

# **Energy and Water Action Plan**

**2022/23 to 2024/25**

Version 1

Date April 2023

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## **Introduction - Energy and Water Action Plan**

This Energy and Water Action Plan has been developed in line with the Carbon Management Plan to provide the detail on how the University plans to reduce energy and water consumption, improve efficiency, and reduce carbon emissions going forwards.

The Carbon Management Plan includes a target to reduce scope 1 and scope 2 carbon emissions from a baseline year of 2018/19 to net zero carbon by 2040.

This is a challenging target and there are a number of ways the University is implementing measures to achieve this. The plan therefore covers a wide range of areas and activities, and is divided in to a number of sections, Planned Energy Saving/Carbon Reduction Projects, Monitoring and Targeting, Energy and Water Awareness Raising, New Builds and Refurbishments, and Reporting.

The Energy measures required for the University to achieve net zero can be split in to 3 main areas:

### 1) Energy Saving Measures

The University is continuing to implement Energy Saving Measures as a first step to reducing carbon emissions arising from energy use. This aligns with the fact that the greenest unit of energy is the one that you do not use.

The University is developing an Energy Partnership with Siemens that will allow more Energy Saving Measures to be funded. Part of the first phase of the works to be covered by the Partnership will be lighting, and other energy saving measures have been identified for further investigation.

Energy Awareness – This is an energy saving measure which helps maintain energy efficiency. Part of this is communication with information being provided on what the University is doing to improve energy efficiency and reduce carbon emissions. This has included information on the need to reduce heating temperatures.

### 2) Renewable Energy Supplies

There are a range of options to increase the proportion of electricity provided by renewable sources. Where the University is developing an Energy Partnership with Siemens part of the first phase of the works is to increase the amount of Roof Top solar PV installed on site. In addition to this the Partnership is investigating the option of installing a large ground based Solar PV array on one of the plots of land owned by the University.

A possible further option for the supply of renewable energy would be for the University to buy renewable energy through a Power Purchase Agreement (PPA) subject to availability.

### 3) Heat Decarbonisation

The University currently produces heating, and hot water primarily by using natural gas fired boilers. The aim is to reduce the use of natural gas on site. Currently there may be 2 main options to replace natural gas, One is primarily by using heat pumps, and the other is by potentially using hydrogen as a fuel. Both of these options need to be powered/produced by renewable electricity to be green.

The University has had a Heat Decarbonisation Plan produced which provides details on a range of options to decarbonise heat for it's operations. The plan is high level, and outlines how the University can progress towards achieving this aim.

The measures for Heat Decarbonisation are shown later in the Plan after some of the Energy Saving Measures, and the measures to increase renewable energy supplies. That said as the technology for decarbonising heat is being developed and becoming more available there have been some installations of this technology in new builds e.g. Pears. Further there will

be some local installations of this technology at the University in refurbishment projects, for example the new air-handling unit due to go on the library roof.

## Energy and Water Management Action Plan – Measures

2022/23

Location	Description	Project Type	Program	Budget Cost, £	Saving £ p.a.	Saving, kWh	Saving Carbon, tonnes	Status/Notes
Boiler House and District Heating	Reduction of District Heating flow Temp	Energy Saving Project	Jun22-Sep23	-	5,000	310,000	25	Ongoing
Buildings	Reduction of Heating Set Points	Energy Awareness	Jun22-Sep23	-	17,700	485,000	89	Ongoing
Rutherford College	Footpath Lights 43 x 50W halogen replaced with 37W LED with daylight control AW	Energy Saving Project	Jan23-Feb23	TBC	1,200	4,700	1	Complete
Registry Original	Lighting replacement of fluorescent lighting with LEDs, and controls	Refurbishment - Energy Saving Project	Jun20-Jan23	TBC	8,000	67,000	14	Complete
Chipperfield Extension	Roof Replacement CI	Refurbishment - Energy Saving Project	Mar22-Aug22	TBC	830	22,000	4	Complete
Tyler Court A Roof Replacement	Roof Replacement MA	Refurbishment - Energy Saving Project	Nov21-Oct22	TBC	1,800	50,000	9	Complete
Venue	AHU replacement	Refurbishment - Energy Saving Project	Jun22-Jul22	TBC	4,600	39,000	8	Complete
University wide	Water Meters – Expand the use of automatic meter reading of water meters to 45 Key water meters.	Stand alone	May22-Jul23	TBC	14,200	4,700 m3	2	Planned
Canterbury Campus	High water usage – Produce monthly profiles for historic maximum consumptions by month. Compare actual use against this and identify buildings with high use	Stand alone	Mar23-Jul23	-	-	-	-	Ongoing
Accommodation Blocks	Check with Commercial Services, and see if there are gaps in	Stand alone	Aug21-Sep21	-	-	-	-	Planned

	occupancy. If there are monitor consumption to see if the buildings are consuming water when not in use.							
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2023/24

