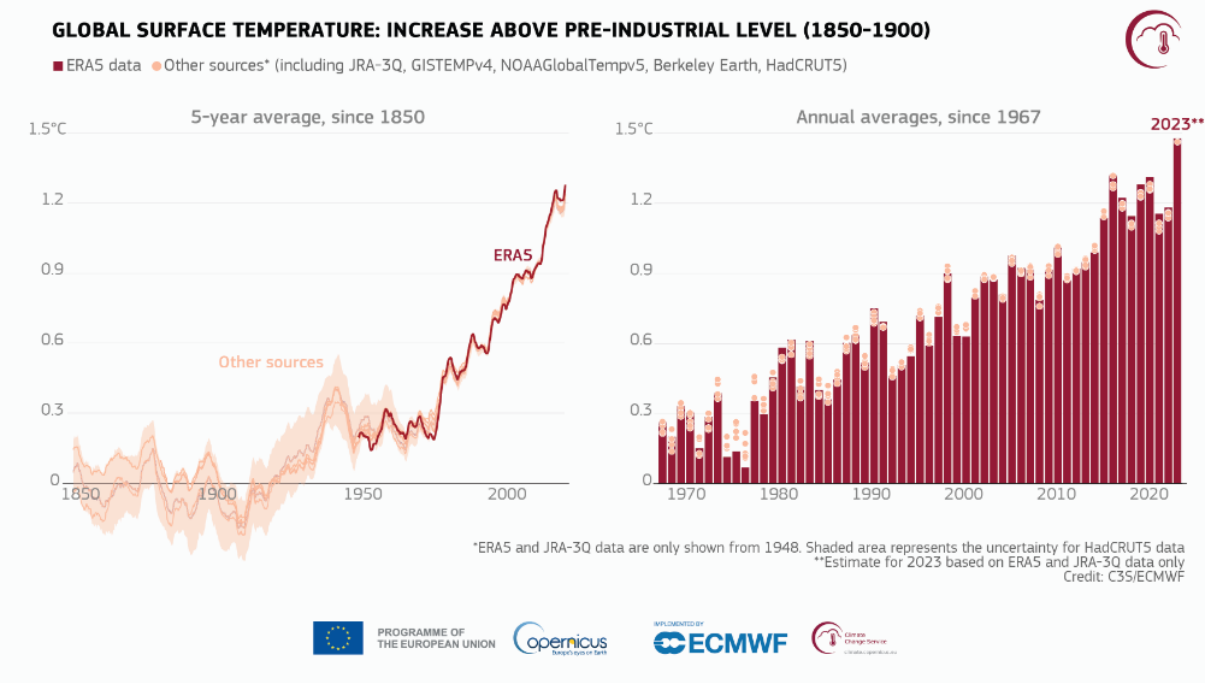
[1] Accelerating the UK Tertiary Education Sector towards Net Zero, The Royal Anniversary Trust

INTRODUCTION

In 2023 we published the University of Hertfordshire Net Zero Action Plan, outlining our commitments and approach to reducing the university's carbon footprint. One year on, the 2022-23 Net Zero Progress Report details action taken to help deliver on our commitments, performance against our targets, and updates to the Net Zero landscape and our internal approach.

CLIMATE CHANGE

Climate change continues to be one of the biggest challenges facing humanity to date. Despite significant progress in many areas to reduce carbon outputs, greenhouse gases are at a record high, and 2023 has been confirmed as the warmest calendar year in global temperature data records going back to 1850. The effects of global warming have been felt across the globe, with extreme weather and climate events having a significant impact on all inhabited continents, including major floods, tropical cyclones, extreme heat and drought, and associated wildfires. These have in turn resulted in the displacement of both animals and humans, food shortages, loss of homes and livelihoods, billions being spent on adaptation and reparation, and sadly the significant loss of life.



As the climate emergency deepens, many countries, businesses, local governments, and public bodies are taking steps to mitigate their impact on global warming:

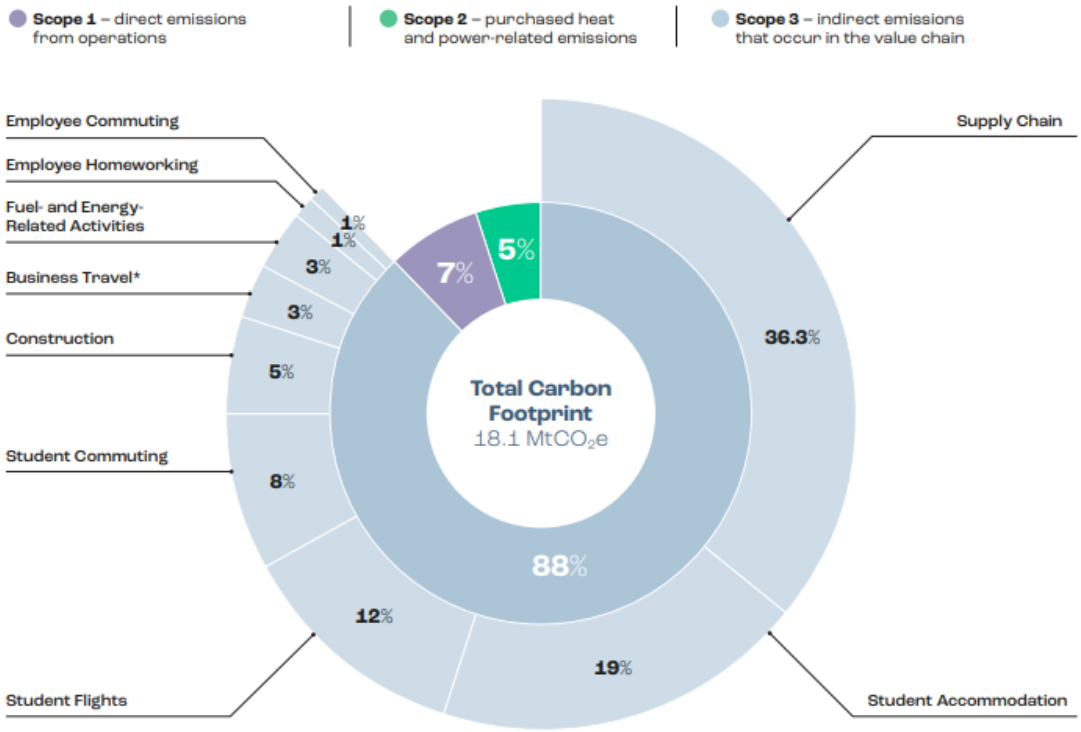
HERTFORDSHIRE

Hertfordshire County Council (HCC) is committed to becoming Carbon neutral for its own operations by 2030, and a net zero greenhouse gas county by 2050. While individual authorities within Herts will set their own targets and action plans, the newly established Hertfordshire Climate Change and Sustainability Partnership (HCCSP) will act as the lead partnership organisation for partners to collaborate and identify joint work programmes on environmental, climate change, and wider sustainability issues.

HIGHER EDUCATION

The UK Higher Education sector's carbon footprint[2] has been calculated at 18.1 $MtCO^2e$, with a breakdown of emissions as illustrated below.

Chart 1: A breakdown of 2020-21 sector-wide emissions across Scope 1, 2, and 3 in $MtCO_2e$, excluding financed emissions



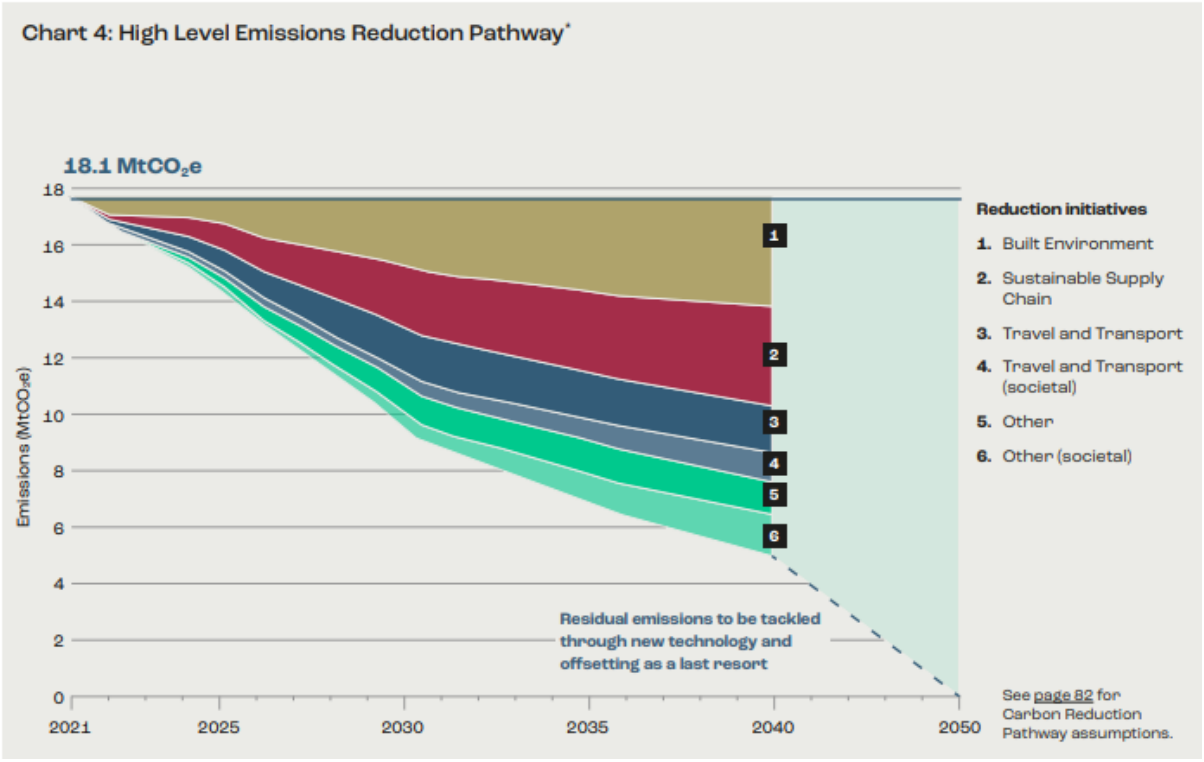
The report identifies three Action Pathways where the sector should focus efforts to reduce emissions. These are across:

- Built Environment
- Travel and Transport
- Sustainable Supply Chain

Combined, these three areas make up 80% of the sector's overall carbon footprint. It also highlights Finance and Investment and Internal Skills and Resources as two cross-cutting enablers to help accelerate progress towards Net Zero.

