

Cambridge Colleges Environmental Sustainability Report.





Contents



Welcome to the first

Cambridge Colleges Environmental Sustainability Report.

Published on 28 February 2023

This year, all 31 Cambridge Colleges have come together to highlight the positive progress that they are making towards environmental sustainability. The University of Cambridge publishes its own Annual Environmental Sustainability Report that covers progress towards its own environmental sustainability commitments, but this does not include the Colleges, as they are separate legal entities to the University.

Together, the Colleges' report and the University's report provide an overview of progress on environmental sustainability across the Collegiate University. Sustainability, as defined by the [United Nations Brundtland Commission](#), is "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

This report focuses on environmental sustainability, reporting on the progress that the Colleges have made and some of the actions they are currently undertaking to improve the environmental performance of the Collegiate estates and operations. The report also provides a brief overview of the projects that the Colleges will be undertaking in the 2022/23 academic year.

The 31 Cambridge Colleges provide academic and pastoral support to students and house the majority of students at Cambridge. The Colleges vary in age, with their formation years ranging from 1284 to 1981. The age disparity of the Colleges is also reflected in their differing size and architecture, which present different opportunities and challenges for environmental sustainability work across the Colleges.

Foreword

Environmental concerns and operating sustainably have in recent years been areas of considerable activity in the Colleges of Cambridge University. As residential academic communities, the Colleges exist as places of intellectual discourse as well as physical homes and workplaces for members. In both functions sustainability frequently features. It is seen in the research and teaching of College members, for example around the science of climate change and the engineering of adaption, and in the development of the Colleges' estates and operations, for example as buildings are decarbonised and our grounds made more biodiverse. The Colleges recognise the role they must play not only as trustees of the unique environments in which they sit, but also in equipping today's students to be tomorrow's innovators and leaders on sustainability around the globe.

This report brings together in one place for the first time information on the wide range of initiatives and activities which the separate Colleges have undertaken. There has been significant collaboration in a number of areas, both among the Colleges and with the central University, which has accelerated

progress and delivered cost efficiencies. The report complements the University's sustainability reports on its estate and operations, thus providing a fuller picture overall than has been previously available.

The report was initiated by the College Bursars Sustainability Sub-committee and produced with the invaluable assistance of colleagues in the University of Cambridge Estates Management Sustainability Team. I thank all those who have contributed to making the report both informative as to the current situation and compelling for the work which lies ahead, and I commend it to you as such.

John Dix

Chair
Bursars Sustainability
Sub-committee

Methodology

The information displayed in this report was derived from a survey sent out in November 2022 to all 31 Colleges which they all completed. Each College was also given the opportunity to discuss the survey responses in further detail. Of the 31 Colleges, 26 took part in follow up meetings to discuss their environmental sustainability practices and the remainder provided supplementary information via email correspondence and their College websites.



Mathematical bridge
Photo credit – James Appleton

1 Energy

Photo credit – Smartest Energy



Trinity and
St John's

Photo credit – University of Cambridge

The Utilities and Buildings section of the report will cover some of the Colleges' scope 1 & 2 carbon data, targets and ambitions they have set and sustainable practices associated with their utility usage and buildings.

Targets

In 2019, the University of Cambridge became the first university in the world to announce that it had adopted a carbon reduction target aligned with the requirements and recommendations of the [Science Based Target Initiative \(SBTi\)](#). The target commits the University to reducing its scope 1 and 2 emissions by 75% against 2015/16 levels by 2030, and to absolute zero by 2048. The University has also expressed its aspiration to reach absolute zero by 2038.

Building on and learning from the work of the University, the majority of Colleges have also set a target or declared an ambition to reduce their scope 1 and 2 carbon emissions whilst making efforts in their procurement policies to reduce their scope 3 carbon emissions. All of the Colleges' targets range from 2030 to 2050.

21

Colleges have set or are working towards setting a net zero target or ambition

9

Colleges have set a target aligned with the requirements of an SBTi

25

Colleges are working towards decarbonisation

25

Colleges are working towards degasification

Scope 1 & 2 Carbon Data

Different kinds of carbon emissions are categorised by scope. In this report a proportion of the Colleges scope 1 & 2 data, in the form of gas and electricity usage, is collectively presented. Scope 1 carbon emission data refers to emissions from sources which the Colleges own or control directly, and for the purposes of this report the scope 1 emissions presented are limited to gas usage. Scope 2 refers to emissions from indirect sources, primarily the generation of purchased energy presented as electricity usage in this report.

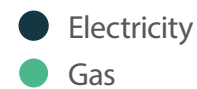
Scope 3 covers all the emissions not accounted for by scope 1 & 2. It includes the carbon emissions that the Colleges are indirectly responsible for, for example through their catering supply chains. More information surrounding scope 1, 2 and 3 including measuring and reporting can be found in the [Green House Gas Protocol Corporate Accounting and Reporting Standard](#).

Colleges Energy Consortium

All Cambridge Colleges are part of an energy consortium which collectively negotiates energy supply contracts for electricity. For the 2020-24 period the Colleges actively chose Renewable Energy of Origins (REGOs) backed contracts for their electricity supplies, which guarantees that the generation of power comes from a renewable source. Currently, 100% of the Colleges electricity supply comes from UK solar and hydro sources with over 80% generated from solar farms within 20 miles of Cambridge, allowing the Colleges to report their energy-related emissions as zero carbon.

As the Colleges source their electricity from renewable sources, the remaining challenge which the Colleges need to tackle is the use of gas primarily for space and hot water heating across their built estates. Reducing to zero the scope 1 emissions from gas for heating is a monumental and costly task, especially when considering the challenges of existing, often listed, buildings. The majority of Colleges have begun taking action and are making changes to degasify their estates through improving building fabrics and electrifying heat either directly or through heat pumps.

Energy Consumption for the year 2021/22 year



Around **26%** of the College's energy usage is electricity



College delegates visit Solar Farm in Cambridgeshire

Photo credit – Smartest Energy

Steps taken to reduce energy consumption

24



Colleges have lights that are sensor operated or on a timer

21



Colleges have electrical equipment that are on timers or turned off when not in use

25



Colleges actively engages with staff and students on energy saving advice

16



Colleges have installed automated room-based controls for heating

31



Colleges have installed LED lights

17



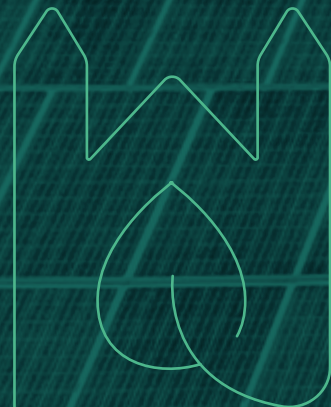
Colleges have developed plans to improve window glazing