Location	Description	Project Type	Program	Budget Cost, £	Saving £ p.a.	Saving, kWh	Saving Carbon, tonnes	Status/Notes
Ingram	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Jarman	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Library	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Marlow	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Keynes	Installation of new Solar PV array on the roofs.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Library	Expansion of the Solar PV array on the roof.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Sports Centre	Installation of new Solar PV array on the roof.	Energy Saving Project	2023-24	TBC	TBC	TBC	TBC	Project is part of the Energy Partnership University of Kent/Siemens
Library	Replacement of the Air-Handling Unit on the roof of D/E library roof that supplies the pc rooms. The existing unit is supplied with heating	Refurbishment Project	Summer 23	TBC	TBC	TBC	TBC	Design complete

	off the central boiler house. The new unit will include a heat pump to provide heating							
Templeman Library D & E Block Roof Works	Roof Replacement CI	Refurbishment - Energy Saving Project	Jul22-Dec23	TBC	TBC	TBC	TBC	On site
Stacey Roof Replacement	MA	Refurbishment - Energy Saving Project	TBC	TBC	TBC	TBC	TBC	Planned
Sports Centre - Main hall roof replacement (total budget £600K split 2022-23/2023-24)	MA	Refurbishment - Energy Saving Project	TBC	TBC	TBC	TBC	TBC	Outlined
Canterbury Campus	High water usage – Produce monthly profiles for historic average consumptions by month. Compare actual use against this, identify buildings with high use and audit these	Stand alone	Aug23-Dec23	-	TBA	TBA	TBA	Planned



Energy and Water Management Action Plan – Measures

2024/25 - Energy

Location	Description	Project Type	Program	Budget Cost, £	Saving £ p.a.	Saving, kWh	Saving Carbon, tonnes	Status/Notes
Various	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	TBC	TBC	TBC	TBC	TBC	Outlined
Various	Installation of new Solar PV array on the roofs.	Renewable Energy Project	TBC	TBC	TBC	TBC	TBC	Outlined

Energy and Water Management Action Plan – Measures

Major Projects

Location	Description	Project Type	Program	Budget Cost, £	Saving £ p.a.	Saving, kWh	Saving Carbon, tonnes	Status/Notes
TBC	Ground based large solar PV Array	Stand alone	TBC	TBC	400,000*	-	400*	Concept

Notes

- The size of the solar PV array has not been determined, to give an idea the figures used for savings are based on a 2MW solar PV array.

Status

Planned – Works are scheduled to be done.

Outlined – Works are scoped and assessed, but not scheduled

Concept – Initial proposal requiring an assessment to scope and evaluate

## **Energy Awareness Raising**

### **Futureproof**

Futureproof is a wide-ranging initiative based around the 17 Sustainable Development Goals. Included within these goals is 13 Climate Action, which directly addresses the issue of the need for carbon reduction through energy efficiency, and the requirement for renewable energy. Further, several of the other goals indirectly reference the need for energy and water efficiency. The Futureproof website can be accessed using the link below.

<https://www.kent.ac.uk/sustainability/futureproof>

The Futureproof program promotes awareness of the issues associated with energy, and water use, and encourages staff and students to reduce use of these resources. This in turn helps to maintain good practice in terms of using energy helping to minimise unnecessary wasting of energy. Further Staff can volunteer to become Sustainability Champions, and information on energy and water can be provided to assist them with particular Projects.

### **Further methods of raising energy awareness**

- Responding to Departmental Enquiries, and providing additional information on how heating and hot water operate, and what can be done locally to improve the performance and energy efficiency of these systems.
- Providing practical assistance to help with course work by showing how existing heating and hot water services are provided on request. This work is in line with using the University's operations as a living lab type arrangement.
- Ongoing development of the Carbon and Water webpages to demonstrate what the University is doing to reduce carbon emissions, and how it is progressing against targets.

## Appendix 1

### **Types of Energy Saving/Carbon Reduction Projects**

There are a number of different programs of work that are undertaken by the University. These fall in to 3 main types of Project:

#### 1) Energy Saving Measures

The stand alone works are individual measures like the implementation of presence detection to improve control of lighting, or ventilation plant.

#### 2) Refurbishment Works

An example of recurring works is the refurbishment of the replacement of heating and hot water systems in University accommodation. Here when the refurbishments are carried out the opportunity is taken to include energy saving and water saving measures. These measures can include replacing conventional boilers with condensing boilers to improve energy efficiency, and in time replacing boilers with heat pumps.

#### 3) New Builds

Where the University is constructing new buildings these are generally additions to the building stock. The University needs to reduce energy consumption at the same time as increasing building capacity. As a result, new buildings need to have minimal energy requirements, as the entire new load will add to the University's existing carbon emissions making it harder to achieve overall reductions.

The Building Regulations give a baseline to work to in terms of energy efficiency, the requirements for BREEAM then add to these requirements. Where new builds are constructed these meet, or exceed the Building Standards for energy efficiency. The University aims to achieve BREEAM excellent for new buildings. New buildings typically have a proportion of their energy supplied from renewable sources and this is usually be solar photovoltaic panels. An Energy Performance Certificate (EPC) is produced for each new building, which gives the Energy performance rating for the building fabric, and services, but does not include process loads. This can result in a significantly lower Display Energy Certificate (DEC) rating than the EPC.