University of Hertfordshire

Net Zero Action Plan

University of Hertfordshire UH

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GLOSSARY

BEIS - UK Government Department for Business, Energy & Industrial Strategy

BMS - Building Management System

CCC - UK's independent Committee on Climate Change

CCUS - Carbon Capture Utilisation and Storage

EfW - Energy from Waste

EMR - Estate Management Record

EMS - Environmental Management System

FTE - Full-time equivalent

HE - Higher Education

HESA - Higher Education Statistics Agency

IPCC - Intergovernmental Panel on Climate Change

kWh - Kilowatt hour

LCA - Life-cycle analysis

LED - Light-emitting diode

LPG - Liquid Petroleum Gas

PV - Photovoltaic

SDGs - UN Sustainable Development Goals

tCO2e - Tonnes of carbon dioxide equivalents

UNFCCC - United Nations Framework Convention on Climate Change

INTRODUCTION: CLIMATE CRISIS

Climate change is the biggest challenge of our time. Unprecedented rates of global warming are responsible for more severe and frequent extreme weather events, rising sea-levels, and declining biodiversity. Climate change has the potential to irreversibly alter the global landscape, and poses a significant threat to all aspects of life as we know it.

The latest report published by the Intergovernmental Panel on Climate Change (IPCC) has found that human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming. Global greenhouse gas emissions have continued to increase as result of unsustainable energy use, land use and land-use change, lifestyles, and patterns of consumption. Ambitious, yet urgent action is needed to reduce our greenhouse gas outputs and associated impact on the climate. To limit global warming to 1.5°C[1], emissions must peak before 2025 at the latest and decline 43% by 2030.

The United Nations Sustainable Developments: Goal 13 recognises climate change as a key barrier to sustainability and highlights the important and interconnected role climate action plays securing a sustainable future for all.

The Higher Education sector has a pivotal role to play in fighting climate change and shaping a sustainable future, not just through our campuses but also at a societal level. Changes to the way we live, work and study are inevitable, and as such, we have a responsibility to not only prepare our staff, students, and campuses for the challenges that lie ahead, but also to provide the knowledge, awareness, and motivation to empower the citizens and leaders of tomorrow to create a more sustainable future. It is this responsibility that drives the motivation for our Climate Vision and Net Zero Action Plan.

AIM OF PLAN

To provide detail and clarity on:

- The current local and national context surrounding our aim and commitments;
- The University of Hertfordshire's approach to addressing the climate crisis, including; background, carbon accounting methodologies and performance to date,
- The University of Hertfordshire's action plan on carbon reduction.

BACKGROUND

UK

In 2008, the UK was the first country in the world to set a legally binding carbon reduction target. In In June 2019, this was amended to increase the target reduction from 80 to 100%, thereby effectively legislating for 'net-zero' carbon emissions by 2050. In April 2021, the Government announced that it would legislate for the sixth carbon budget as recommended by the Climate

[1] As directed at the 2015 Paris Agreement

Change Committee (CCC), and set a target to achieve a 78% reduction in greenhouse gas emissions by 2035. The Government has also announced a 68% reduction by 2030 as a Nationally Determined Contribution (NDC) under the Paris Agreement.

In the context of this emissions target, net zero does not mean an absolute reduction to zero, but any greenhouse gas emissions that continue to be produced by this date will either be captured and removed from the atmosphere, or potentially offset. This can be achieved through nature-based solutions such as tree planting and peatland restoration, and/or Negative Emissions Technologies (NETs) such as Carbon Capture Utilisation Storage (CCUS). The CCC report is clear that both types of solutions will be required in order to deliver net zero.

In order to achieve its aims as detailed within the Climate Change Act 2008, and those within the 2015 Paris Agreement, the UK Government Department for Business, Energy and Industrial Strategy (BEIS) published 'The Clean Growth Strategy' in line with its overarching Industrial Strategy. The ability for all UK regions, cities, organisations, and individuals to meet their carbon emissions targets will be influenced to varying degrees by the UK Government's support for, and performance against the UK net zero target. Future changes in policy, benefits and incentives, taxation, and investment in the research, development, and installation of ultra-low/zero-carbon technologies will all play a crucial role. It is also true that cultural and behavioural change will be a key part of achieving a just transition - the role of individuals in achieving net zero cannot be underestimated. Following the announcement of the UK Government's net-zero carbon target there has been a nationwide uptake of similar commitments, with differing target dates and ambitions, across both the public and private sector including local authorities and the Higher Education (HE) sector.

HERTFORDSHIRE

In July 2019 Hertfordshire County Council declared a climate emergency in recognition of the need for immediate action. This was based on evidence of the global impacts of climate change, including those being experienced within Hertfordshire which included dry riverbeds, reduced water supply, intense weather events, localised flooding and specific loss of habitat and species throughout the county. This declaration led to the development of the Sustainable Hertfordshire Strategy and Action Plan, which sets out the policies, strategies and implementation plans needed to embed sustainability across all the county council's operations and services.

CONTEXT

CLIMATE VISION

In 2022 we published our Climate Vision, setting out our ambition to become a Net Zero Institution by 2050. The vision was created around our pledge to the global Race to Zero campaign, and our intention to take an integrated, whole-university approach to climate action that underpins our core values and institutional aims. The Climate Vision sets the backdrop for our Net Zero Action Plan, and the context around our enabling pathways:

- Our Estate and Operations
- Building a Sustainable Community

- Education and student Experience
- Research, Enterprise and Knowledge Exchange

RACE TO ZERO

As part of our commitment to carbon reduction, we have signed up to 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.

