TRINITY HALL
CAMBRIDGE

Sustainability Strategy

2025-2040

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1. Executive Summary

This document sets out the strategic goals, ambitions and progress of Trinity Hall in improving the sustainability of its estate and operations. The progressive development and execution of these ambitions will be monitored by the relevant College committees and working groups, reporting to Governing Body. For Trinity Hall, sustainability means reducing its environmental impact on our surrounding area and improving biodiversity across our estate. Trinity Hall has been in existence since 1350 and prides itself on being a long-standing and perpetual institution. We take the responsibility for the sustainability of the estate, the fabric, and the institution as a place of education, learning, research and religion very seriously. We need to take action now to ensure future generations continue through Trinity Hall.

The report details objectives, KPI's, results achieved and action plans across the major areas of College activity. The largest single area of activity relates to measures to be taken across the College's built estate towards reductions in energy usage and the switch to less carbon intensive energy sources. These projects involve fabric improvements to historic buildings, the redesign of certain core service functions and newbuild capital projects. This is the area of greatest opportunity for the College. It is also the most expensive, intrusive and challenging to execute. Nonetheless, the College is committed to embedding sustainability into its renovation and newbuild projects with the aim of achieving a 60% reduction from its 2023 emissions sitewide by 2035.

To define an action plan for this area of activity Trinity Hall commissioned an Architect and a Sustainability Consultant in July 2022 to prepare a Masterplan covering Estate Management and Development through to 2040. The plan was approved by Governing Body in July 2023. The College's requirements are ambitious; they require careful phasing and substantial funding (c.£60m). Both capital and maintenance costs will be carefully analysed to ensure continued financial sustainability.

Trinity Hall has been committed to reducing energy consumption and carbon emissions, improving the College environment and raising standards for many years. Sections 4 & 5 of this report cover the actions Trinity Hall has already taken relating both to energy consumption and emissions and broader good practice relating for example to biodiversity, plastic and chemical reduction and sustainable food consumption.

The Masterplan offers the College the opportunity to transition from fossil fuel delivery systems to site wide low/zero carbon alternatives, future proofing new installations to ensure adaptability to emerging technologies wherever possible. It is possible that some gas will be retained for security of supply and given the seasonal bias of consumption towards the winter months when solar PV and heat pumps are less efficient.

The sustainability strategy outlined for Trinity Hall is anchored in the principles of the UN Sustainable Development Goals (SDG's, https://sdgs.un.org/goals)which provide a holistic framework for addressing environmental, social, and economic issues. By aligning our initiatives with specific SDG's, Trinity Hall aims to maximise its impact and contribute towards the broader agenda of sustainable development. Key SDG's relevant to our energy reduction targets include:

- **SDG 7: Affordable and Clean Energy**
- **SDG 9: Industry, Innovation, and Infrastructure**

- **SDG 11: Sustainable Cities and Communities**
- **SDG 13: Climate Action**

2. Introduction

Trinity Hall recognises the imperative to address sustainability challenges in order to safeguard the planet and the well-being of current and future generations. In alignment with the United Nations (SDG's), this report presents a comprehensive sustainability strategy for Trinity Hall, with a focus on emission reduction measures and targets. By adopting a proactive approach to sustainability, Trinity Hall aims to mitigate its environmental footprint while fostering a culture of responsible stewardship among its community members.

Trinity Hall has a rich history spanning 675 years, with this legacy comes a responsibility to adapt to contemporary challenges, including climate change and resource depletion. As part of the University of Cambridge, Trinity Hall acknowledges its role in contributing to global sustainability efforts and seeks to lead through intellectual contributions, innovative solutions and collaborative partnerships.

2.1 Energy Reduction Targets/KPI's

The following targets have been established to guide our efforts in achieving these objectives:

1. **Reduce Energy Consumption:** Trinity Hall aims to decrease overall energy consumption by 20% and its emissions by 60% by 2035, compared to its baseline year of 2023. This reduction will be achieved through a combination of energy efficiency measures, behaviour change initiatives and technology and fabric upgrades.
2. **Increase Renewable Energy Usage:** by 2035, Trinity Hall aims to generate at least 30% of its electricity consumption from renewable sources, such as heat pumps, solar photovoltaic (PV) panels and Solar Thermal to reduce demand on gas heated water. This will involve investing in renewable energy infrastructure and exploring opportunities for on-site generation and city-wide developments (such as the proposed District Heating Network, and river source heating from the Cam).
3. **Enhance Building Energy Efficiency:** Trinity Hall will implement energy efficient retrofits across its buildings to optimise heating, ventilation and lighting systems. Trinity Hall has targeted high use luminaires of all types, including CFL (Compact Fluorescents), Halogen and Incandescent; along with luminaires that are at the end of their useful life. By 2030 100% of Incandescent, fluorescent tube and Halogen fittings will have been changed to LED. Compact Fluorescent, which are already a low energy fitting, will be replaced with LED as they reach their end of life.
4. **Promote Sustainable Transportation:** Trinity Hall will promote sustainable commuting options for students, staff, Fellows and visitors, such as cycling, walking and public transport. By 2030, the College aims to eliminate the carbon emissions of its own transportation fleet, primarily through the adoption of electric vehicles through its entire estate.
5. **Engage and Educate:** Trinity Hall Fellows will make innovative contributions to global sustainability problems across a range of disciplines. The College will engage with its community members to raise awareness about energy conservation practices and the importance of sustainable living. Educational initiatives, such as workshops, seminars and outreach events will empower individuals to take action and contribute to the College's sustainability goals.