As this report demonstrates, the big challenge for the sector is tackling Scope 3 emissions, those which are out of the direct control of the institutions – not only are these emissions more difficult to measure, but they are also more difficult to effectuate change on.

[2] 2021-2022, using EMR data, published in Accelerating the UK Tertiary Education Sector towards Net Zero, The Royal Anniversary Trust



Despite a lack of mandatory carbon reporting requirements and formal policy or legal drivers on climate action for the sectors, Higher Education Institutions continue to accelerate their commitment to achieving Net Zero, with 1,193 universities now signed up to the Race to Zero campaign, an increase of 6% since 2022. Of those, 97% have a net zero emissions target and 45% have a published transition plan[3].

UNIVERSITY OF HERTFORDSHIRE

The University of Hertfordshire has committed to becoming net zero by 2050. By adopting an integrated approach and setting ambitious targets, the University aims to reduce its carbon impact in line with science-based targets while empowering positive action within the community.

RACE TO ZERO

As part of our commitment to carbon reduction, we have joined the United Nation's Race to Zero global campaign, which aims for a healthy, resilient, zero-carbon recovery that prevents future threats, creates good jobs, and unlocks inclusive, sustainable growth.

The Race to Zero commitment states that we must: *Pledge, Plan, Proceed, Publish, and Persuade*.We have:

- **Pledged** as a signatory,
- **Planned** and **published** our approach as set out in the Net Zero Action Plan,
- **Proceeded** to take action through our area-specific plans and working groups,
- Reported on progress by **publishing** annual progress reports.

[3] 2023 Race to Net Zero report

REPORTING

In 2023, the University of Hertfordshire (UH) published its Net Zero Action Plan, setting out its commitments and pathways to reducing its carbon output and reaching Net Zero[4] by 2050. Our commitments are managed through various forums such as the Estate Decarbonisation, Waste and Resource Management, and Biodiversity working groups, and progress against targets is reported to the overarching Environment and Sustainability Sub-Committee (Estates), the Environment and Sustainability Steering Group, and the Chief Executive Group. Progress is published annually through the Higher Education Statistics Agency's (HESA) Estates Management Record (EMR) and the University of Hertfordshire Net Zero Progress Report.

* Please note that at the time of publication, the 2022-23 figures have not been published by HESA yet due to a delay within their internal process. The figures used in this report are those that have been submitted but are yet to be verified by publication.

Please see Appendix 1 for an overview of the Environment and Sustainability governing structure.

This progress report relates to the period **August 2022 to July 2023**.

EMISSIONS ACCOUNTING

At UH we account for our emissions within the three categories (or 'scopes') as defined by the Greenhouse Gas Protocol (GHG Protocol), the world's most recognised carbon accounting tool. This standard of reporting is utilised globally across all sectors including in Higher Education. Note that within this document the terms 'emissions' and 'carbon emissions' refer to carbon dioxide equivalents, measured in tonnes (tCO_2e).

There are three classes of emission scopes, and they can be defined as follows:

Scope 1 – direct emissions that arise from the combustion of fuels and/or energy generated by the organisation's owned or controlled sources. The University of Hertfordshire's relevant emission sources within this scope include:

- Natural Gas (Heating);
- Liquefied Petroleum Gas (LPG) (Heating);
- Petrol and Diesel (University-owned, 'Fleet' vehicles and UNO buses); and
- Fugitive Emissions (fluorinated gases, typically found in air conditioning, cooling, and refrigeration systems).

Scope 2 – indirect emissions that arise from the purchasing and consumption of energy generated outside of the reporting organisation's owned or controlled sources. The University of Hertfordshire's relevant emission sources within this scope include:

- Grid-Supplied Electricity (power, and electrical heating / cooling where applicable)

Scope 3 – indirect emissions that arise within an organisation's value chain and other activities, typically out of the organisation's immediate control.

[4] SBTI definition

The University of Hertfordshire's relevant emission sources within this scope include the following, in line with the Greenhouse Gas Protocol - Corporate Value Chain (Scope 3) Accounting and Reporting Standard:

• Upstream

- Purchased Goods and Services
- Capital Goods
- Fuel and Energy-Related Activities
- Upstream Transportation and Distribution
- Waste Generated In Operations
- Business Travel
- Employee Commuting
- Upstream Leased Assets

• Downstream

- Downstream leased assets
- Investments Additional categories in our context include:
- Student Commuting (Upstream)
- Water Supply and Wastewater Treatment (Upstream)

While our Net Zero Action Plan aims to address all emissions in Scope 1, 2 and 3, not all scope 3 emissions are currently reported on, and our emissions are likely to increase as and when we include them in reporting.

For scopes 1 and 2, emissions are calculated by applying the UK government-issued carbon emission factors for the selected latter year to the associated fuel and energy source to the consumption we collect for University-owned assets. For scope 3, data collection methodologies and data quality vary from source to source as detailed in relevant sections in this report.

Our emissions reporting year follows the University academic year, which runs from August to July. We therefore use the conversion factors for the latter year of the reporting period as more months from the split reporting period fall into this year (Conversion factor periods are Jan – Dec).

SCOPE

The scope of this plan follows the guidelines as set out by HESA and applies to all buildings and areas within the wider UH group including academic buildings, halls of residence, sports village, UNO Bus, and catering facilities. It is worth noting, however, that the 2018/19 carbon emissions excluded various entities as these were considered "commercial" according to the HESA scope guidelines, but post-2020, these properties were reclassified, meaning that the following buildings entered the scope:

- Club de Hav
- Fielder Centre
- Sports Village
- UNO bus depot

A full list of campus buildings can be found in Appendix 2.

BASELINES

The Net Zero Action Plan sets a target for overall carbon reduction as well as targets by emission scope. Our targets are absolute and based on science-based targets (SBTIs) in line with the Paris Agreement goals, and for some scopes we have set interim targets in line with our Race to Zero Commitment.

The baseline period against which progress is measured is **2018/19** where this data is available. Progress is measured in the following areas:

Scope 1 & 2	**Baseline CO^2e (tonnes) 2018 / 19**
Scope 1 – Gas	4,671.2
Scope 1 – Diesel / Petrol	5,260.1
Scope 2 - Electricity	7,113.6
Total	**17,044.8**

Other Scope 1	**Baseline CO^2e (tonnes) 2018 / 19**
F-Gas	4,671.2

We will also measure our scope 3 emissions against the baseline figures where available as set out below:

Scope 3	**Baseline CO^2e (tonnes) 2018 / 19**
Purchased goods and services	38,552.28*
Capital goods (construction and IT)	15,914.54*
Waste	25.35
Business travel	1,910.0 (estimated)
Water supply and wastewater treatment	363.8
Staff commuting	N/A
Student commuting	N/A
Investments	N/A
Carbon from food	Started measuring 2022-23

*This data is from 2019/20 as 18/19 data was not available.

The baseline carbon data reported in the Net Zero Action Plan has been verified by HESA through the EMR annual return publications. Where possible, the Net Zero Progress Report will also include HESA-verified data. At the point of publication of this report, however, the 2022-23 EMR data has not yet been published due to a delay by HESA, so the numbers reported in this document are those that have been submitted, yet to be verified.

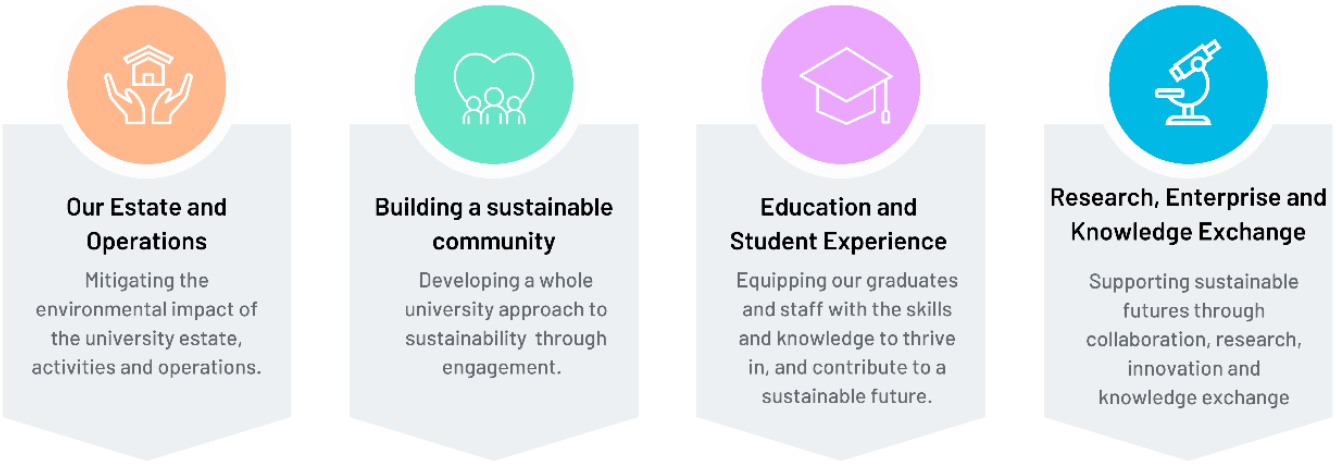
While all of our targets and metrics are absolute, some of our targets are also reported on per Full-time Equivalent (FTE) and / or GIA to help provide a picture that considers the growth in staff and student numbers, as well as campus development. The below table shows these variables as reported by EMR.