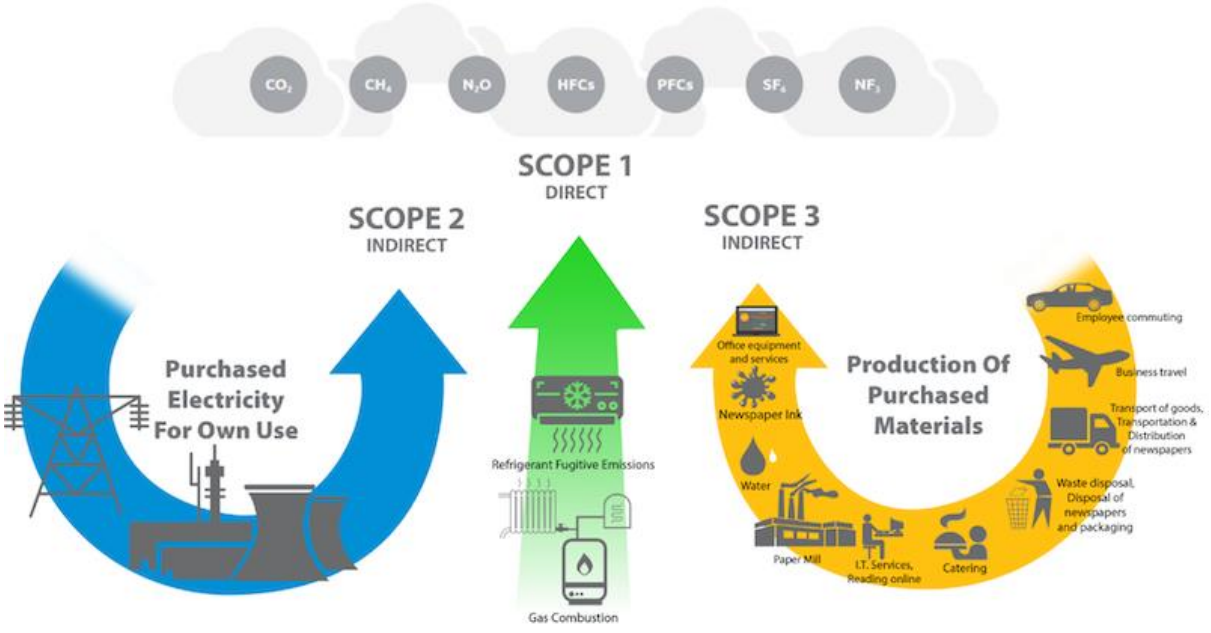
The Race to Zero commitment states that we must: *Pledge, Plan, Proceed, Publish, and Persuade.*

We have **pledged** as a signatory, and this Net Zero Action Plan sets out our intentions to **proceed** by setting out plans and targets, how we will **publish** our plans and progress, and our aims to **persuade** action through our climate pathways. The plans will be implemented and managed through operational working groups, overseen by the Environment and Sustainability Sub-Committee and Steering Group, and reporting to the Board of Directors. Progress on our decarbonisation plans will be reported annually through our Net Zero Progress Report, which will be published internally and externally.

ACCOUNTING FOR CARBON EMISSIONS

Prior to the creation of this new Net Zero Action Plan, we have systematically reported on our emissions via the University's Environment and Sustainability (E&S) Annual Performance Report. The university also returns annual carbon dioxide emission figures for all available 'scopes' to the Higher Education Statistics Agency (HESA) within our yearly 'Estate Management Record' (EMR) submission. Going forward we will continue to report on carbon emissions within the E&S Annual Report, but also in more detail within the Net Zero Annual Report.

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 the HE sector. Note that within this document the terms 'emissions' and 'carbon emissions' refer to carbon dioxide equivalents, measured in tonnes (tCO2e).



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

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.

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)

Since the 2005-06 academic year we have accounted for and reported against our scope 1 and 2 emissions, and some of our scope 3 emissions from the 2015-16 academic year. 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, and are detailed later in this report.

Our emissions reporting year follows the University academic year, which runs from August to July. We therefore use the conversion factors from 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).

While we will report on our various emission streams through our annual performance report, our overall carbon KPI reporting will be based on the HESA Estate Management Reporting requirements, as this will ensure that our top-level reporting aligns with the sector. As the EAUC / BSI standardised reporting framework develops, and becomes incorporated with HESA, we will use this to inform our reporting. The Annual Report on Net Zero progress will include details of scopes and methodologies for any given reporting period.

We will report on overall carbon but also emissions broken down by scope and type to identify progress in specific areas and as a result of targeted interventions.

SCOPE

The emissions scope of this plan follows the guidelines as set out in the HESA guidance and applies to all buildings and areas within the wider UH group including commercial properties, as well as university activities. It is worth noting, however, that the 2018/19 carbon emissions excluded various entities as these were considered as 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 and UNO bus depot. A full list of campus buildings can be found in appendix 1.

It is also prudent to note that emissions reporting is not always exact and exact science, and inherently a level of estimation will be applied. Data and information used within this report will always be the best available, and we will continue to improve data quality in line with relevant guidance, advancement in technology, and our environmental and energy management systems' requirements. In many cases, we have included actions within the plans documented below for the increase in quality of our data collection processes, particularly for scope 3 emission sources which are often more difficult to monitor and measure.

PROGRESS SO FAR

In 2020-21 we emitted just over 12,000 tonnes of scope 1 & 2 CO^2e emissions. This represents a 10.7% reduction on the previous reporting period, and a 48.2% reduction on the 2005/06 baseline level, well above the HEFCE target set at the time. While much of this was down to a decrease in energy demand and the national grid's energy mix becoming greener, there were other drivers such as continued improvements in building performance and energy consumption across the portfolio such as:

- Improvements in building fabric, i.e., newer buildings replacing older ones and the renovation of spaces
- Improvements in HVAC systems, lighting systems and controls
- Investment in energy-efficient equipment

We have also made significant progress with some scope 3 emissions e.g. from waste and water over the last few years as a result of better monitoring, behaviour change campaigns, leak detection, and reparation.

CARBON FOOTPRINT - BASELINE 2018/19

A full carbon footprint assessment was undertaken for 2018 -2019 in line with the scopes and methodologies as stated above. The carbon footprint for this period represents our new baseline and supersedes the previous 2005/2006 HEFCE baseline period. 2018-19 has been chosen as our baseline year as it reflects the last representative year of operation before the disruptions caused by the pandemic impacted consumption and emissions.

In **2018 / 19** the University of Hertfordshire emitted 17,044 tonnes of CO^2e (scope 1 & 2).