15



Colleges have upgraded their building insulation

31 Colleges within the University

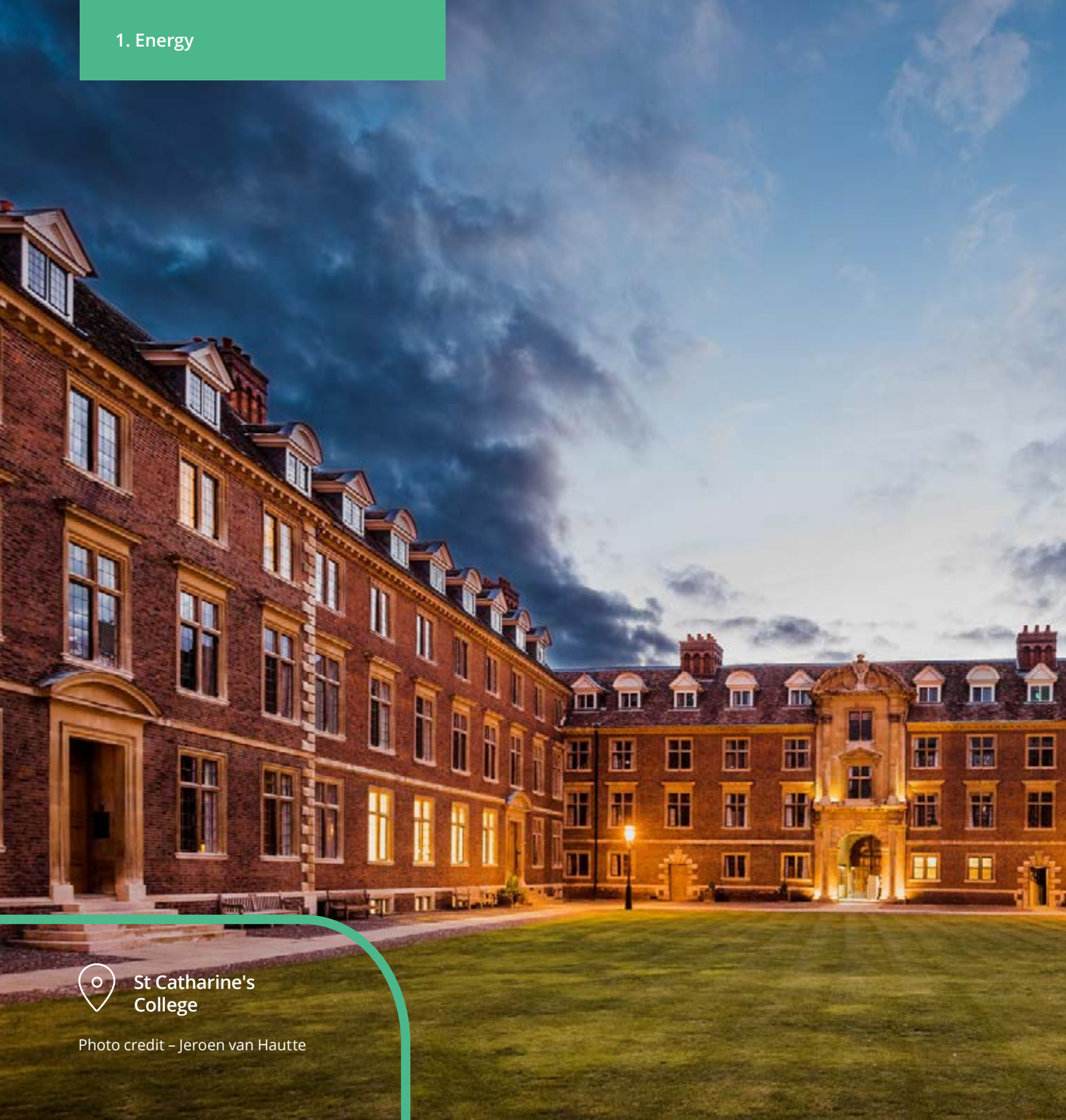


Monitoring Energy Usage

Twenty-nine Colleges actively monitor their energy usage in house, with additional support provided by the University Sustainability Energy team who provide a bill validation service and compile annual carbon reports for each building. Monitoring energy consumption and the effect of interventions on the fabric of individual sites has been made easier since the widespread roll out of smart meters on gas and electricity supply points since 2019.

Estimated percentage of rooms with LED lights

All Colleges have installed LED lights in at least some of their buildings, one College has installed them in >25%, 2 Colleges have installed them in approximately 25-50% of their rooms, 17 have installed them in approximately 51-75% of rooms and 11 have installed them in approximately 76-100% of their rooms.



St Catharine's
College

Photo credit – Jeroen van Hautte

CASE STUDY

Collecting Real Time Data of Energy Usage

Churchill College has installed sensors in offices and communal spaces to monitor the temperature, humidity, light, solar gain, carbon dioxide and presence of people in the area where they are installed. The purpose of the sensors is to provide real time data of energy use and to help the College to make informed decisions about how its spaces are used. The sensors can also be linked to the Building Management System and smart thermostatic radiator valves. Therefore, when the sensor reports that a space is empty it can automatically reduce the temperature of the room, preventing heating of empty spaces. St Catharine's College is in the process of trialling the same system.

Pembroke College has also installed a set of sensors which determine whether there is someone in the room or not, adjusting both the heating and lighting controls accordingly.

Alongside the sensors, Churchill College has begun installing eco-plugs. These monitor the amount of power being used at each outlet, switching themselves off if no power is used for an extended period. The eco-plugs are connected to the sensors, reducing the energy supplied to an empty space. The plugs also help the maintenance team to identify electrical faults by supplying data on power supply.

CASE STUDY

Homerton's Smart Thermostatic Radiator Valves

In September 2022 Homerton College installed smart thermostatic radiator valves (TRVs) in 276 rooms across four floors of the original Victorian Cavendish and Ibberson buildings. These Wi-Fi-connected radiator controllers give students autonomy over their heating controls via a smart phone and allow building temperatures to be easily monitored and managed by the facilities team. Students can set a timeframe during which they will be away from their room and the radiator temperature will automatically decrease. The smart TRVs can also sense when a window is open in the room, automatically turning the heating down until the window is closed. Maintenance staff are able to set a maximum temperature for the thermostat thereby regulating the temperature in hallways and communal spaces, and can remotely turn off heating in empty or unused rooms. All heating data for each radiator is compiled and displayed through a management portal which provides energy and carbon reports. The smart TRVs have resulted in an energy saving of 37% based on radiators set on a medium temperature before the smart TRVs and up to 59% on radiators set on maximum. Overall, the smart TRVs have produced a significant saving on energy, carbon associated with the generation of heat, bills and maintenance of radiators.



Homerton
College

Photo credit – Sir Cam

Other Colleges are currently looking into similar projects for accommodation and core facilities buildings, including Peterhouse which plans to trial them in 120 student rooms across off-site student hostels.