	18 / 19	**19 / 20**	**20 / 21**	**21 / 22**	**22 / 23**
FTE staff	2,679	2,577	2,647	2,636	2,772
FTE students	17,403	18,456	20,179	22,928	27,050
TOTAL	**20,082**	**21,033**	**22,826**	**25,564**	**29,822**
		5%	14%	27%	49%
GIA m3	186,769	189,610*	192,422	193,227	192,641
total campus (ha)	94	94	97	97	97

*Club de Hav, Fielder Centre, Sports Village & University Bus are no longer classified as COMMERCIAL so are included in EMR from 2020.

APPROACH

The University of Hertfordshire's Environment and Sustainability Framework sets out four pathways through which we aim to implement and achieve our aims and commitments, including reaching Net Zero. While the first two pathways, Our Estate and Operations and Building a Sustainable Community drive our carbon mitigation commitments, the latter two pathways enable us to positively influence climate action beyond our four walls.



OUR ESTATE AND OPERATIONS

The most material aspect of our Net Zero Action Plan will be delivered through the Estate and Operations Pathway. Areas covered by this pathway include:

Scope 1 & 2:

- Energy
- Fuel
- F-Gas

Scope 3:

- Waste
- Business travel
- Staff and Student Commuting
- Purchased Goods and Services
- Capital Goods & Construction
- Food & Catering

SCOPE 1 & 2:

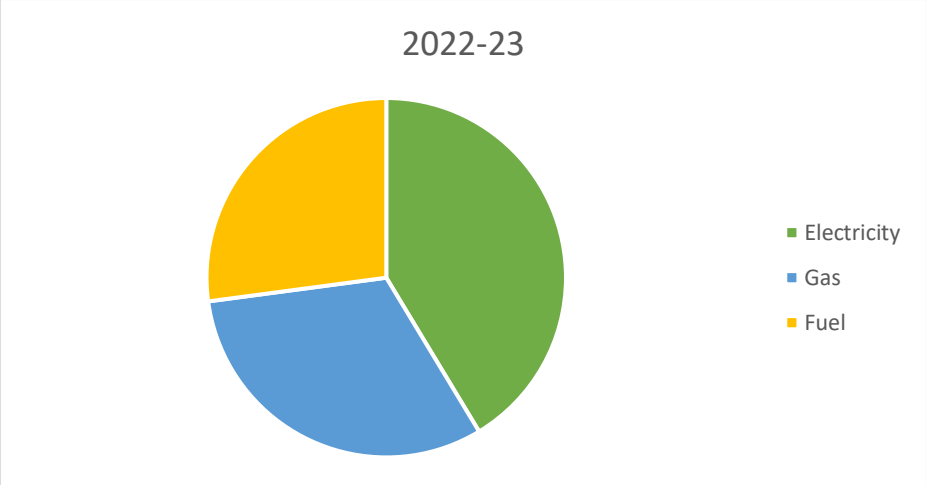
➢ ***Target:*** *To become Net Zero by 2050 at the latest, with a 50% reduction by 2028, and a 78% reduction by 2035 against our 2018/19 baseline.*

This KPI is reported annually to the Chief Executive Group and the Board of Governors.

Our scope 1 & 2 emissions are further broken down into separate decarbonisation plans and targets:

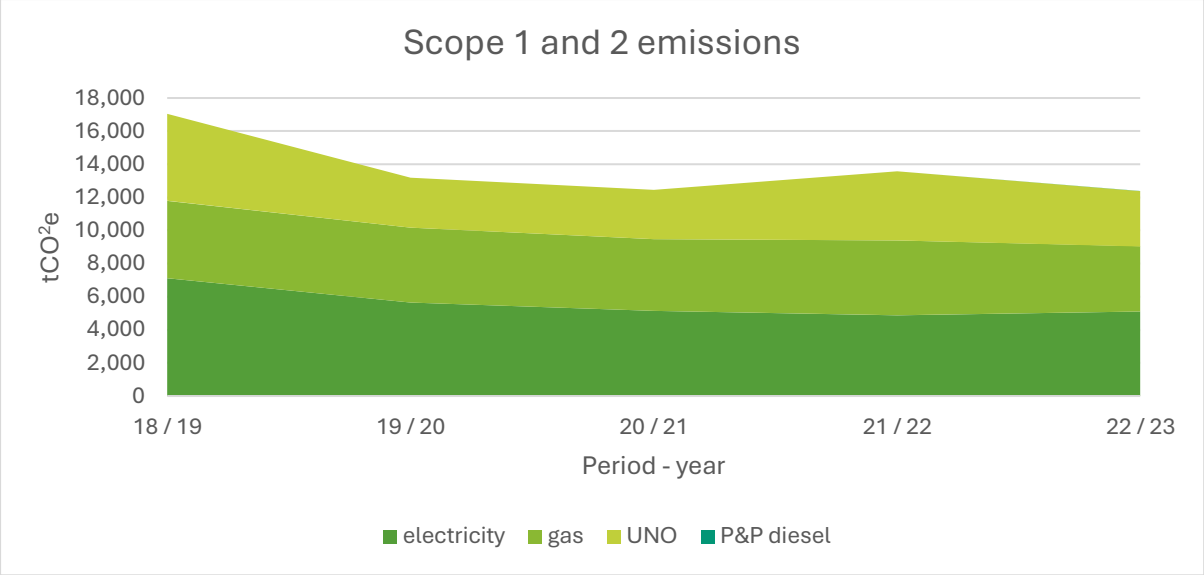
- Energy
- Fuel
- F-Gas

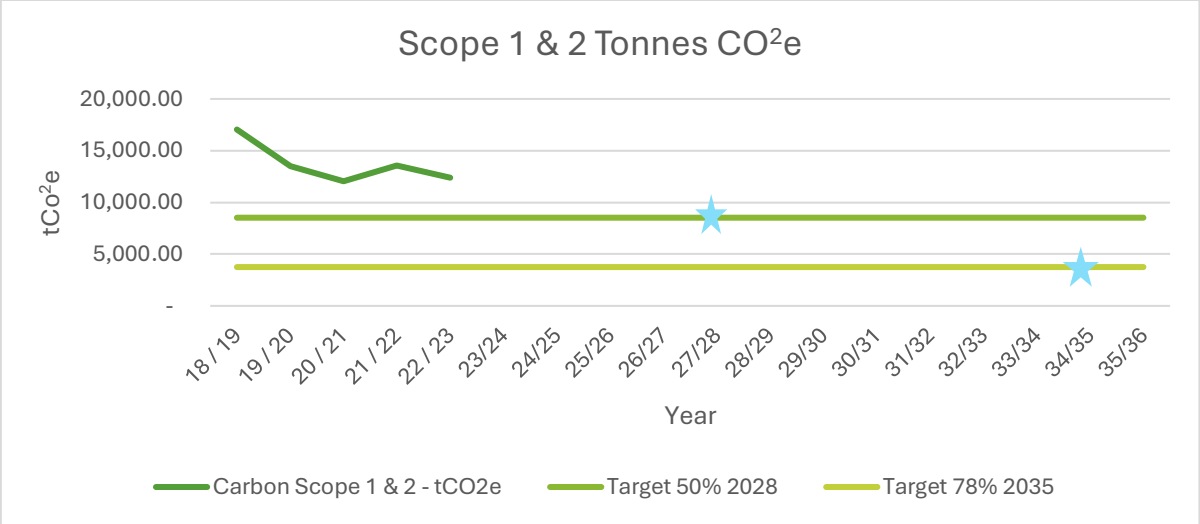
	Baseline 2018/2019	**2022-23**
Total Scope 1 & 2	17,004.8	12,389.23
Electricity	7,113.56	5,124.02
Gas	4,671.18	3,906.70
Fuel	5,265.46	3,358.52
F-Gas	343.64	incomplete



In 2022/23 the University of Hertfordshire emitted 12,389.23 tonnes of CO^2e (scope 1 & 2, excluding F-Gas), compared to 17,044 in 2018/19.