Table 1 & 2: Scope and emission type breakdown

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

We will also be starting to measure our scope 3 emissions against the baseline figures as set out below:

Scope 3	**CO^2e (tonnes)**
Purchased goods and services	38,552.28*
Capital good (construction and IT)	15,914.54*
Waste	25.35
Business travel	1,910.0 (estimated)
Water supply and wastewater treatment	363.8
Employee commuting	N/A
Investments	N/A

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

As can be seen from the table above, with the data available, purchased goods and services, followed by capital projects are by far our most significant sources of Scope 3 emissions. As an important first step in managing our scope 3 emissions, therefore, action plans are focused on improving our scope 3 accounting methodologies and data collection practices so that meaningful SMART targets can be set, and action plans developed.

COVID

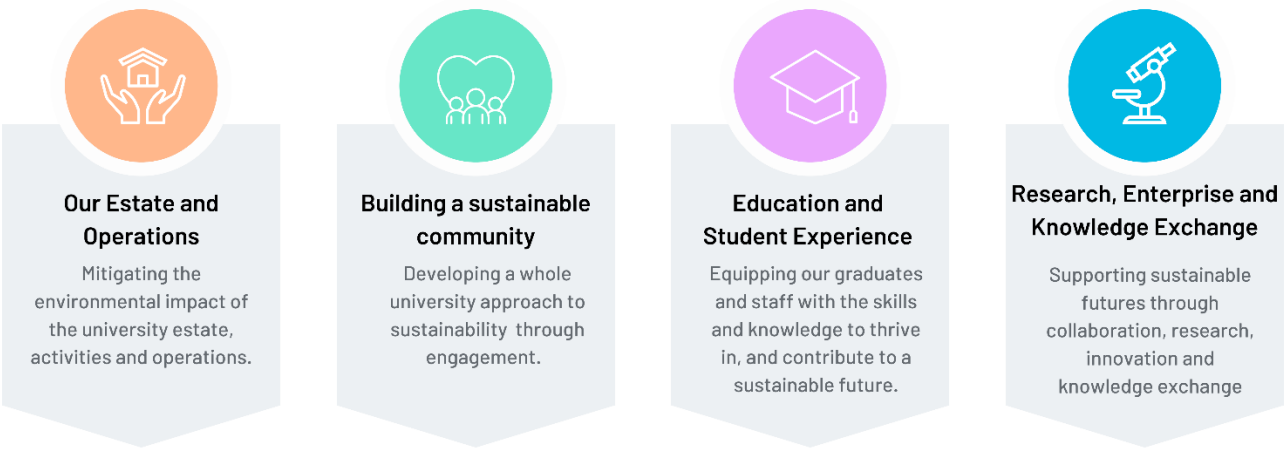
Covid has impacted campus life and operations significantly over the past few years. With only essential workers being situated on campus for most of 2020, and then reduced occupancy into 2021, emissions were significantly reduced during this period as can be seen below.

	2017 – 18	**2018 - 19**	**2019 – 20**	**2020 – 21**	**2021 - 22**
CO2e	18,453	17,044.80	13,487.66	12,044.50	13,591.05

Whilst COVID-19 has undoubtedly caused severe disruption across all areas of society, it has provided an opportunity to rebuild a more sustainable future, and as a responsible institution, we have learnt from the lessons this historic period has taught us. As an example, COVID-19 has proved an optimum test bed for monitoring the University's energy usage (and associated emissions) baseload i.e. the current minimum level of scope 1 and 2 emissions attainable in order to keep the estate functional, excluding teaching, research, and other activities. It has also facilitated the move to hybrid working for most staff and for some students, which will change the way we use our offices and teaching spaces, prompting changes to the way we use, power, and heat our buildings. As we continue to understand what a new normal in the context of university life looks like, we will strive to implement sustainability principles in decision-makings, as set out in the Estates Vision 2035.

OUR PATHWAYS TO NET ZERO

By bringing together stakeholders and local plans from across the university, we can take a holistic and embedded, yet targeted approach to sustainability. Our four pathways reflect the scope of our impact, reach, and influence, and provide a framework for delivering our aims and objectives.



TARGETS

As scopes and reporting standards are constantly evolving, we have set a target for overall carbon reduction as well as targets by emissions scope. This will help us report on and track progress in a more meaningful and comparative way. Our targets are absolute and based on science-based targets (SBIs) in line with the Paris Agreement goals.

For some scopes we have set interim targets in line with our Race to Zero Commitment. We will add interim targets to the remaining scopes as soon as we have more refined accounting methodologies and as the BSI / EAUC standardised reporting framework comes into effect.

OUR ESTATE AND OPERATIONS

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.

Our Net Zero Action Plan sets out the university of Hertfordshire's approach to addressing the climate crisis and provides detail and clarity around our intentions and commitments. The plan considers both positive and negative climate impacts across all pathway areas, and sets out our approach to mitigate, or indeed harness these. It includes actions that need to be taken in the following areas in order to meet our targets:

- Energy
- Travel and transport
- Purchased Goods and Services
- Capital Goods

- Construction
- Engagement
- Food & Catering

Objective: ***To reduce our overall greenhouse gas emissions and its associated impact on climate change***

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 is a board level KPI and is reported on annually to the senior executive group.

Our scope 1 & 2 emissions are further broken down into separate decarbonisation plans and targets, one for Energy and the Estate, and one for fuel (UNO Bus and campus owned vehicles).

1. ENERGY & ESTATE

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.

In 2022 we appointed external consultants to help us deliver our Estate Decarbonisation Plan (EDP). This included visual surveys of the buildings and their engineering systems, a review of campus-wide energy infrastructure, investigations into control systems and operations, analysis of energy consumption and operational carbon emissions, and appraisals of Net Zero retrofit options.

The scope covers sixty-six buildings, including all academic buildings and the buildings included in the Private Finance Initiative (PFI) arrangement on the de Havilland campus.