In the last 12 months, 16 Colleges have undertaken energy audits which help assess the energy needs and efficiency of buildings. 10 of these Colleges have developed an Energy Action Plan as a result, which lays out goals and actions to reduce their energy consumption.

Renewable sources

Twenty-six Colleges have invested in an on-site renewable source of energy and/or heating. Of these 26 Colleges, 17 have installed air source heat pumps, 9 have ground source heat pumps and 22 have solar panels.

CASE STUDY

Churchill's Solar Panels

Churchill College has become a pioneer in the collegiate community when it comes to harnessing solar power. The in-house maintenance team have been trained in both the installation and maintenance of solar panels, allowing a high number of panels to be installed. This ensures that the installation is economically viable. Churchill has just completed the second stage of installation and is currently generating 200,000 kWh a year, with plans to generate 750,000 kWh of solar power by 2026.



Churchill
College

West court project
Photo credit – Churchill College





 Gonville & Caius College

Caius Court
Photo credit – Gonville & Caius College

Heating Mechanisms

All Colleges have buildings which are still at least partially heated by gas boilers to some degree. However, 3 Colleges have stopped installing new gas boilers, whilst 17 Colleges are only installing new gas boilers in some circumstances, mostly when an emergency replacement is required.

Looking forward,

Seven Colleges have a plan to migrate from gas boilers to alternative heating methods and 17 Colleges are working towards a plan to use alternative heating methods.

CASE STUDY

Gonville & Caius' Bespoke Heat Recovery System

As Colleges are working towards a decreased reliance on gas boilers, other methods of heating are also being considered. In this endeavour Gonville & Caius have developed a one-of-a-kind heat recovery system. Working with an external engineer the College has designed a system which allows the waste heat ejected from the fridges and freezers in the basement to be used elsewhere. The waste heat is used to pre-heat the domestic hot water which is then used in the kitchens. This unique heat recovery system uses the rejected heat from the fridges and freezers to match the kitchens hot water load, thus creating a huge saving in energy, with 60% of the energy required to heat the water achieved by using waste heat.

There is a potential for the waste heat to be used in other buildings across the College, and the possibility of using this process to heat the College chapel and potentially the Master's Lodge is being explored.

CASE STUDY

Water Source Heat Pump

Robinson College has harnessed the thermal energy in the water flowing through Bin Brook, a tributary of the Cam which runs through their College grounds. The Water Source Heat pump installed operates in a similar way to a ground source heat pump and uses a series of submerged pipes connected to a heat exchanger to extract the heat from the Brook, which helps supply the College's heating and hot water for its main site. This supports the College's gas boiler systems, reducing the site's gas requirements and the associated carbon emissions.



Photo credit – Robinson College



CASE STUDY

Collabrative Water Source Heat Pump study

Six river-based Cambridge Colleges (Darwin, Queens', King's, Trinity Hall, Trinity, St John's) have commissioned a six-month hydrological feasibility study to assess the suitability of the River Cam as a renewable source of heat for part or all their estates. If the heat and flow capacities of the river are proven suitable then this would provide an opportunity for efficient installations of heat pumps in the river by any or all of the 6 Colleges, assisting in the decarbonisation of their built estate.

Photo credit - Giles Greenfield

2 Buildings



Photo credit – Sir Cam



Trinity College
New Court refurbishment
Photo Credit – 5th Studio

Colleges have multiple buildings and rooms used for a variety of purposes, from accommodation to seminar rooms to dining halls. Many Colleges have taken steps in recent years to make their buildings more energy efficient, and better prepared to withstand future expected changes in climate.

Refurbishment of Existing Buildings

All Colleges are taking steps to make their College accommodation more energy efficient. Five Colleges have adopted a strategy to make their present accommodation more climate resilient. Examples include controlling solar gain by installing film on windows and developing mechanical ventilation with heat recovery systems. A 'fabric first' approach, which improves the energy efficiency of buildings through refurbishment, has been adopted by the Colleges, improving energy efficiency before introducing heat pumps and removing gas boilers. Ten Colleges have stated that they are working towards developing a strategy to make their accommodation more climate resilient, again focusing on a 'fabric first' approach to refurbishments.

In the last year Selwyn College has refurbished three graduate hostels, a short walk from their main site. The refurbishments followed the 'fabric first' approach with a significant upgrade to insulation before ground source heat pumps were installed, which serves the newly installed underfloor heating.

In 2016 Trinity College undertook a mass refurbishment of New Court, a Grade 1 listed building constructed in 1822, which included replacing all of the listed single-glazed windows with double glazing, a first for buildings of this age and significance. The full refurbishment included the installation of smart technology in the window frame, which senses when the windows are open and links to the room systems, turning down the heating. As part of the same project, Trinity installed underfloor heating provided by a ground source heat pump, demonstrating that historic College buildings can be made energy efficient.

Fitzwilliam College is currently undertaking a large refurbishment of all its accommodation, moving from single to double glazing and, in some cases, triple glazing.



Jesus College

Photo credit – Barry Flanagan



CASE STUDY

Jesus College's commitment to decarbonisation

Jesus College has formed a detailed decarbonisation plan, which gives the College a roadmap to the decarbonisation and the elimination of fossil fuel use. The College received funding from the Government's Public Sector Decarbonisation Scheme, managed by [Salix Finance](#), towards its completion. The decarbonisation plan focuses on improvements to infrastructure, includes data gathering, improvements to buildings fabric, degasification, investment in renewable technology and the promotion of changes in usage and behaviour.

Development of new builds

Fourteen Colleges have used an audited sustainability standard for new builds, ranging from BREEAM Good to Excellence and Passivhaus certified builds.

Fitzwilliam College has adopted an aim that every new building in the future should be constructed to a Passivhaus or BREEAM Excellence standard, achieving the highest sustainability standards they can.

Emmanuel College has set out its own building parameters for a new building project which encompasses bespoke sustainability standards to achieve a high BREEAM score. The sustainability principles include minimising the impact of the building construction, air pollution, operational carbon emissions and operational water demand, while ensuring ecological benefits and enhancing the performance and efficiency of the building's use.



Building to a Passivhaus standard

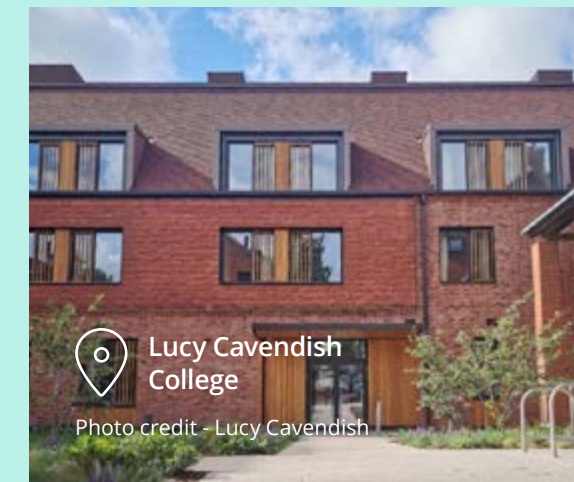
The University of Cambridge has an ever-growing community of students and the Colleges are facing the challenge of accommodating more students in an environmentally sustainable way. Both Lucy Cavendish and King's College have responded to this challenge through the creation of purpose built Passivhaus standard accommodation and multiuse spaces for their communities.