EMR & KPI	**18 / 19**	**19 / 20**	**20 / 21**	**21 / 22**	**22 / 23**
Carbon Scope 1 & 2 - tCO2e	17,044.80	13,487.66	12,044.50	13,591.05	**12,389.23**
change against baseline		-21%	-29%	-20%	-27%
Year on year		-21%	-11%	13%	-9%
Carbon (kg CO2) / FTE	848.7	641.26	527.67	531.65	415.45
change against baseline		-24%	-38%	-37%	-51%
carbon (kg CO2) / m2	91.26	71.13	62.59	70.34	64.31
change against baseline		-22%	-31%	-23%	-30%





ENERGY

Objective: Minimise the impact of our energy use on the environment

➢ ***Target:*** *To achieve reductions in carbon from energy against our 2018/19 baseline of 85% by 2035 and 95% by 2050.*

ENERGY DECARBONISATION PLAN

In 2022, external consultants were appointed to help develop a comprehensive Estates Decarbonisation Plan (EDP). The plan covered sixty-six buildings, including all academic buildings and those under the Private Finance Initiative (PFI) arrangement on the de Havilland campus, including the Halls of Residence.

The EDP is based on the following interlinked themes:

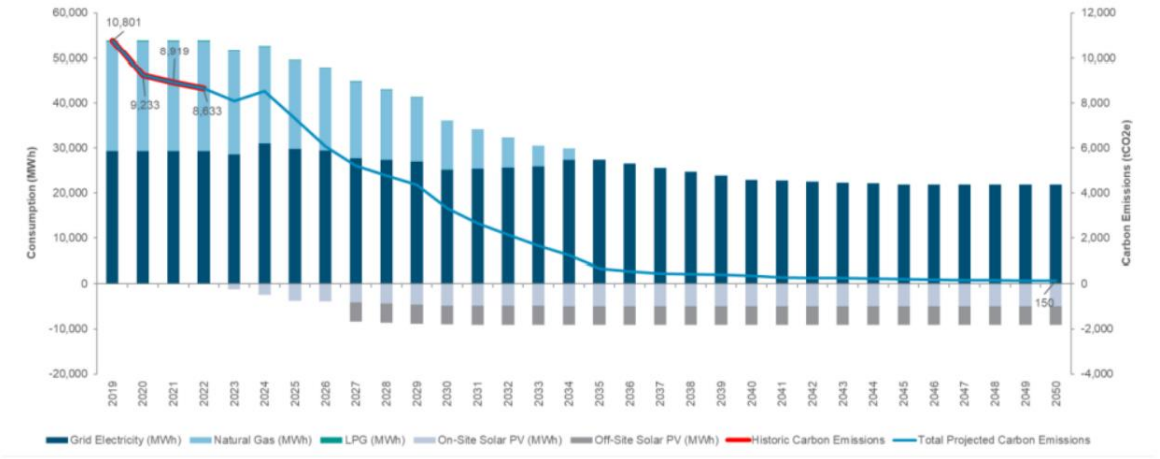
- CONTROL – active energy and carbon management and enhanced building control systems

- ELECTRIFY – switch from burning fossil fuel to electrically-driven heating and hot water systems
- INSULATE – reduce peak loads and annual demand for thermal energy

The decarbonisation plan identified four main opportunities for intervention:

1. Retrofit
   - Building Fabric Improvements (thermal insulation and airtightness)
   - LED Lighting and Controls Retrofit
   - Decarbonisation of Heating and HWS
   - Cooling Upgrades
   - Building Management System (BMS) and Active Energy & Carbon Management
   - Ventilation Upgrades
   - Solar PV – on-site and off-site
2. Heat / Hot water Decarbonisation
3. Solar PV panels
4. HV/LV Electrical Infrastructure

Having considered the risks, the age and condition of existing assets, anticipated annual funding, and future campus redevelopment plans, an incremental approach was adopted as per the figure below.



PROJECTS 22-23

The following projects were carried out during 2022-23 to help reduce emissions from energy:

- LED lighting upgrades in our Learning Resource Centres (started 2021/22)
- New BMS systems to improve energy efficiency
- Feasibility studies on cladding to help make building more energy-efficient
- Estates decarbonisation plan (outsourced)
- Boiler replacements to more efficient versions

BUDGET & SPEND

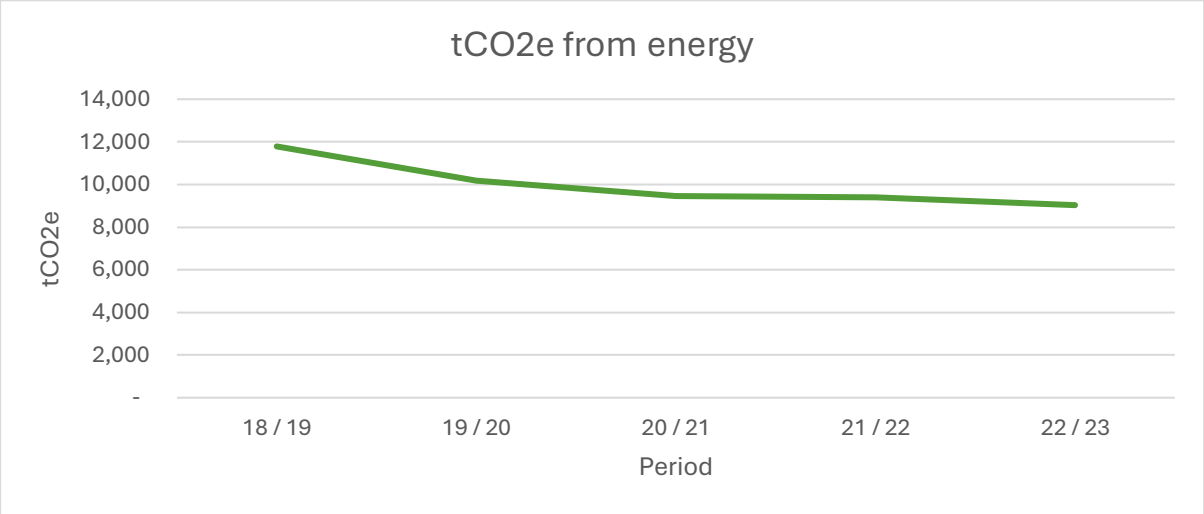
The University has an annual carbon management budget of £345,000 which funds various projects such as those listed above.

In 2022-23 the University spent almost £1.3m decarbonising the estate. Grants from Salix / PDSD helped fund the LED lighting project (£750,000) and the Estates Decarbonisation Plan Consultancy project (£99,000). Additional expenditure came from other budgets such as maintenance and revenue.

For 2023/24, the £245,000 carbon management budget will remain in place, as well as an additional £2.5 million budget to decarbonise the estate and help us reach Net Zero.

PROGRESS

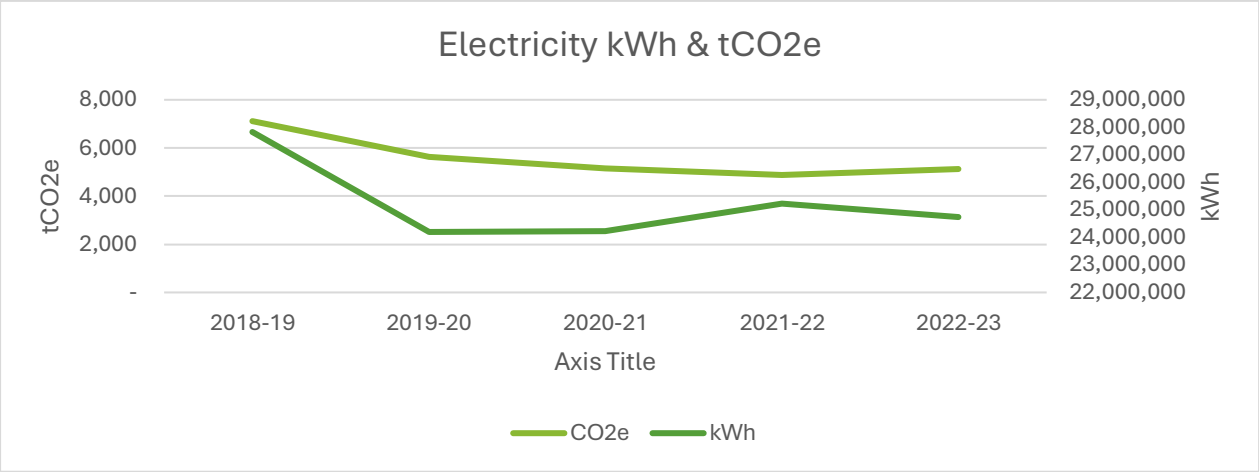
As can be seen from the figure below, we are making significant progress towards our carbon reduction targets, with carbon from energy falling steadily against both the baseline year of 2018/19 and 'year on year'.