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 EDP sets out retrofit measures which reduce energy consumption and carbon emissions compared to the baseline. The following baselines (Table 3) have been derived from analysis of meter readings and consumption data:

Table 3 – Baselines: Grid Energy Consumption and Carbon Emissions for baseline 2018-19:

	Energy Consumption kWh p.a	**CO^2e emissions p.a. (tonnes)**

Electricity	29,328	6244
Natural gas and LPG	24,754	4558
Total	54,082	10,801

ESTATE CONTEXT

The in-scope buildings range from the original WW2 college buildings to the recently completed buildings on the de Havilland campus. While many buildings are more thermally efficient compared to many older estates, most buildings are heated by gas-fired boilers, which are a major source of carbon emissions. As many boilers will be approaching the end of their economic life in the next ten years there is an opportunity to replace them incrementally with alternative low/zero carbon (electric) heat sources in a planned programme.

There are no District Heat Networks (DHN) near the campuses and there are no plans to build one, according to information available from the Local Planning Authority. The option of UH building a DHN and central Energy Centre on the de Havilland Campus has been appraised, however, the decentralised, incremental approach to heat decarbonisation is more cost effective and less risky.

CAMPUS REDEVELOPMENT

It is worth noting that there are significant campus redevelopment plans in the pipeline, and while much of this work will involve the demolition of the older, less efficient buildings, our carbon emissions are likely to rise and fall as older buildings are replaced by newer ones. As we don't have exact dates for these works, especially in the long term, the adopted scenario and projected trajectory should be viewed allowing for peaks and throughs as the campus develops.

On the College Lane campus, twelve buildings are due to be demolished (two of which will be part-demolished) and four new buildings will come into operation (identified in Table 5) prior to 2050. For the buildings to be demolished, no decarbonisation interventions have been considered and consumption attributable to these buildings has been removed at forecast the year of demolition.

- Major refurbishment projects across the UH estate include:
- Reconfiguration of the M and R blocks
- Reconfiguration of the Health Research Building
- Relocation of Meridian House
- Major refurbishment of the MacLaurin building
- Major refurbishment of the Fielder Centre
- Refurbishment of the Refectory
- Redevelopment of the de Havilland public realm
- Other infrastructure works

The School of Physics Engineering and Computer Science (SPECS) project involves the demolition of a range of older buildings and the construction of a new 15,000m2 building at the heart of the College Lane campus. The new building has been designed to meet high sustainability standards (BREEAM Excellent). The heating systems are designed to be electric, with fossil fuel consumption restricted to laboratory use only.

PREVIOUS ENERGY SAVING PROJECTS

Campus	Building	Works Description	Year Undertaken
de Havilland	LRC	LED Lighting and lighting controls retrofit (funded by PSDS grant)	2020
de Havilland	Institute of Sport	Full replacement of HVAC and hot water systems undertaken	2020
de Havilland	Enterprise Hub	New building constructed	2019
de Havilland	Law Court Building	BREEAM 'Excellent' building with low energy consumption design incorporating thermal mass arrangements	2011
de Havilland	Sports Village	Replacement of main pool air handling unit (AHU)	2021
de Havilland	MNR Blocks	Replacement boilers installed	2020
de Havilland	Campus wide	LED Lighting Upgrades	Ongoing
College Lane	Hutton Hub	Space heating and cooling upgrades (ASHP, Variable Refrigerant Volume (VRV), Direct Expansion (DX) units and packaged AHU)	2014
College Lane	LRC College Lane Classroom Annexe	DX units installed	2020
College Lane	New Science Building	CHP installed and gas boilers replaced	2016
College Lane	Patrick Moore Building (Rotunda)	Electric radiant heater installed	2012
College Lane	49 Chantry Lane	Replacement boilers installed	2012
College Lane	Mercer and Lindop Buildings	Packaged AHUs installed	2018
College Lane	Art & Design, Automotive Centre, Film, Music and Media Facilities Building, Hutton Hub, LRC (Buxton Centre for Learning), Lindop, Mercer, New Science Building, Todd, MacLaurin	Solar PV installation	-

DECARBONISATION SCENARIOS

The indicative cost of implementing the Net Zero measures in the EDP is approximately £104.6million (Q3 2022 prices, excluding VAT). Two investment scenarios for achieving Net Zero have been considered, one with front-loaded interventions for more immediate impact, however at a greater near-term cost, and one with interventions spread out more evenly over the next 28 years, but with the majority of interventions taking place in the next 15 years. Both scenarios should achieve close to Net Zero by 2050.

There are risks and a degree of uncertainty in both scenarios. The sources of uncertainty include the rate at which the UK's electricity grid decarbonises and future climate scenarios (potentially milder winters) as well as access to funding and uncertainty over future technologies.

Having considered the risks and likely sources of funding, the scenario which is based on the age and condition of existing assets and anticipated annual funding (Scenario 2) has been adopted as the

basis of the EDP. It also takes account of the changes in the estate envisaged in UH's 'Estates Vision 2035'.

This scenario provides a realistic programme of Net Zero retrofit works to meet the projected trajectory of decarbonisation shown in Figure 1. It is based on an incremental approach with the Net Zero retrofit measures being coordinated with other programmes of works programmes, thereby leveraging the PPM/minor works budgets in combination with UH's Net Zero budget and government grants (Salix) to maximise value for money.