King's College was the first College to build to a Passivhaus standard and currently has two Passivhaus developments in Cambridge located on Crammer Road and Stephen Taylor Court. These were completed in 2019 and 2022 respectively and are both located a short cycle from the main site. Both sites accommodate Kings' students and offer a more energy efficient way of living. There are heat recovery systems at both sites and air source and ground source heat pumps at Stephen Taylor Court. The Stephen Taylor Court development allows for future proofing by adjusting windows to provide shade as global temperatures increase.

Photo credit - Lucy Cavendish



Lucy Cavendish has recently completed an on-site Passivhaus development, which combines student accommodation with a ground floor social and study space housing the College's café and bar. The development is served by air source heat pumps that provide heating and hot water to the building, removing the buildings dependency on fossil fuels. Smart building techniques have reduced the carbon required for the build, the tile hanging on the facades have reduced the volume of material used and glass reinforced polymer brackets reduce heat loss.



3 Water

Fifteen Colleges have invested in water metering systems while a further 12 Colleges have a partial metering system across parts of their estate.

To reduce water consumption

15

Colleges have implemented water demand techniques.

16

Colleges continue to actively engage their community with water saving advice.

8

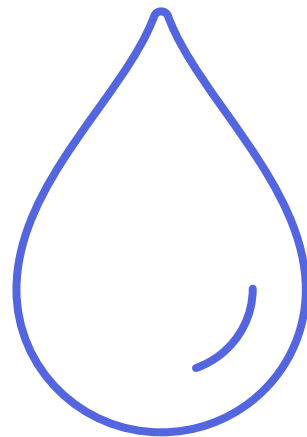
Colleges have installed sub-meters to gather information on how water consumption varies across the College.

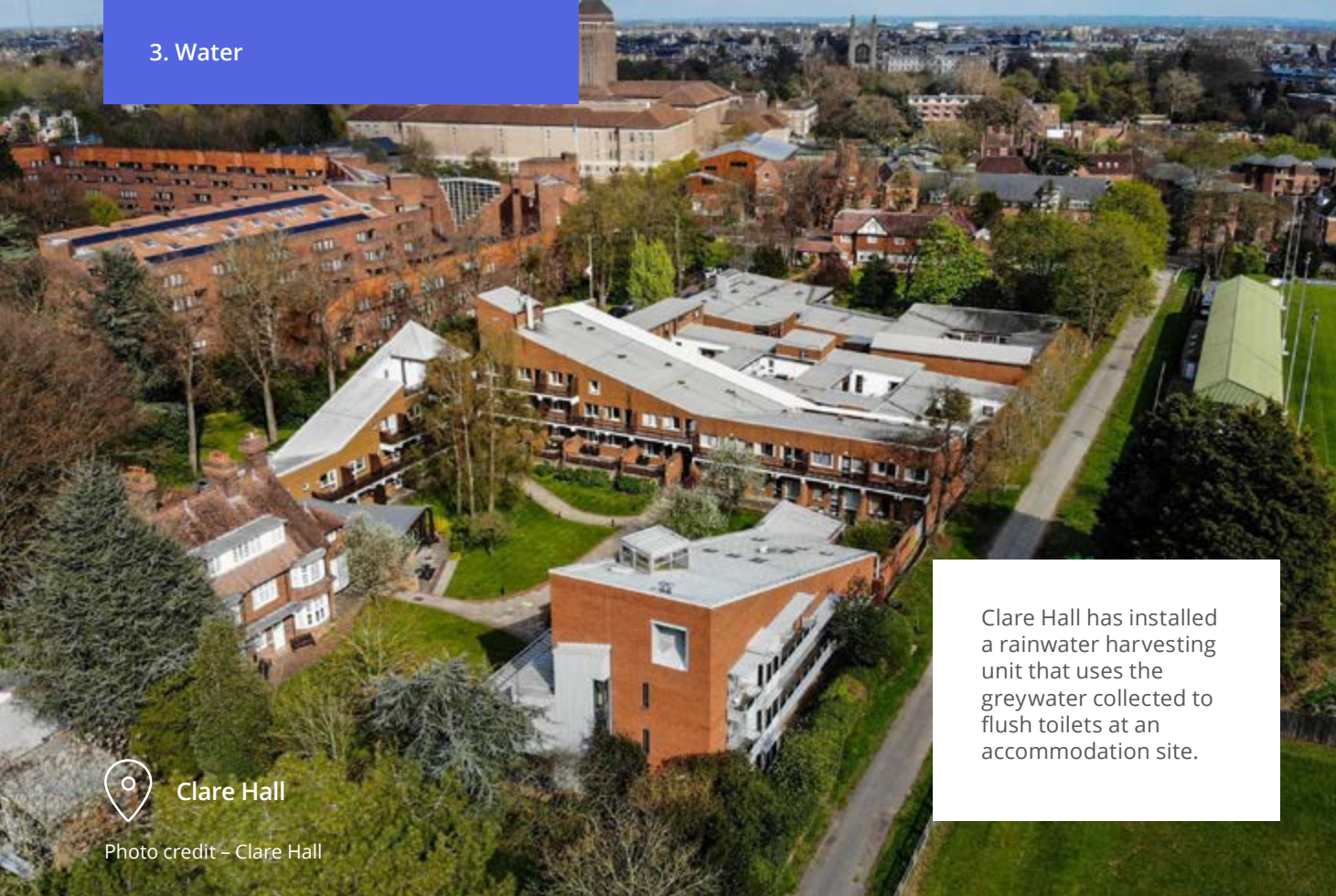
27

Colleges continually maintain equipment to ensure there are no leaks.

9

Colleges have undertaken a review of their laundry activity and made appropriate changes.





Clare Hall has installed a rainwater harvesting unit that uses the greywater collected to flush toilets at an accommodation site.

Clare Hall

Photo credit – Clare Hall



Girton Garden

Photo credit – Girton College



Laundry rooms at Christs
Photo credit – Christs College

21

Colleges have a method of rainwater collection onsite, ranging from water butts to larger collection sites.