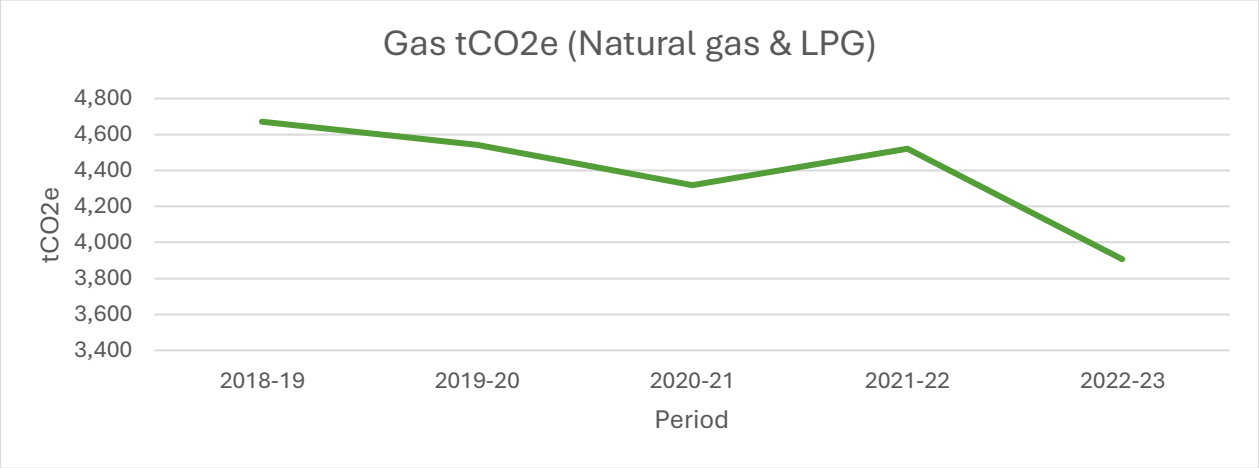


Considering that our FTE numbers have grown by around 50% in the last 5 years, this is indeed a notable success, as is reflected in the change against baseline Carbon per FTE figures below.

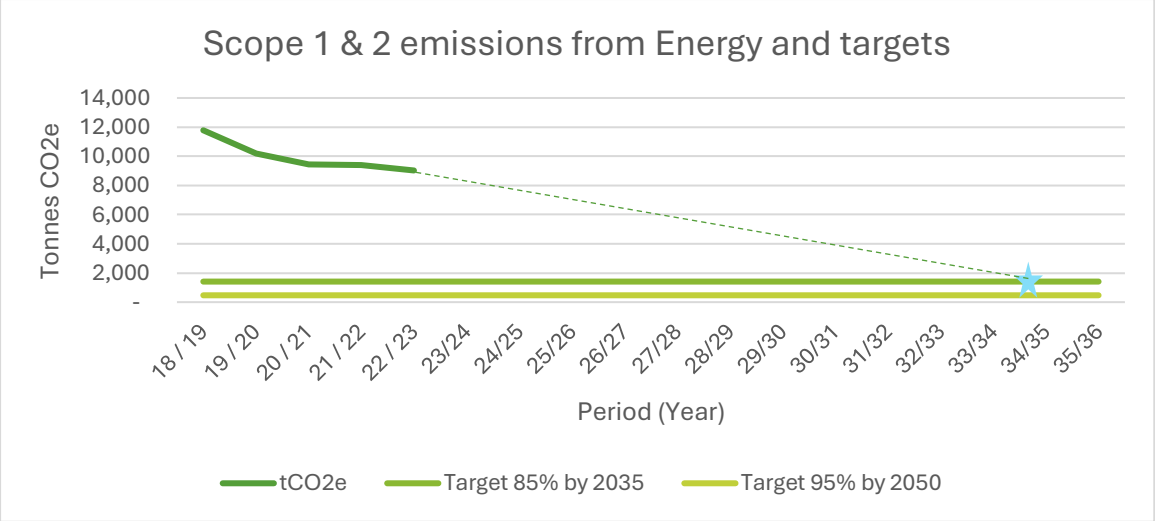
	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23
Carbon from energy (tonnes) (EMR)	**11,784.74**	**10,182.29**	**9,463.06**	**9,400.14**	**9,030.72**
change against baseline		-14%	-20%	-20%	-23%
Year on year		-14%	-7%	-1%	-4%
Carbon (kg CO2) / FTE	586.84	484.11	414.58	367.71	302.82
change against baseline		-18%	-36%	-37%	-59%
carbon (kg CO2) / m2	63.10	53.70	49.18	48.65	46.88
change against baseline		-15%	-26%	-23%	-30%

As can be seen in the figures below, the fall in carbon is a direct result of falling electricity and gas consumption. While higher grid conversion factors during this period have led to a small increase in carbon from electricity despite a drop in consumption, these have been absorbed by the significant reductions in gas consumption, and our energy emissions overall continue to decline. The reduction in both electricity and gas consumption has been enabled by the technical, operational, and behaviour change interventions and initiatives undertaken during this period, such as installing more efficient boilers and lighting, improved BMS systems, increased monitoring and planned maintenance, and energy awareness campaigns.





While progress has been note-worthy, we are not complacent, and as shown in the figure below, the pace and scale of action must accelerate if we are to meet our targets.



Based on the 2018/19 baseline, an 85% reduction by 2035 means that we should be emitting no more than 1,768 tonnes of CO^2e from energy by 2035. This represents a reduction of 7,263 tonnes CO2e between Aug 2023 and July 2035.

While ambitious, this can be achieved provided the following assumptions:

- The **UK grid decarbonises by 20% year on year**, becoming fully renewable by 2035[5] (conversion factor reduced by the same – any electricity transmission and distribution emissions will be captured in scope 3)
- UH **grid electricity increases** by an average of **1,000 MWh per year** as a result of estate development and transition from gas to electricity. Efficiency measures will ensure this increase stays managed, and additional increases in electricity will come from on-site renewable sources.
- UH **gas reduces by an average 1,280 MWh per year** (around 6% of 22-23 gas consumption) - some of this will be transferred to the electricity carbon budget as the estate moves away from gas, the remaining savings will come from efficiencies and behaviour change.

We have identified the main gas consumers across our campus and will be prioritising decarbonisation projects in these areas.

Main users of gas:

Building / area	**% of total gas**	**kWh**	**tCO2e**
De Havilland main building	11 %	2,449, 516	448.1
College Lane main boiler house	21%	4,484, 696	820.38
New science building, Ele House & CP snow	26%	5,622,353	1128.5
HSV (excluding residences)	17%	3,713,090	679.2

Upcoming projects include:

- Installing air source heat pump technology in the Learning Resource Centres (LRCs) and the Weston Auditorium at De Havilland (currently De Havilland Main building & College Lane main boiler house)
- Solar PV technology for the Sports Village (HSV)
- Upgrade boilers in the main boiler house
- 500m2 of solar PV on the new SPECTRA building replacing the gas heating systems in the old SPECS department (main boiler house)
- New heating and cooling policy to reduce demand for heating and cooling
- Continue with the roll-out of LED lighting across campus

FUEL - UNOBUS & UH FLEET

Emissions from university-owned ICE (internal combustion engines) vehicles contribute to our scope 1 carbon footprint. At the University of Hertfordshire, there are 2 main sources of scope 1 fuel emissions: Uno Bus and university-owned vehicles.

[5] https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035

UNO BUS

The University of Hertfordshire owns Uno Bus, a bus company with a fleet of 92 buses, operating around 47,000 service miles per week in Hertfordshire and North London. In 2022-23, it carried 2.8 million passengers across 2.3 million km of road. While helping to significantly reduce regional emissions from private travel (it is estimated that 1 bus can replace up to 30 cars on the road[6]), the fuel from UNO Bus operations is considered as scope 1 emissions and is therefore included in our reporting.

	2018-19	2019-20	2020-21	2021-22	2022-23
tCO^2e	5,260			4,185	3,354
change against baseline	-			-20%	-36%

CO2e emissions from UNO Bus operations have fallen steadily, and in 22/23 emissions were down by 36% against the 2018/19 baseline, largely due to more electric buses, logistical efficiencies, and fewer ICE routes.

While many of the buses are already electric (5 electric double decks on the Transport for London (TFL) school routes and 1 electric sprinter minibus on the Demand Responsive Transport service (DRT)), as well as all ancillary vehicles, UNO Bus are committed to reducing emissions from its operations over the coming years, and have set a target to reach Net Zero by 2050 at the latest. A UNO Bus Decarbonisation Roadmap is being developed and will be published soon.

As part of this commitment, UNO Bus has secured funding from the University of Hertfordshire and the Department for Transport to purchase 27 electric buses over the next 3 years under the ZEBRA programme (Zero Emission Bus Regional Areas). The long-term plan is to convert all vehicles to zero emissions, however, this process will be less incremental than the energy decarbonisation plan due to the capital requirements as well as depot size and energy supply constraints.

OTHER VEHICLES

The university owns 5 vans that support the portering and logistics operations. These are currently ICE vehicles with diesel engines. Emissions from these operations can be seen in the table below, and in 2022-23, the CO2e emissions were 52% lower than during the baseline period, largely due to:

- Reducing the fleet from 7 to 5 vehicles
- A change in delivery model (less office moves and movement of equipment around site)
- Grouping of tasks
- Introduction of contractors to support with these services
- Decline in postal services from 2 deliveries / collections a day to 1

	2018-19	2019-20	2020-21	2021-22	2022-23
tCO2e	9.4	-	-	5.92	4.48
change against baseline	-			-37%	-52%

[6] ACEA - European Automobile Manufacturers' Association "*Buses: what they are and why they are so important*"

Looking ahead, we will continue to explore ways to reduce the emissions from our estate vehicles, including operational efficiencies and trialling cargo bikes.

F-GAS

While emissions from F-Gas on campus are not included in the overall Scope 1 & 2 carbon reporting as this is not requested by HESA for the EMR (Estates Management Reporting) - the framework that we currently align our reporting with, we do measure and track our emissions from F-Gas and report on these separately.