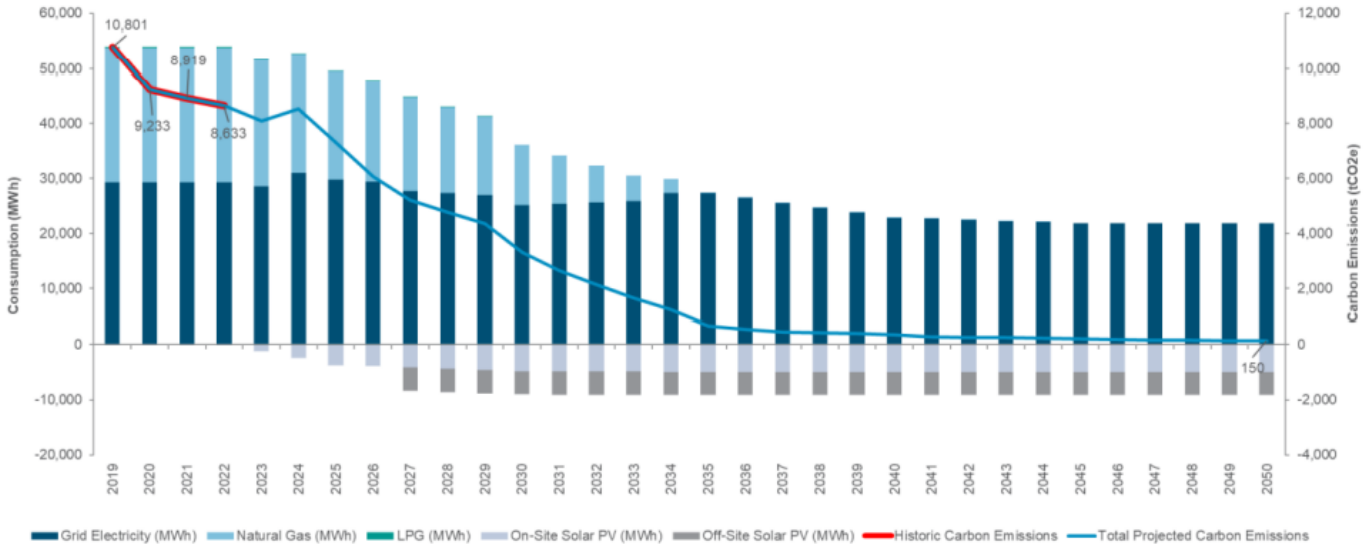


Figure 1 - Decarbonisation Trajectory and Energy Supply Mix

DELIVERY PLAN

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

As a result of the consultation, several projects have been proposed based on the interventions listed about, which could deliver CO^2e savings of **4,813 tonnes** in the next 28 years. The remaining energy decarbonisation will come from the expected transition of the grid electricity towards fully renewable. The final 150 tonnes of CO2e will either be offset through the sector carbon coalition, or other yet unknown measures.

	2023 – 26	2026 - 31	2031 – 36	2036 - 41	2041 - 46	**Total**
Tonnes of CO^2e saved	1119.81	1719	1878	80.55	16.07	**4,813.43**

Table 4: Projected emissions saved

Some of these projects will commence in the Autum 2023 and are predicted to be completed by the end of 2024:

- Replacing boilers with heat pumps and HWS in the De Havilland LRC
- Retrofit VRV systems / HWS in Mercer
- Installing Solar PV on the De Havilland LRC and MN&R block
- Structural assessment of all buildings on College Lane for solar PV
- Electrical infrastructure assessment across both campuses
- BMS optimisation study across both campuses
- Energy Centre Decommissioning Feasibility Study
- Off-Site PV Feasibility Studies

DELIVERY COST & FUNDING

NZ Measure	Cost (£million)	Percentage of Total Cost (%)
Fabric Improvements	15.9	15
Heating and DHWS Retrofit	49.0	47
LED Lighting and Controls Retrofit	13.0	12
Ventilation Upgrades	2.9	3
Cooling Upgrades	7.0	7
Building Management System and Active Energy and Carbon Management	4.1	4
Solar PV (on-site)	7.0	7
Solar PV (off-site)	5.0	5
Metering	0.1	0
Electrical Upgrades	0.6	1
Total	**104.6**	**100**

Table 5: Projected cost for energy decarbonisation plan

Scenario 2 – Based on age and condition of existing assets and anticipated annual funding

Period	2023-26	2026-31	2031-36	2036-41	2041-46	2046-51
Total Indicative Capex	£14.3m	£30.2m*	£25.1m	£25.1m	£9.9m	£0.0m

* includes off-site Solar PV farms (Angerland and College Lane North)

Source of Funding	Approximate Amount Annually (£million recurring)
UH capital expenditure on estate decarbonisation	2.5
Contribution from Minor Works Programmes or Programmed Planned Maintenance (PPM)	1.5
Government grants (subject to successful applications)	1.0
Total per annum	**5.0**

2. UNO BUS

The university of Hertfordshire owns Uno Bus, a bus company with a fleet of 105 buses across 3 depots in Cranfield, Northampton, and Hatfield. It operates around 47,000 service miles per week in Hertfordshire and North London, and also operates 2 TFL contract routes in central London. It carried 2.64 million passengers in 2022-2023.

As fuel derived emissions from the bus service contribute to our Scope 1 emissions, these need to be considered in our Net Zero Action Plan. UNO Bus are currently developing a Net Zero Strategy, and have set a Net Zero target:

- **Target: To become Net Zero by 2050.**

UNOBus has declared its intentions to become Net Zero by 2050. Achieving this target will require significant investment and infrastructure upgrades. While innovation will no doubt play an important part in the decarbonisation process of the travel industry, UNOBus already has several electric buses, as well as a fully electric auxiliary fleet, and are in the process of securing more funding to continue to electrify the bus fleet and upgrade the infrastructure to support this. UNOBus are also exploring a number of innovative options to decarbonisation their services, and will continue to invest in the process. In the meantime the service will continue to provide more sustainable travel for over 2 million users every year.

UNOBus' Net Zero Action plan will be made available once it has been published.

SCOPE 3

While we already report on some Scope 3 items such as purchased goods and services and business travel, we are still in the process of understanding how to best set meaningful targets for these areas. As we develop more accurate accounting methodologies for our other scope 3 emission groups, we aim to set SMART targets for all our scope 3 emissions:

- Purchased goods and services
- Capital goods
- Business travel
- Construction / embodied carbon
- Investments
- Food and Catering

3. CAPITAL GOODS

Capital goods are the assets used by businesses in the course of producing their products and services, and can include buildings, machinery, IT equipment, tools, and other equipment. For the University this accounts for emissions from two primary sources: construction and information and communication technologies, of which the former is the significantly larger emitter. Due to this weighting, we will predominantly focus on reducing emissions from construction activities at this stage of the plan. IT emissions will be addressed through the procurement process.