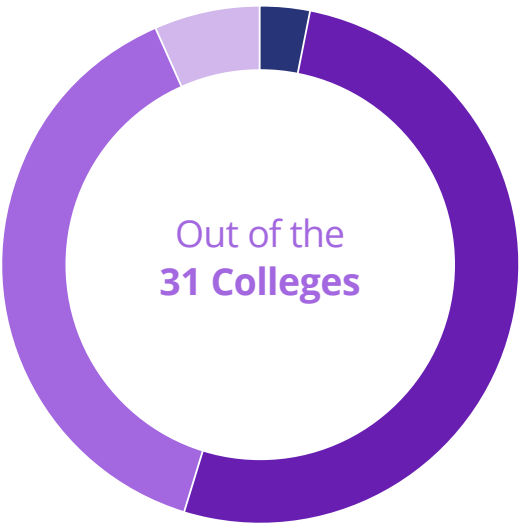
Many Colleges also have policies that limit the watering of the garden and lawns except when establishing new plants or preserving exceptional species in times of drought. Alongside the reduction in watering, some Colleges are also looking into planting more drought tolerant species which would further decrease the need for watering in the future.

Catering

All Colleges uphold sustainability standards in sourcing their produce and adhere to the Catering Managers' Committee Sustainable Food Policy. This Policy states that Colleges should aim to:

- ✓ Reduce the consumption of meat
- ✓ Promote the consumption of plant-based foods
- ✓ Ensure that seafood is responsibly sourced from a sustainable supply
- ✓ Reduce the amount of food that is wasted
- ✓ Use fairly traded products
- ✓ Ensure that animal welfare standards are adhered to
- ✓ Communicate to Fellows, students, staff and visitors their commitment to serving sustainable food

Serving of meat



- **1 College** never serves ruminant meat
- **16 Colleges** serve ruminant meat once or twice a week
- **12 Colleges** serve ruminant meat three or four times a week
- **2 Colleges** serve ruminant meat more than five times a week

21

Colleges state that they promote the consumption of plant-based food through a variety of steps including, making plant-based alternatives the cheapest item on the menu, placing it before meat options on the menu and making it the default option on Formal Hall menus.

Robinson College hosts a plant-based food fayre every term, where staff, students and Fellows can sample plant-based menus to encourage conscious changes in consumption habits and to allow for input on the plant-based menus. Selwyn College is also working to encourage changes in consumption habits, hosting a Formal Hall every term with a plant-based menu and Trinity Hall has an ambition to introduce these.

Labelling seasonal, local and carbon footprint

Six Colleges clearly state when local and seasonal produce is used at the servery and events, whilst 13 Colleges are working towards highlighting this information.

Furthermore, a number of Colleges display the carbon footprint of the meals in their servery. Five of these Colleges have contributed to a [study](#) that investigated the effects of carbon footprint labelling on consumer choices. Two of these Colleges, Darwin and Trinity Hall, noticed an increase in popularity of plant-based low carbon options, which has helped their catering teams assess the environmental impacts of their menus. Other Colleges that presently display carbon footprint labelling on their meals include Churchill, Hughes Hall, King's and Trinity.

Corpus Christi College has a Sustainability Wall in the servery which displays where produce has come from and the efforts made to source food in a sustainable manner.

Sustainability in Conference and Catering

Sixteen Colleges have adopted a Sustainability Policy which covers conferences and catered events, and 5 Colleges are working towards producing a policy. Changes in the way Colleges host events have included offering fully plant-based menus, going paperless and removing single use toiletries from guest rooms.

Food Waste

Sixteen Colleges have a scheme in place to reduce commercial food waste, whilst 10 Colleges are working towards implementing a scheme. Twenty-one Colleges provide compost bins to students in student accommodation with a kitchen to better manage food waste not produced by their commercial kitchen.

At Jesus and Fitzwilliam Colleges food and oil waste, are taken offsite to a biomass plant for the production of energy. St Catharine's has a bio-digester for commercial food waste and Murray Edwards sends food waste away to a bio-digester. Other Colleges manage food waste by reducing the food produced, offering half portions and encouraging Fellows to pre-book for high table lunch. Hughes Hall serves leftovers from Formal Hall during their lunch service the next day.

CASE STUDY

Darwin College's community fridge

Darwin College has set up a community fridge in their study centre where the catering team can place sandwiches and other goods leftover from the daily service at the café and the servery. Students, staff and Fellows all have free access to the fridge.



Darwin College

Photo credit – Darwin College

Food Packaging

Eighteen Colleges offer a reusable hot food takeaway service and 2 Colleges are working towards offering this service. Furthermore, 18 Colleges offer a discount to those that provide their own reusable containers. Twenty-three Colleges serve takeaway items in compostable packaging. A number of Colleges are transitioning to paper-based packaging due to the complexity of composting their compostable packaging.

Newnham College Iris Café

Photo credit – Newnham College



Photo credit – Sidney Sussex College

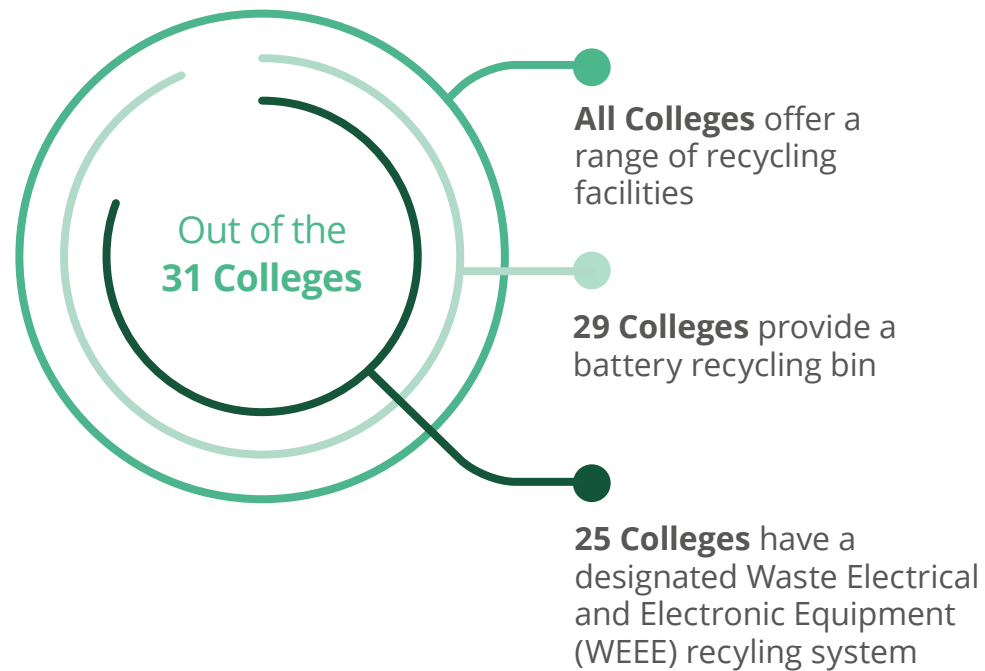
CASE STUDY

Sidney Sussex eliminating single use containers

Sidney Sussex College has eliminated single-use hot food takeaway containers altogether in their servery by issuing every student, staff member and Fellow with their own College branded Tupperware. A takeaway service is only offered to College members who bring their Tupperware, an approach which has drastically reduced single-use waste.