	2018-19	2019-20	2020-21	2021-22	2022-23*
tCO2e	343.64	112.16	116.77	234.75	56.18
change against baseline	-	67%	66%	-32%	

** To note, the 2022/23 figure is based on reactive works only for split units and chillers. Due to a change in contractors, PPM only started in March 2023, meaning that the 22-23 value is not representative.*

While reductions against baseline for 2019-20 and 2020-21 were significant, this was largely due to the reduced demand for chillers and air-conditioning as a result of Covid. Values for 2021-22 are still down 32% on baseline levels, and while the 2022-23 data is incomplete, effective maintenance and repairs, and a transition away from the most harmful F-Gases helped reduce the emissions from F-Gas leakage during this period.

Looking ahead, a plant condition survey will be carried out on all assets, and a replacement programme developed accordingly. Split units and chillers that are beyond their economic life will be removed where possible, or replaced with units with lower (Global Warming Potential (GWP) gases where the units are still needed. Shorter cycles in the planned preventative maintenance programme (PPM) will further help reduce emissions from leaks. when F-Gas becomes incorporated into standardised carbon reporting, we will include this in our Scope 1 & 2 calculations.

SCOPE 3:

While we already measure and report on emissions from some Scope 3 categories, we are seeking to gather baseline data and set meaningful KPIs and SMART targets for all our scope 3 emissions over the coming years.

PROCUREMENT

We report and calculate emissions from our procurement using the Higher Education Supply Chain Emissions tool (HECSET) which is owned and managed centrally by the Higher Education Procurement Association (HEPA) and the British Universities Finance Directors Group (BUFDG). While the emission calculations in this tool are spend-based rather than product-based, it is the sector standard, and in the absence of other more accurate alternatives, provides a useful indicator of the emissions associated with our procurement practices. It is important to note that data for the baseline period of 2018/2019 was unavailable, and so have estimated these based on 2019-20.

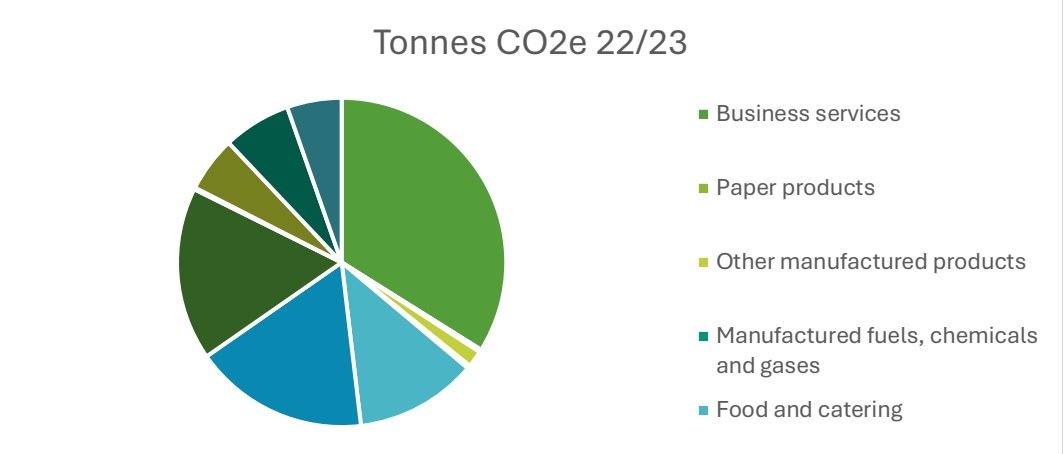
Our Procurement emissions are reported under 2 categories: Goods and Services, and Capital Goods.

Goods and Services includes:

- Business services
- Paper products
- Manufactured chemicals
- Fuels and gases
- Food and catering (we also measure the carbon footprint of food sold based on ingredients rather than spend, but this is reported separately – see section below)
- Medical and precision instruments
- Other procurement
- Unclassified

Capital Goods includes:

- Information and communication technologies
- Construction

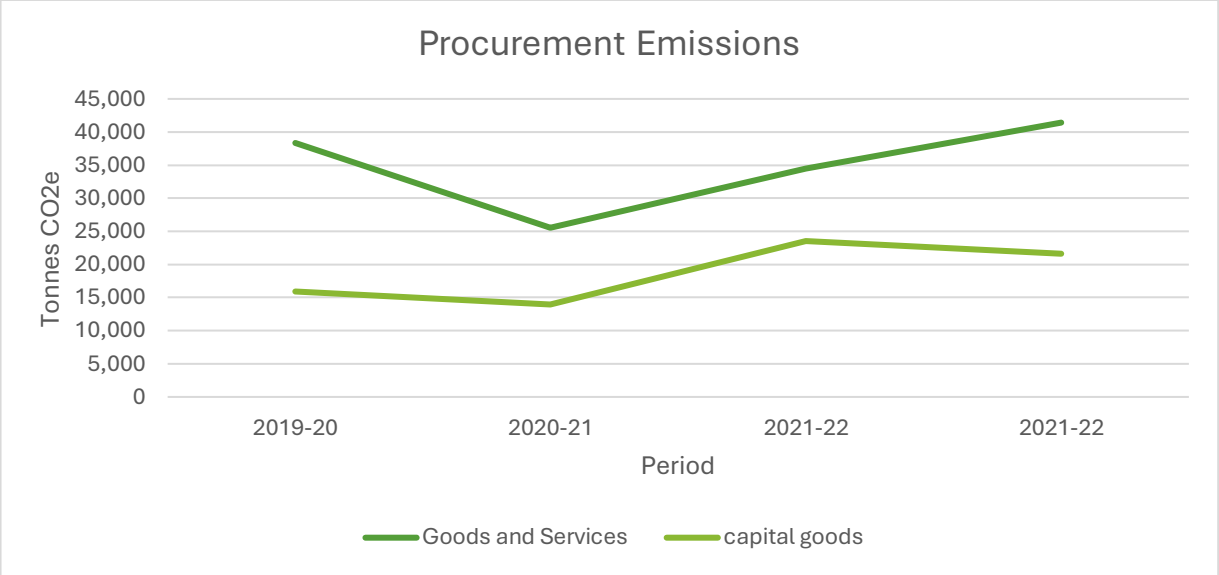


	2018-19	2019-20	2020-21	2021-22	2022-23
Goods and Services	not available	38,333	25,547	34,519	41,419
Change against 19/20			-33%	-10%	8%
Capital goods	not available	15,914	13,955	23,534	21,601
Change against 19/20			-12%	48%	36%
Total	**60,000***	**54,247**	**39,502**	**58,053**	**63,020**
Change against 19/20		-10%	-34%	-3%	5%
tCO2e per FTE		2.58	1.73	2.27	2.11
Change against 19/20		-14%	-42%	-24%	-29%

*Estimate based on 2019-20 taking into account the university closure in the latter part of the 19-20 academic year due to Covid.

While emissions from procurement for 22-23 are up 5% on the baseline figure of 60,000 tonnes of CO^2e, when considering the growth in staff and student numbers over the last 4 years, our procurement emissions per FTE have actually fallen by **29%**.

This has been helped by the publication of a new Sustainable Procurement Policy that sets out guidance on making purchasing decisions, as well as a new structure in Procurement enabling category managers to better manage and support procurement in specific areas.



Looking ahead, we will undertake a comprehensive supplier audit, identifying the top 10 "emitters" in each category, and requesting environment and climate commitments from suppliers. This will then help inform the setting of SMART targets relating to procurement scope 3 emissions.

WASTE AND RESOURCE MANAGEMENT

We calculate the CO^2e emissions from our waste based on actual waste data rather than waste spend (as is included in the HECSET calculator). The waste data is provided by our two waste contractors:

- Cawleys (College Lane, Bayfordury, and De Havilland Academic)
- Veolia (De Havilland Residential and Sports Village)

Waste	**18 / 19**	**19 / 20**	**20 / 21**	**21 / 22**	**22 / 23**
Total waste (tonnes)	895.62	621.65	564	622.44	726.44
Waste (kg) / FTE	44.60	29.56	24.71	24.35	24.36
Change against baseline / FTE		-34%	-45%	-45%	-45%
total recycled %	59%	72%	50%	65%	61%
total to landfill %	1.51%	1.59%	1.30%	1%	1%
Scope 3 CO^2 emissions from waste	25.35	16.64	14.68	16.00	18.74
CO^2e change against baseline		-34%	-42%	-37%	-26%