Emissions from construction fall under Scope 3, and are widely referred to as embodied carbon. These are emissions associated with the manufacturing and transportation of materials to the on-site development of a facility, not the utilities consumption or other operational changes brought about as a result of the work. We have recently published a sustainable construction policy that sets out our aims and plans to reduce embodied carbon emissions:

*Objective**: Minimise the embodied carbon emissions associated with our capital schemes.***

Going forward, we will be reporting on the embodied carbon of construction projects as provided by our contractors. Sustainability will also be a key criterion in the tender process for new construction projects, ensuring that builds are not only as sustainable as possible, but also so that we can obtain as much accurate data as possible.

All new building and major refurbishment projects will also be assessed under formal sustainability schemes such as the Building Research Establishments (BREEAM) which include operational as well as embodied carbon. A target for all new buildings to achieve an “Excellent” BREEAM rating with a minimum of “Very Good” where there are justifiable reasons why excellent cannot be achieved. Estates will continually review and consider other schemes such as WELL standard as they develop and become further embedded in UK construction.

All our commitments and underpinning principles can be found in our Sustainable Construction Plan.

4. PURCHASED GOODS AND SERVICES

The University of Hertfordshire recognises that the products and services that we buy have an impact on the environment and climate change. Since 2019-20 we have reported on our scope 3 emissions from our purchased goods and services through our procurement consortia SUPC. This reporting framework uses GHG Protocol to calculate carbon emissions based on spend. While this methodology is not necessarily the most representative or accurate, it is currently the industry standard, and can be a useful way of identifying the areas which have the biggest negative impact.

Objective: ***To reduce the negative impact on the environment and climate change associated with the goods and services that we buy.***

While we are still in the early stages of setting meaningful targets for emissions arising from our goods and services, we are have started putting systems and processes in place to help us better understand how to set and achieve these.

Measuring:

In 2023 we started auditing all of our suppliers to establish their commitment levels to net zero. We are also looking at all of our categories to identify the most emitting groups by value, as well as the top emitters within each one.

Reducing:

We aim to reduce the environmental impact of our purchased goods and services through 2 channels: by engaging with our suppliers and by engaging with our users and local procurement officers.

- **Suppliers:**
  - Ensure sustainability is considered in tender processes
  - Ensure that contractors comply with the Modern Slavery Act 2015
  - Ensure that suppliers environmental credentials are considered in the appraisal process
  - Choose suppliers that can demonstrate sustainable commitments where possible
  - Liaise with suppliers to encourage sustainable good practice
  - Educate suppliers on the university's sustainability objectives

- **Users / procurement officers:**
  - Consider the necessity of a purchase
  - Understand the environmental impact of purchases
  - Explore alternative sustainable options will be explored
  - Educate staff on the university's sustainability objectives
  - Apply whole-life cost approach to purchasing considerations

5. TRAVEL

Commuting:

The University of Hertfordshire Travel Plan aims to reduce the organisational impact from transport, whilst providing cost effective and sustainable travel options to its employees, students, resident, and visitors.

Objective: ***To reduce the impact of staff and student travel and commuting on the environment***

The travel plan sets out the university's commitments to:

- Reduce the environmental, social, and business impacts associated with transport
- Implement measures to encourage sustainable modes of travel
- Make the campuses more accessible
- Reduce the impact of delivery transport
- Collaborate with external partners to develop sustainable travel solutions
- Monitor and report on data and progress

As set out by our current travel plan, our targets for commuting are defined by modal split: single use car journeys against all other modes as below:

	Single journey car %	Other mode %
Staff	60	40
Students	20	80

Our new travel plan is due to be published in 2023. This plan will consider the changes in travel due to new hybrid work and study patterns, and the targets will be revised accordingly with the aim of reducing emissions from commuting.

We are still in the early stages of developing an accurate and meaningful method for capturing commuting data. 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 and have plans to incorporate sustainability into our Business Travel policy which will address emissions arising from this activity. Business travel emission targets will be published with the new Business Travel Policy. As part of this process, we are also working with internal and external partners to improve our reporting on travel so that we can capture accurate data for all travel modes including own car travel, where mileage is submitted through expenses.

6. WASTE AND RESOURCE MANAGEMENT

We currently receive very comprehensive waste data from our waste management contractors, and report our waste through HESA.

Objective: ***to minimise the impact of waste generated at UH on the environment***

- **Target:** Year on year reduction in waste measured by:
  - Total Waste
  - Waste / FTE
  - Total waste recycled %
  - Total waste to landfill %

We currently report on a number of waste data including Scope 3 emissions from waste through HESA. Our scope 3 emissions from waste are directly linked to how much waste we generate, and how this waste is handled and processed.

	Waste Output (tonnes)	Waste per head (kg)	Waste to landfill (tonnes)	Waste to landfill %	Waste Recycled %*	Waste to Energy %	CO2e (t) from waste
2016 - 17	1142.46	52.5	n/a	n/a	71.9%	28.1%	N/A
2017 - 18	851.45	38.5	14.61	1.7 %	76%	22.3%	N/A
2018 – 19	895.62	44.60	13.55	1.51 %	59 %	39 %	25.35
2019 - 20	621.65	29.55	9.86	1.59 %	72 %	27 %	16.64
2020 - 21	564	24.7	7.34	1.30 %	50 %	49 %	14.68
2021 - 22	622.44	24.34	8.7	1.4 %	65 %	34 %	16.0

Table 6: Historical waste data

The University's Waste and Resource Management Strategy is based on the principles of waste hierarchy which sets out the order in which waste management measures should be prioritised based on environmental impact.

Our main priority is to reduce our overall waste output and the amount of waste sent to landfill as this has the highest carbon conversion factor. While Covid had a significant impact on waste levels, we have continued to reduce our waste per head post-pandemic which is reflected in our scope 3 from waste emissions. The strategy also sets our intentions to improve recycling rates, including composting, anaerobic digestion, and waste to energy to help further reduce our impact.

To achieve our targets and objectives, we have a Waste Management group that works closely with partners, contractors, student bodies etc. to help raise awareness, and better understand consumption and disposal habits. Alongside this we offer a number of initiatives that encourage the use of reusable cups such as reward systems, water stations, eat in options, and more.