Waste

What is thrown away and how it is done has huge implications for the environment. Regulating waste and sorting it correctly at the point of disposal is imperative to ensure less waste ends up in landfill.



St Edmund's College provides its students with the opportunity to dispose of any electrical items through the WEEE recycling system, ensuring the correct disposal of electrical and electronic goods. Robinson College students set up an interactive website page named 'Where Are the Bins', the map allowing students to search where the nearest bin is for different kinds of waste.

Twenty-six Colleges are also taking steps to reduce paper waste, by removing printers from offices, sending out communications electronically and moving invoices online.

When disposing of larger items like pieces of furniture, 17 Colleges donate the items to charity if in a good condition. Five Colleges make efforts to repair and re-use the furniture before it is donated. To avoid purchasing new desks, Girton College have recently renovated its stock of original 1930s desks to a high standard making them suitable for modern day use.

All of the Colleges also have access to the University wide furniture redistribution scheme [WARPiT](#), where Colleges and other University departments can access an online marketplace to redistribute resources for free. All Colleges are now aware of the platform and are intending to use the platform when needed, whilst 6 Colleges have made use of it.

Alongside, the efforts Colleges are making to re-use and donate their own furniture and bulky items, 19 Colleges have a scheme in place to manage the waste produced by students moving out, via donations to charity and organising redistribution among their students.

CASE STUDY

Project Second Life

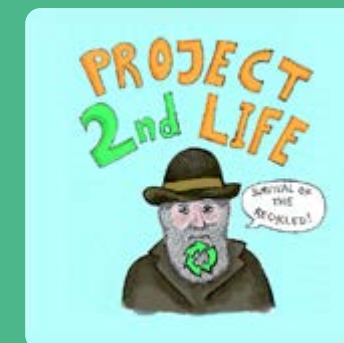
Project Second Life was initiated as an [Engage for Change](#) project by two students to reduce the volume of waste entering landfill when students move out of College accommodation, by offering them to new students moving in. The scheme provides an opportunity for students leaving College accommodation to donate their unwanted useable items, which are then recirculated at the beginning of the new academic year giving every item a 'second life'.

The Project Second Life scheme now has an established team at Darwin College spearheaded by the College Green Officer. In 2022 the Darwin team collected over 500kg of unwanted items for redistribution. The items that could not be redistributed were sent to local charities and specialised recycling with a minimal residual amount sent to landfill.

The scheme also raised funds raised which have been used to pay for summer storage of the items when storage space in College is limited.

Similar schemes are now running at other Colleges with Jesus, Corpus Christi, Fitzwilliam, Newnham, Queens', Robinson, Sidney Sussex, St Catharine's, St Edmund's and Wolfson all having introduced or planning a similar initiative.

Clare College promotes an initiative in their student accommodation where students can leave reusable items such as pots and pans in a Freecycle cupboard for others to take.



500kg
diverted from landfill

Project Second Life Trash to Treasure event
Photo credit – Darwin College

Local Transport



A reduction in society's carbon generation requires changes to the way people move around every day, switching from small occupancy fossil fuelled vehicles to more sustainable modes of transport. To encourage this transition, many Colleges are making efforts to promote sustainable modes of local travel for their students and their staff.

Cycling is the primary sustainable travel mode supported and promoted by the Colleges, with regular installation of new bike racks to increase bicycle storage capacity onsite, along with supplying additional showers and changing facilities to encourage cycling among the College community.

Seventeen of the Colleges now own electric vehicles (EVs) in their fleet and a further 4 Colleges are considering switching to an EV when next purchasing a vehicle. Eighteen Colleges also offer on-site electric vehicle charging spaces for staff, guests and visitors.

Seventeen Colleges promote sustainable travel to guests, staff and students directing, people to and around Cambridge via the train and bus network whilst also encouraging cycling and walking routes in the city centre. Queens' College works with the Park & Ride services to allow Queens' staff, students and Fellows to use the service for £1. Queens' also offers an electric bike to staff when travelling around the city for meetings.

Five Colleges loan bicycles out to their students, as well as providing cycle training to both staff and students. Six Colleges offer bicycle upkeep sessions to both students and staff, with 4 other Colleges offering the sessions just to their students. Twenty-six Colleges offer a cycle to work scheme, to assist staff in purchasing a bike.

Under a new travel policy at St John's College, all students, staff and Fellows who use College funded travel have to declare the carbon footprint of their journey, encouraging low carbon travel options.

26
**Colleges offer
a cycle to
work scheme**



Hughes Hall

Photo credit - Sir Cam

7 Biodiversity



Photo credit - Paul Everest

Improvements to biodiversity and nature recovery have a widespread impact, from flood mitigation, carbon capture to localised temperature reduction as well as improving the health and well-being of staff, students and local communities.

In 2020/21 an [Engage for Change](#) project worked to understand how the Cambridge Colleges are managing their grounds for biodiversity. The project highlighted the amount of positive work being delivered by College gardeners across the city, allowed sharing of best practice as well as laying the foundations, for surveying the city-based collegiate estate.

Building on the work done in the College Gardeners project in 2021/22, a biodiversity baseline assessment of the University of Cambridge's College sites, was commissioned by the College Bursars Sustainability Sub-committee. The [Cambridge Colleges' Biodiversity Baseline](#) provides a review of what wildlife is present on College sites across the collegiate operational estate and highlights the diversity of flora and fauna with which staff, students and the local community share these spaces. This baseline data will enable the Colleges to enhance and improve their green spaces for biodiversity and work with city wide partners to improve the city for wildlife.

Eleven Colleges have a Biodiversity Action Plan (BAP) and 10 Colleges are currently working towards producing one. When it comes to monitoring biodiversity on College grounds, 14 Colleges are currently recording this information.



A Fox photographed at Jesus College

The Colleges are encouraged to submit records to the '[Cambridge University and Colleges' iRecord](#) wildlife monitoring and recording activity. All staff, students and visitors are encouraged to record wildlife throughout the year in their outdoor spaces to measure progress against its biodiversity baseline.



Orange-tip butterfly *Anthocharis cardamines*
Photo credit - Rhona Watson

11

Colleges have a Biodiversity Action Plan

10

Colleges are working towards producing one



Photo credit - King's College



Small elephant hawk-moth *Deilephila porcellus*
King's College meadow

Photo credit - Rhona Watson



CASE STUDY

King's Wildflower Meadow

Once a year the lawn outside of King's College chapel transforms into a wildflower meadow. In 2021 59 plant species were present in the meadow compared to the 22 species found in the regularly mown lawn of previous summers. The wildflower meadow has been present at King's since the summer of 2020, with the project initiated in 2018 by Fellows, the Gardens Committee and the Colleges Head Gardener. The aim of the meadow project was to improve biodiversity and prevent the decline of pollinating insects. Ongoing research confirms that the meadow provides a habitat for 130 insect species.