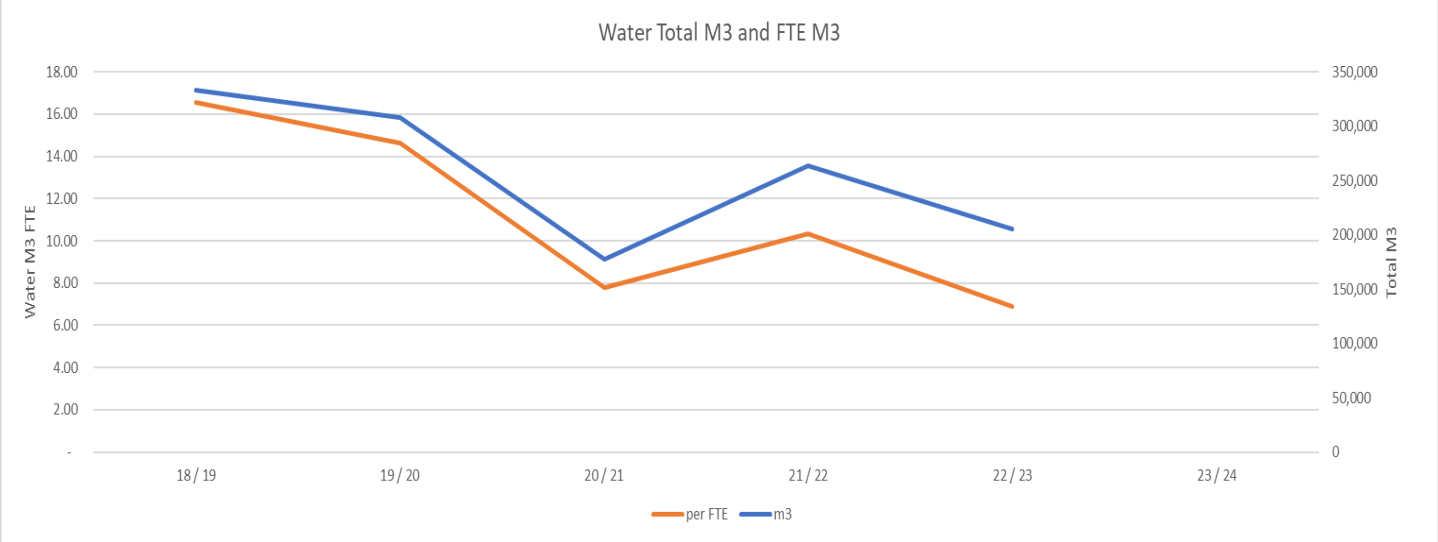
In 2022-23 we emitted 26% less CO2e from waste compared to the baseline period 2018-19, largely due to the fact that we are generating less waste, and more of the waste is being segregated and recycled, with only 1.375% going to landfill.

Looking ahead, we will continue to work with our contractors, staff, and students to continue reducing the amount of waste generated on campus and to ensure that it is treated in the most environmentally friendly way possible.

UTILITIES INCL. WATER SUPPLY AND WASTEWATER AND ELECTRICITY T&D

WATER SUPPLY AND WASTEWATER TREATMENT

Scope 3 CO2e emissions from water supply and wastewater treatment is directly related to water consumption. Apart from a larger dip in 20-21 due to Covid, our water consumption and associated emissions have been steadily decreasing since 2018/19 largely due to the implementation of water-saving fixing on taps and toilets, and to a number of leaks being repaired.



Looking ahead, we will continue to explore new ways to reduce our water consumption by improving efficiencies and running awareness campaigns.

ELECTRICITY TRANSMISSION AND DISTRIBUTION

CO^2e emissions from electricity transmissions and distribution is again directly related to the amount of electricity consumed, as well as the conversion factor for that period.

	2018-19	2019-20	2020-21	2021-22	2022-23
Tonnes CO^2e	603.93	485.16	455.43	446.21	443.32

As we progress with our Energy Decarbonisation Plan, our Scope 3 emissions from electricity will reduce accordingly.

FOOD AND CATERING

Aramark is the university's primary catering contractor, and they manage the retail outlets, canteens, and hospitality services. Aramark as a group, has committed to becoming a Net Zero carbon organisation by 2050. The carbon reduction target, based on a 2019 assessment baseline, encompasses all of Aramark Northern Europe's Scope 1 and Scope 2 food service and a rigorous set of Scope 3 emissions categories.

Aramark's Net Zero commitments are built around areas where it can have the most impact such as transport, energy efficiency, and goods and services. Particularly relevant to UH are its commitments around food ingredients, supply chain, and waste:

Goods and services: In Northern Europe, Aramark has already been moving towards a higher percentage of plant-based meals along with the development of a science-based climate-friendly menu proposition. With this, we are changing recipes, and increasing the mix of delicious, plant-based, and environmentally sustainable dishes, that are based on 50 key ingredients.

Source locally: Aramark prides itself on a long-standing commitment to identify, partner with, and support local producers. The organisation takes care to operate with a detailed understanding of our product, transport logistics, and food waste categories as we manage our impact on the planet. As the organisation continues to deliver on this ambition, a preference for locally sourced will be given in instances where carbon reduction can be achieved.

Minimising waste and maximise recycling: Aramark will trial software that tracks and manages food wastage, indicating possible changes to menus and portion sizes. In addition, staff training programmes will minimise waste and maximise recycling with food waste sent to anaerobic digestion plants.

In January 2023, Aramark launched its Carbon Foodprint initiative in collaboration with Nutrics which calculates and displays a score for all the meals served in our outlets[7]. This not only allows us to accurately measure the emissions from our catering service, but it also helps encourage users to consider the environmental impact of their food choices, nudging them towards more sustainable menus.

[7] Product-based carbon emissions from the food sold through tills in the canteens, excluding Premier Shops, Subway, and hospitality. The proportion of food sold through the tills is around 49% of total food sales on campus, so the data applies to around 50% of our catering service.

Carbon emissions from food started being recorded in January 2023. Based on current data, we have estimated that the carbon emissions for the period Aug 22 – July 23 is **144.7 tonnes of Co^2e**. This will be our baseline figure to track progress against, both as absolute and per FTE.

Going forward, we will continue to track emissions from food sales, and next year a healthy and sustainable food policy will be published that sets out the university's commitments and approach to reducing carbon emissions from the food sold on campus.

STAFF AND STUDENT COMMUTING

While staff and student commuting contributes significantly to our Scope 3 emissions, we don't currently have enough to meaningfully set SMART targets or track progress.

With the publication of our new Travel Plan later this year we aim to not only establish methodologies of capturing commuting data as well as to set more specific targets: Initiatives that we already run that will help us continue to reduce emissions from commuting include:

- Liftshare schemes
- Active Ride – free bike hire
- Discounted bus fares
- Dozens of UNOBus routes
- Bike training and route guides
- Secure bike storage and shower facilities

BUSINESS TRAVEL

We currently report on emissions arising from business travel through HESA's EMR framework. In 2021 we started collecting product-based business travel data from our partners Diversity Travel (air and train) and Enterprise (car hire). We are not yet reporting on emissions from miles travelled for business purposes in own cars. Figures for 2018 – 2021 are estimated based on FTE numbers and travel frequency before and during Covid.

	18 / 19*	19 / 20*	20 / 21*	21 / 22	22 / 23
Tonnes CO^2e	1,910	887.10	500	887.10	1,240.24

* Estimated

Looking ahead, we will be taking steps to both improve the data collection and reduce the emissions derived from business travel. We are planning to develop a new sustainable business travel policy in 2024, and will also work with HR to better capture emissions data from own car business travel.

SCOPE 3 – OVERALL

The table below shows our Scope 3 progress against our 2018/19 baseline.

	2018-19	2019-20	2020-21	2021-22	2021-22
procurement	60,000.00*	54,247.00	39,502.00	58,053.00	63,020.00
waste	25.35	16.64	4.68	16.00	8.74
electricity T&D	603.93	485.16	455.43	446.21	443.32
water supply and waste	363.83	335.59	77.66	111.11	77.63
business travel	1,910.00	1,910.00	887.10	887.10	1,240.24
commuting	-	-	-	-	-
Total	**62,903.11**	**56,994.39**	**40,936.87**	**59,513.42**	**64,799.92**
Per FTE	3.13	2.71	1.79	2.33	2.17

* 2018/19 figures estimated based on 2019-20

While the total figure shows an absolute increase on the 2018/19 values, when considering the growth in staff and student numbers, this actually represents a 31% decrease emissions per FTE. It is also worth noting that both the procurement and business travel figures for 2018/19 have been estimated, so while important to compare against a baseline, going forward we will also be reporting on progress against previous actual data, and focus on the predicted trajectory for each category.

ESTATES AND OPERATIONS PATHWAY - CONCLUSION

	2018-19	2019-20	2020-21	2021-22	2021-22
scope 1 & 2 - tCO^2e	17,044.80	13,487.66	12,044.50	13,591.05	12,389.23
scope 3 - tCO^2e	62,903.11	56,994.39	40,936.87	59,513.42	64,799.92
Total	**79,947.91**	**70,482.05**	**52,981.36**	**73,104.47**	**77,189.16**
Change against baseline		-12%	-34%	-9%	-3%
FTE - tCO^2e	3.98	3.35	2.32	2.86	2.59
Change against baselines FTE		-16%	-42%	-28%	-35%

As can be seen from the table above, we are making progress against our Scope 1, 2 and 3 targets, particularly when the increase in staff and student numbers is considered. While the absolute reduction in total scope 1, 2 and 3 emissions is relatively small at 3%, we are making significant progress in reducing the emissions directly within our control, as demonstrated by the 27% reduction since 2018/19 (scope 1 and 2).

Looking ahead, we will continue to focus on reducing the emissions that we have direct control over, and ensure that we meet our Scope 1 and 2 targets. We will also continue to improve our Scope 3 accounting methodologies and data collection practices so that meaningful SMART targets can be set, and action plans developed to reduce our Scope 3 emissions in line with internal, sector, and national commitments.

OTHER PATHWAYS

While the university's carbon footprint currently sits within the Estates and Operations pathway as detailed above, we continue to work through our other pathways to influence, collaborate, inspire, and educate on all aspects of climate change. These “handprint” actions may not have a direct impact on our footprint, but they can help promote a culture around sustainability that indirectly helps to reduce our emissions, both at Herts and beyond.

BUILDING A SUSTAINABLE COMMUNITY

With 2 new engagement coordinators joining the team in 2022, we were able to deliver a comprehensive programme to engage staff and students with sustainability and climate action including:

- The launch of the Sustainability Advocates programme, with over 40 students signing up
- Campus energy audits
- Collaboration with secondary schools to deliver events such as Youth COP and the Herts Climate Summit
- Awareness stalls, engaging 853 students and 208 members of staff.
- The launch of the Sustainability staff network
- Green Impact challenge where Staff completed over 226 actions across energy, waste, food, transport, and community engagement.