Our full Waste and Resource Management Plan can be found here.

WATER SUPPLY AND WASTEWATER EMISSIONS

Our scope 3 emissions from water supply and wastewater are directly linked to our water consumption which is managed through our water policy.

Objective: ***To minimise water usage and waster losses across the estate***

We have the following targets for water consumption which will help reduce our related greenhouse gas emissions:

- Water consumption to remain below 13m^3 per person (FTE)
- Year on year reduction on water consumption (3m^3/FTE)

7. FOOD & CATERING

Our food and catering services emit greenhouse gases from a number of sources: the food production and sourcing stage (agriculture, processing, packaging, and transportation), the prep and serve stage in our kitchens and outlets, to the end of life where food waste is considered. We are taking steps to reduce emissions associated with all these stages.

1. **Production and Sourcing**: We are working closely with our catering contractors Aramark to not only measure but also reduce the environmental impact of the food served across our campuses. Aramark has committed to becoming Net Zero for scopes 1 & 2 by 2030, and Net Zero by 2049, and has recently launched a Foodprint initiative in collaboration with Nutrics that calculates and displays a score for all the meals served in our outlets. This not only allows us to accurately measure the emissions from this stage of the catering service, but it also helps encourage users to consider the environmental impact of their food choices, nudging them towards more sustainable menus.
2. **Prep and Service**: This stage is largely covered by our energy decarbonisation plan which aims to move away from gas and to switch to more efficient systems and appliances.
3. **Food waste**: Both Aramark and Hertfordshire University are committed to reducing food waste and associated emissions. Aramark have recently launched a Wipe Out Waste campaign which pledged to reduce food waste by 50% by 2030. Initiatives include making up new recipes from scraps such as coffee ground brownies and butternut squash muffins.

Food with a near sell-by date is also sold off at discounted prices, and portion sizes have been optimised. Our Estates department is also raising awareness and making it easier for users to segregate food waste into correct bins. We will be reporting on our scope 3 emissions from food in our annual Net Zero Progress reports.

BUILDING A SUSTAINABLE COMMUNITY ENGAGEMENT

Empowering our staff, students, and wider community with the skills and knowledge to not only face the emerging environmental challenges, but to also play an active role in reducing our carbon emissions, is an integral part of our Net Zero Action Plan. Our engagement programme offers opportunities to learn, share, celebrate, and participate in sustainability activities on campus and beyond, galvanizing our community around a common purpose. Some of the initiatives that can directly impact our emissions, particularly around energy, waste, travel, and food, are our Green Impact programme for staff, and professional development courses such as Carbon Literacy. Students can also engage with our Net Zero commitments by volunteering as auditor for Green Impact or e.g. energy surveys. We also work closely with the Student Union and support their Sustainability Society.

EDUCATION & STUDENT EXPERIENCE

By equipping our students with the skills and knowledge to meet the demands of a changing world and to drive positive change through future careers, we are empowering a generation of sustainability-driven citizens and leaders. Whether through the taught curriculum, informal learning, careers advice, or the Go Herts award, all students have the opportunity to acquire new skills and deliver a Net Zero future.

GRADUATE ATTRIBUTES

Graduate Attributes are the skills and qualities students should develop during their programme and throughout their student life. Their focus is to develop and enhance employability, and to give students the skills and knowledge to thrive and succeed in their future endeavours. The University of Hertfordshire Graduate Attributes were established in 2011 and have been updated following a consultation with our students in 2022. 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 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.

GREEN SKILLS

The green jobs market has grown incredibly rapidly over the last few years to keep up with central, local, and sector commitments to Net Zero. While this is positive news for social, economic, and environmental purposes, it has highlighted acute skills shortages across the sectors it most urgently needs to decarbonise as programmes to upskill and reskill workers have not been able to keep track.

The University of Hertfordshire is helping to close this gap, not only by embedding the sustainability-driven graduate attributes into all academic programmes but also by working with employers to understand their specific workforce needs and develop innovative apprenticeships and short courses to upskill and expand knowledge and workplace effectiveness in this area.