At the end of flowering in 2021 and 2022 the wildflower meadow was harvested in a traditional manner by two shire horses. The bales harvested in this way have been used to create more wildflower meadows across Cambridge. Jesus College have used the wildflower seeds from Kings' meadow to form its own sanctuary of biodiversity on the North Court lawn.

Engagement, policy and governance



Gonville & Caius
College

Photo credit - Gonville & Caius College



How Colleges engage with their members through College governance and policy is vitally important to ensure that whole College community is working towards a common goal of environmental sustainability.

Each College has a designated student Green Officer on either their Student Association, [Junior Combination Room \(JCR\)](#) and/or [Middle Combination Room \(MCR\)](#), who act as student representatives at committee meetings and lead on the engagement of students in sustainable practices. Green Officers work throughout the year on engagement projects in their College and work across Colleges during the Universities Green Week where the student Green Officers come together to host collaborative events.

The College Green Officers also sit as student representatives on Committees within their College addressing sustainability and environmental issues. Twenty-eight Colleges have a committee meeting that encompasses sustainability at least once a term.

In the 2021/22 academic year, 11 Colleges took part in the international [Green Impact scheme](#) organised by the University's Sustainability Team, which lays out sustainable criteria for the Colleges to achieve. Out of the 11 Colleges that participated, 8 Colleges were awarded the highest level of accreditation, Platinum, and the other 3 Colleges were awarded the second highest accreditation, Gold. In the 2022/23 academic year, 16 Colleges have signed up to participate, increasing engagement in the scheme across the Colleges.

Other student efforts towards sustainability within Colleges include the '[sustain-a-ball](#)' scheme ran by Cambridge University Environmental Consulting Society (CUECS). The 'sustain-a-ball' scheme works in a similar way to Green Impact, with a specific focus on making sure that each Colleges' annual May ball or other large event is held to a set of sustainability criteria.



Clare Hall

Photo credit – Clare Hall Allotment Society

CASE STUDY

The Wolfson Living Lab

The Wolfson Living Lab provides a space for members of the College to work on projects that have demonstrably positive impact on the College's sustainability. The Living Lab projects receive mentorship and support from the Colleges Sustainability & Conservation Hub, with funds provided to aid with project work. One current project utilises the student's intelligent energy management software to gain a greater understanding of energy consumption patterns at Wolfson. The project aims to provide a bespoke programming interface that visualises and generates reports of the College's energy use, energy costs and carbon emissions across its site. This result will provide reliable data for the operations team and other committees, as well as improving resource efficiency and carbon management.



**Wolfson
College**

Photo credit - Wolfson College



**Jesus
College**

Photo credit - Jesus College



CASE STUDY

The Churchill and Jesus Seed Library

Jesus and Churchill Colleges have collaborated to form Seed Libraries, making seed packets and books on gardening and wildlife available to their communities. Both of the Seed Libraries have encouraged engagement in gardening and biodiversity promoting the connection between people and outdoor spaces. Wildflower seed from Jesus' North Court meadow has also been available via the Seed Library spreading its biodiverse habitat further afield.

9 Procurement



Photo credit - Sir Cam

9. Procurement

When procuring goods and services, 13 Colleges include sustainability as a criteria in the process, with another 13 Colleges working towards including sustainability.

Christ's College has recently used sustainability as a weighting in the procurement process when sourcing furniture for a new building on King's Street, ensuring that the sustainability standards run from the BREEAM construction to the furnishings inside.

Colleges are also looking into how to reduce the packaging of items procured, with 11 Colleges currently taking steps to reduce packaging and 8 Colleges working towards this in the future. Newnham College has recently invested in an appliance that turns water into a chemical free cleaning fluid, used in reusable bottles. The appliance works by introducing electricity to tap water to create a cleaning and sanitising solution. This appliance has saved the College from using approximately 1,800 plastic bottles over a year, with Lucy Cavendish and Magdalene both using a similar method.

Downing College publishes its 'Green Metrics' every three months, which includes data on the College's gas, electricity and paper consumption. These metrics help the College monitor the usage of the items included in the metrics, influencing purchasing habits.



Christ's
College

Photo credit - Sir Cam

10 Sustainable Investment

The Colleges are making efforts to incorporate sustainable practices in their investment portfolios. Twenty-eight Colleges have incorporated sustainability principles in their investment policy. Twenty Colleges have fully divested from direct investments in fossil fuels and the remaining 11 Colleges are working towards fully divesting from direct investments. Twenty-three Colleges are pursuing 'positive investment' opportunities such as investing in renewable technology.

28

Colleges have incorporated sustainability principles in their investment policy

Looking ahead



Photo credit - Sir Cam

Many Colleges are looking at expanding their onsite renewable energy generation in the 2022/23 academic year with Christs, Churchill and King's all aiming to increase solar panels across their site. Colleges are continuing to adapt the way they heat their buildings with Christs, Clare and Newnham all looking into installing heat pumps. Clare are currently undertaking a feasibility study in Memorial Court, a listed building, with hopes of installing an air source heat pump. Newnham have already planned the installation of a new air source heat pump on a postgraduate accommodation site in 2023.

Alongside the changes in energy and heating supplies, Colleges are planning refurbishments to existing builds to increase energy efficiency. King's College is undertaking a refurbishment of another of its student hostels, with the set of buildings ranging from the Edwardian to Tudor period. During the refurbishment King's are looking to achieve a high energy efficiency standard not far off the EnerPHit standard. Downing College are also aiming to degasify one of its large listed buildings as a result of a refurbishment over the 2023 period. Girton College are looking at redesigning Cloister Court to a space free of cars, encouraging cycling and other modes of sustainable transportation.