TEACHING, LEARNING AND SKILLS FOR LIFE

In 2022 we re-launched the updated Hertfordshire Graduate Attributes. Among the six graduate attributes, there are two that link specifically to Sustainability:

- Sustainability driven
- Globally minded

The graduate attributes will be embedded into all courses and programmes over the course of 2023 and 2024, and will inform the wider student experience agenda, ensuring teaching and learning is relevant to students’ priorities and the world they will be graduating into.

Looking ahead, we are also planning to develop an optional module on Sustainability and Climate Change that will be open to all staff and students.

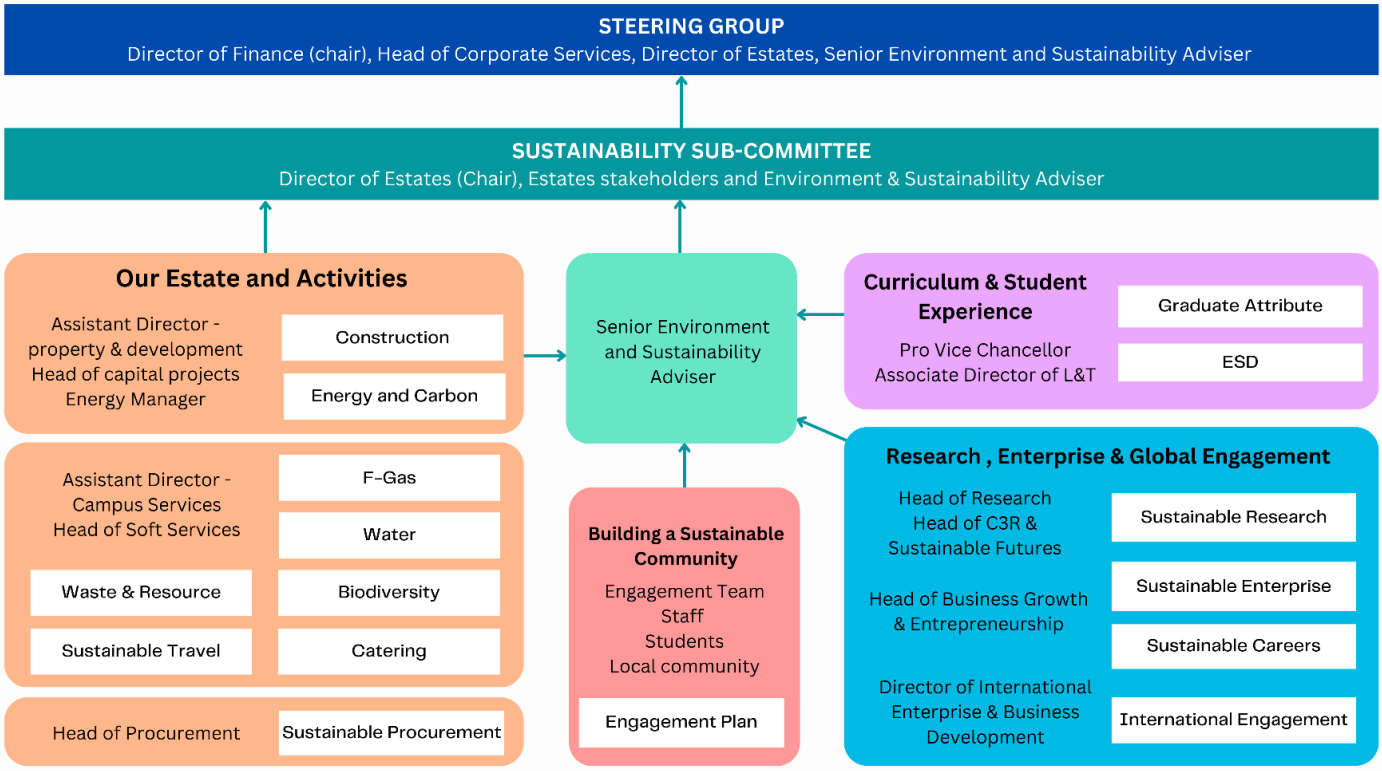
RESEARCH, ENTERPRISE AND KNOWLEDGE EXCHANGE

The Centre for Climate Research (C3R) addresses one of the most pressing challenges facing society. The Centre focuses on understanding the impacts from climate change on our society and in developing adaptation and mitigation strategies to aid the United Nations' sustainable development goals. C3R is a unique initiative that crosses all academic Schools of Study at the University of Hertfordshire, and cuts across all research themes. It brings together nearly 50 academic and research staff, making C3R one of the largest research centres at the University.

Through our knowledge exchange and enterprise programmes we are then able to apply our research to external policy, business, and innovation, helping to accelerate the scale and speed of local, regional, and central net-zero strategies. In 2023 we partnered with the Hertfordshire Climate Change and Sustainability Partnership (HCCSP) to help drive the collective Net Zero efforts of both public and private organisations in the region.

APPENDIX

Appendix 1. Environment and Sustainability Governance Structure



Appendix 2. Buildings in scope

College Lane:

Name	GIFA (m^2)	Year of Construction	DEC Rating	Lead Heat Source
Art & Design	5,262	1995	D	Gas
Automotive Centre*	575	2001	G	Gas
Boiler House	769	1955	N/A	Gas
C.P. Snow Psychology*	1,799	1975	F	Gas
Document Services Building	213	1975	E	Gas
Ele House	1,068	1985	E	Gas
Film, Music & Media Facilities Building	5,587	2006	E	Gas
H.I.C*	448	1965		Gas
Health Research Building	2,187	2006	E	Gas
Hillside House*	460	1990	D	Gas

Name	GIFA (m^2)	Year of Construction	DEC Rating	Lead Heat Source
Hut E*	252	2000	F	Gas
Hut Q Research Centre*	392	1980	D	Gas
Hutton**	5,284	1955	E	Gas
Hutton Hub	3,188	2014	E	Gas
Innovation Centre	1,561	2004	E	Gas
Key Centre	465	1999	E	Gas
LRC College Lane Classroom Annexe	1,096	2021	E	Electric
LRC (Buxton Centre for Learning)	11,760	1995	E	Gas
Lindop	2,390	1985	F	Gas
Main**	14,404	1955	E	Gas
Mercer	2,395	1985	E	Gas
Multi-Storey Car Park 1	10,251	2008		Not heated
New Science Building	8,614	2015	C	Gas
Nursery	675	2008		Gas
Science Building	2,191	1970	E	Gas
Services Building (ASE)	952	1990	E	Gas
Student Forum	8,673	2009	C	Gas
The Barn*	315	1970	F	Gas
Todd	5,754	1985	E	Gas
VRS*	143	1970	N/A	Gas
Wright*	6,540	1975	E	Gas
Wright Extension*	1,475	1999	E	Gas
Bayfordbury Science Block	1,249	1975	E	LPG
Patrick Moore Building (Rotunda)	89	2000	N/A	Electric
Fielder Centre	2,724	1980	D	Gas
Meridian House	1,640	1990	A	Gas
MacLaurin Building	5,004	2006	G	Gas
University Bus	1,728	2003	G	Gas
Titan Court	7,949	1997	N/A	Gas
49 Chantry Lane	105	No details	N/A	Gas
Total Area (m^2)	**127,626**			

De Havilland:

Name	GIFA (m^2)	Year of Construction	Building Type	DEC Rating	Lead Heat Source	PFI or Academic
Block M	13,861	2004	Teaching	D	Gas	Academic
Block N						
Block R						
de Havilland Reception	152	2012	Office	D	Gas	Academic
Enterprise Hub	2,683	2020	Hub	A	Gas	Academic
LRC	9,936	2004	LRC	D	Gas	Academic
Law Court Building	2,404	2011	Teaching	B	Gas	Academic
Gatehouse	201	2004	Office	N/A	Electric	Academic
The Street	936	2004	Circulation	D	Gas	Academic
The Weston Auditorium	2,118	2004	Auditorium	E	Gas	Academic
Sports Village	8,959	2004	Sports	D	Gas	PFI
Refectory	1,548	2004	Refectory	E	Gas	PFI
Outdoor Change	710	2003	Sports	N/A	Gas	PFI
RSO	386	2017	Office	N/A	Gas	PFI
Institute of Sport	2,065	2003	Laboratory	B	Gas	PFI
Aldenham	3,436	1990s	Residence	C	Electric	PFI
Ashwell	1,552	1990s	Residence	C	Electric	PFI
Hadham	2,423	1990s	Residence	C	Electric	PFI
Kimpton	2,243	1990s	Residence	C	Electric	PFI
Lemsford	1,584	1990s	Residence	C	Electric	PFI
Redbourn	3,215	1990s	Residence	C	Electric	PFI
Sandridge	1,627	1990s	Residence	C	Electric	PFI
Sarrat	1,629	1990s	Residence	C	Electric	PFI
Shenley	2,380	1990s	Residence	C	Electric	PFI
Watton	4,780	1990s	Residence	C	Electric	PFI
Welwyn	3,086	1990s	Residence	C	Electric	PFI
Total Area (m^2)	**73,914**					
Sub-Total Sports and Residential – PFI (m^2)	**39.558**					
Sub- Total Academic Buildings (m^2)	**34,356**					