RESEARCH, ENTERPRISE, AND KNOWLEDGE EXCHANGE

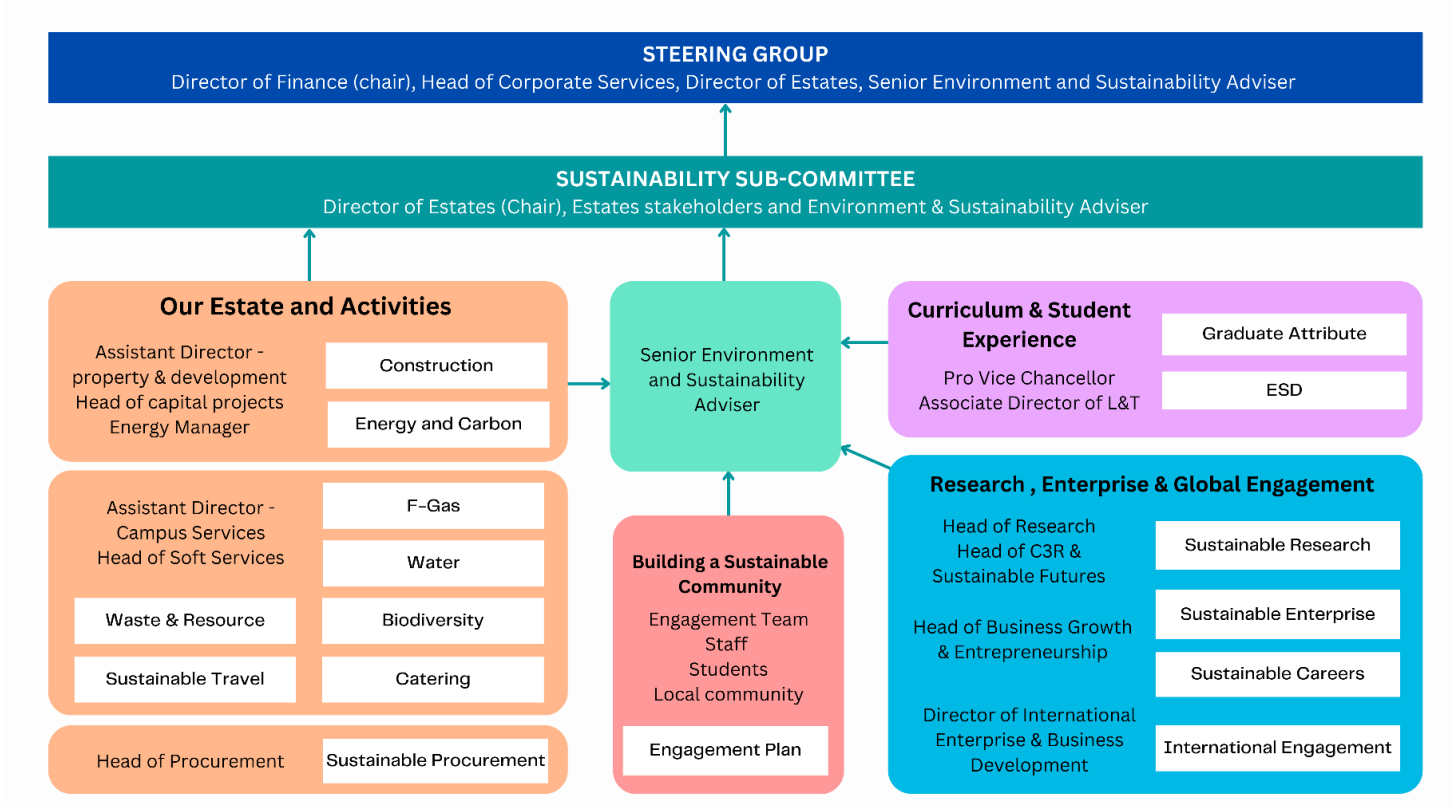
Research by the University of Hertfordshire is increasing our understanding of climate change, creating sustainable solutions to environmental challenges, and empowering people to take purposeful action to protect our planet.

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.

LEADERSHIP AND GOVERNANCE

To ensure the successful implementation of our Net Zero Action Plan, we have established a robust governance structure that brings together stakeholders and management commitments from across the university. This ensures accountability, coordination, and strategic decision-making at each level, ultimately driving the integration of sustainability principles throughout our institution.



CONCLUSIONS AND NEXT STEPS

This plan sets our intentions and commitments to meeting our carbon targets and combating the climate crisis. For some areas such as energy and waste, we have accurate data, SMART targets, concrete plans, and budgets in place to take meaningful action. For other areas in Scope 3 we are still in the early stages of developing methodologies to account for our emissions in those categories, and then understanding how to this translates into meaningful targets and action plans. On a whole, however, we are committed to achieving our aims as quickly as possible, and to working with our partners, communities, funders, and the rest of the sector to deliver a sustainable future for all.

This plan will be updated regularly as objectives, targets, and actions may change year on year dependant on the availability of new information, technology, and our recorded performance. Progress on our plans and commitments will be reported on through our annual Net Zero Progress Report.

APPENDIX

1. In scope buildings

Table 4 – College Lane Campus Buildings

Site	Name	Forecast Demolition Year
P157	Art & Design	
P142	Automotive Centre*	2025
P106	Boiler House	
P109A	C.P. Snow Psychology*	2030
P181	Document Services Building	
P140	Ele House	
P103	Film, Music & Media Facilities Building	
P117	H.I.C*	2030
P108	Health Research Building	
P124	Hillside House*	2030
P125/E	Hut E*	2025
P125/Q	Hut Q Research Centre*	2030
P126	Hutton**	2035
P126A	Hutton Hub	
P110	Innovation Centre	
P165	Key Centre	
P127	LRC College Lane Classroom Annexe	
P128	LRC (Buxton Centre for Learning)	
P129	Lindop	
P130	Main**	2025 and 2030
P132	Mercer	
P192	Multi-Storey Car Park 1	
P170	New Science Building	
P193	Nursery	
P137	Science Building	
P138	Services Building (ASE)	
P191	Student Forum	
P145	The Barn*	2025
P146	Todd	
P163	VRS*	2025
P149	Wright*	2030
P149A	Wright Extension*	2030
P701	Bayfordbury Science Block	
P708	Patrick Moore Building (Rotunda)	
P121	Fielder Centre	
P133	Meridian House	
P189	MacLaurin Building	
P500	University Bus	
P188	Titan Court	
P653(Y)	49 Chantry Lane	

Table 2 - Academic Buildings on the de Havilland Campus

Site	Name	Description
P802M	Block M (Sir Brian Corby Building)	Business School (Including Atrium)
P802N	Block N (Teaching Block)	Lecture Theatres & Classrooms
P802R	Block R (Humanities & Education)	Humanities & Education (Including Atrium)
P803	de Havilland Reception	New Reception
P806	Enterprise Hub	Teaching & Social Space
P808	LRC	Learning Resources Centre
P839	Law Court Building	New Law Court Building
P840	Gatehouse	de Havilland Gatehouse & Barrier Control
P825	The Street	Enclosed Link Between Buildings
P805	The Weston Auditorium	Auditorium
P838	Institute of Sport	Teaching (LMS)

The Academic buildings are owned and occupied by UH. Tenon are the hard FM provider for these buildings Their ten-year contract expires in 2026. UH advised that any sustainability, energy efficiency and net zero interventions are not included within the scope of the current FM contract. Similarly, optimisation of the BMS controls is not in scope within their contract.

Table 3 - Private Finance Initiative (PFI) Facilities on the de Havilland Campus

P810A	Sports Village	Sports Village
P810A	Refectory	Refectory
-	Outdoor Change	Changing Rooms
	RSO	Residence Office and Student Shop
-	Accommodation Blocks (11no.)	Student Accommodation/Summer Schools

Due to their adjoining nature, the MNR blocks have been combined. Similarly, the Enterprise Hub and de Havilland Reception are considered as one building for the purposes of the EDP.