Newnham College Air Source Heat Pump

Photo credit - Newnham College



 **Clare College**

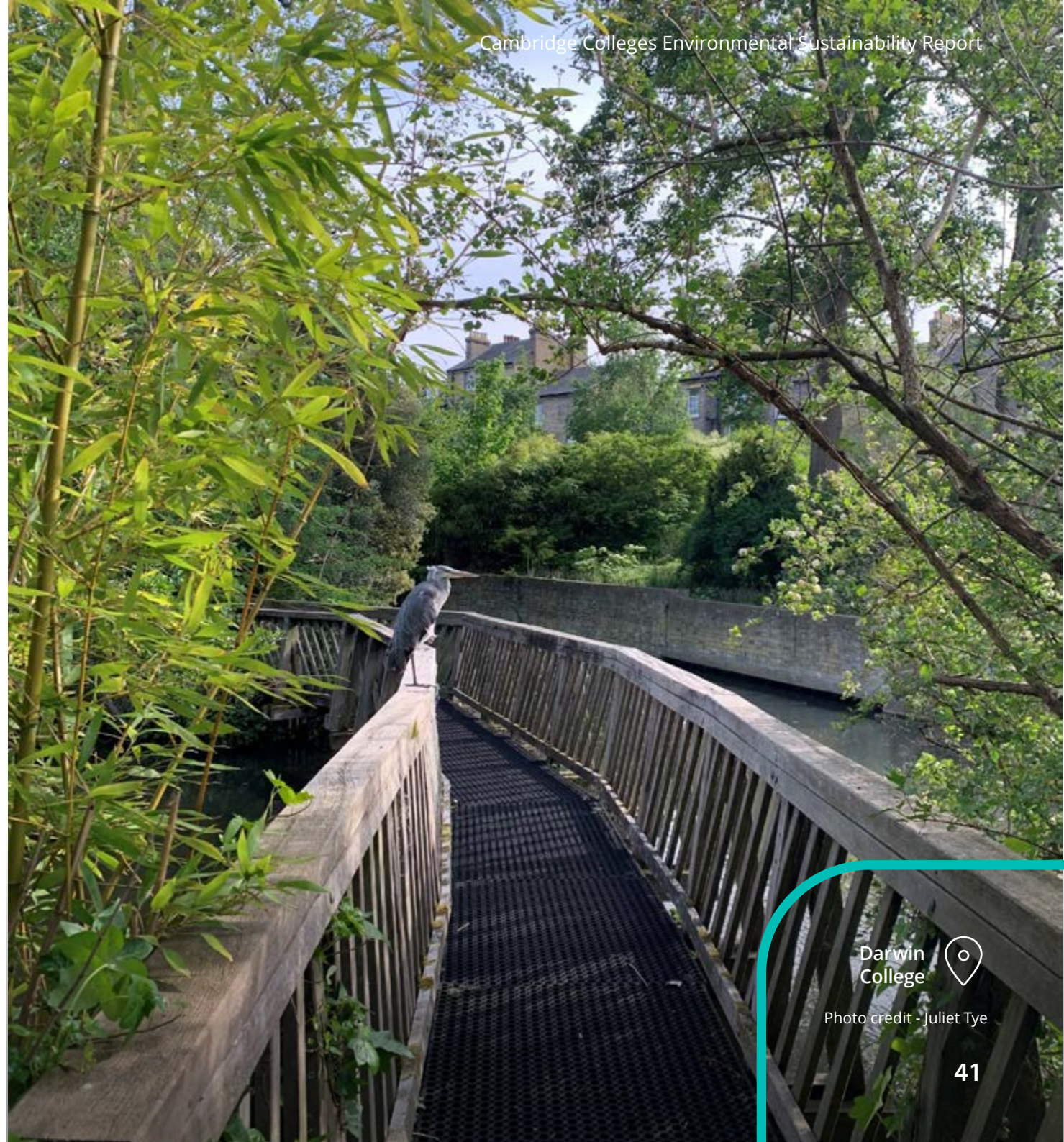
Photo credit - Sir Cam

Summary

From large renewable energy schemes to encouraging changes in behaviour, this report has demonstrated that the Colleges are undertaking a wide range of activities and initiatives to improve their environmental sustainability. Although, this report shows only a snapshot of these activities, the Colleges are aware that more needs to be done and are proactively making progress behind the scenes.

The Bursars Sustainability Sub-committee, having commissioned this report, is dedicated to working collectively to create an environmentally sustainable Collegiate environment. This report highlights exceptional practices across the Collegiate University, enabling knowledge sharing and the wider implementation of best practice.

In publishing this report, the hope is that the Colleges will continue to build on their sustainable practices with enthusiasm, and respond positively to the challenges that come with their unique environment.



Glossary

Air Source Heat Pump - Transfers heat from the outside air to water, which heats rooms via radiators or underfloor heating and can heat water stored in a hot water cylinder.

BREEAM – A science-based suite of validation and certification systems for sustainable built environment supporting the Environment, Social and Governance (ESG) solutions.

Building Management System (BMS) – A control computer-based system that is used to monitor and control building services including heating, electricity and lights.

Energy Action Plan - An Energy Action Plan is a strategic planning document that lays out goals and actions to reduce energy consumption.

Energy audit – An energy audit is an assessment of the energy needs and efficiency of a building or buildings.

EnerPHit – A relaxed standard of Passivhaus for retrofit projects, where the existing architecture and conservation issues mean that meeting the Passivhaus standard is not feasible.

Fellow – A senior member of a College, normally required upon election to undertake academical or administrative duties within the College. In all Colleges they form the Governing Body for changing statutes.

Formal Hall – A formal three course dinner open to College members and guests, which often occurs bi-weekly in many Colleges.

Ground Source Heat Pump - Transfers heat from the ground outside into a thermal transfer fluid to heat rooms via radiators and underfloor heating and can heat water stored in a hot water cylinder.

Junior Combination Room (JCR) – The centre of social life amongst each College's undergraduate community, providing various facilities and run by an elected committee.

LED lights – An energy-efficient lighting technology that have the capability to turn 70% of their energy into light making them more efficient than other bulbs.

Middle Combination Room (MCR) – The place in a College set aside for graduate and post-graduate students to socialise and is run by an elected committee.

Passivhaus - A whole-building approach with clear, measured targets, focused on high-quality construction, certified through an exacting quality assurance process.

Renewable Energy Guarantee of Origin (REGO) - Provides transparency to consumers about the proportion of electricity that suppliers source from renewable generation.

Science Based Target Initiative (SBTi) - Science-based targets provide a clearly-defined pathway for companies to reduce greenhouse gas emissions in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement.

Smart meters - Smart gas and electricity meters record half-hourly price and consumption data and provide automatic meter readings to the energy supplier and will display the cost and amount of energy being used.

Solar gain - Refers to the heat increase of a structure in a space that results from absorbed solar radiation.

Water Source Heat Pump - Extracts heat energy from water to provide heating and hot water to buildings.

Cambridge Colleges

Thank you to all those that contributed to the report. All the 31 Cambridge Colleges were involved in the production of this report and are listed on this page.

This report was produced by Juliet Tye in collaboration with the University of Cambridge's Colleges and Sustainability Team.

- **Christs College**
- **Churchill College**
- **Clare College**
- **Clare Hall**
- **Corpus Christi College**
- **Darwin College**
- **Downing College**
- **Emmanuel College**
- **Fitzwilliam College**
- **Girton College**
- **Gonville & Caius College**
- **Homerton College**
- **Hughes Hall**
- **Jesus College**
- **King's College**
- **Lucy Cavendish College**
- **Magdalene College**
- **Murray Edwards College**
- **Newnham College**
- **Pembroke College**
- **Peterhouse**
- **Queens' College**
- **Robinson College**
- **Selwyn College**
- **Sidney Sussex College**
- **St Catharine's College**
- **St Edmund's College**
- **St John's College**
- **Trinity College**
- **Trinity Hall**
- **Wolfson College**

View from
The Pitt Building

Photo credit - University of Cambridge

Photo credit - University of Cambridge