6. **Investment:** the College divested from direct investments in fossil fuel extraction companies in 2021. The Endowment's exposure to fossil fuels is now c. 0.5% (vs 4% MSCI ACWI-October 2024). The College will continue to endeavour further to reduce exposure to fossil fuels in its investments.
7. **Gardens:** the College will work towards the elimination of the use of harmful pesticides by 2027, subject to suitable alternatives coming to market.
8. **Catering:**
   The catering team has been monitoring the environmental impact of the dishes produced in cafeteria by monitoring the quantity of ruminant meat and vegetarian and vegan dishes. The introduction of a vegan option at every meal service in 2017 and implementing Meat Free Monday in 2018 has increased the quantity of vegetarian and vegan dishes to a level that is currently sustainable whilst continuing to offer choice to the students.
   Research conducted by Dr Emma Garnett et al in 2019 indicated that when a higher proportion of vegetarian and vegan dishes are available in a student cafeteria there is a reduction in the number of meat sales regardless of the diets the students follow. This was particularly relevant when the availability of vegetarian and vegan dishes was increased to 50%. The breakdown of Trinity Hall's cafeteria dishes shows that we now offer 58% vegetarian and vegan dishes which has increased from 50% in 2017.
   Ruminant meat has been the lowest category of cafeteria dishes served ranging between 11% and 13%. These dishes remain the most popular on the weekly menus. On an average weekly basis this equates to six of 52 dishes prepared in cafeteria.

Category	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Vegan	23.30	25.96	30.29	29.33	26.32	29.33	29.33	28.37
Vegetarian	23.79	23.56	27.40	28.37	24.88	28.37	28.37	29.33
Fish/Poultry/Pork	41.26	37.98	31.25	29.33	36.84	29.81	29.81	31.25
Ruminant Meat	11.65	12.50	11.06	12.98	11.96	12.50	12.50	11.06

Table: Breakdown of quantity of each category of dish served in the cafeteria by academic year

Key dates:

2017-18: Vegan option at each meal service introduced
2018–19: Meat Free Monday implemented

Reference:
Garnett, E., Balmford, A., Sandbrook, C., Piling, M. A. and Marteau, T. M. (2019) Impact of increasing vegetarian availability on meal selection and sales in cafeterias, *Proceedings of the National Academy of Sciences of the United States of America,* 116 (42), pp 20923-20929

9. **Housekeeping:** based on 2023 data, the College will reduce the use of chemical-based cleaning products by 50% by 2030.

2.2 Implementation Plan

Achieving the College's energy reduction targets will require a co-ordinated and multi-faceted approach, involving collaboration across departments, communities and other stakeholders. The following actions will guide the implementation of our sustainability initiatives:

1. **Energy Audits and Assessments:** Conduct comprehensive energy audits to identify opportunities for efficiency improvements and prioritise investment decisions based on environmental impact as well as cost-effectiveness.
2. **Investment in Renewable Energy:** Explore opportunities for on-site renewable energy generation, such as solar PV installations on rooftops, solar thermal opportunities to pre-heat water and heat pumps. Participate in and support city and regional initiatives.
3. **Behaviour Change Campaigns:** Launch awareness campaigns and behaviour change programmes to encourage energy saving behaviours among students, staff and Fellows. Utilise digital platforms, signage and incentives to promote sustainable practices and track progress towards energy reduction goals. The College won a Gold Award in the 2024 Green Impact survey. We should aim for a Platinum award in the coming years.
4. **Technology Upgrades:** Continue to invest in energy-efficient appliances, lighting and HVAC systems to minimise energy waste and enhance occupant comfort. Leverage smart building technologies, such as occupancy sensors and Building Management Systems (BMS) to optimise energy use and reduce operational costs.
5. **Partnership and Collaborations:** Forge partnerships with the University, other Colleges and local government (e.g. District Heat), network with specialist installers and consultants, access funding opportunities and engage with wider academic networks to share best practice and use collective impact in addressing common challenges.

2.3 Monitoring

Regular monitoring of energy consumption data, carbon emissions and financial costs will provide valuable insights into the effectiveness of our sustainability initiatives. The figures below are from Expedition's baseline reporting document.

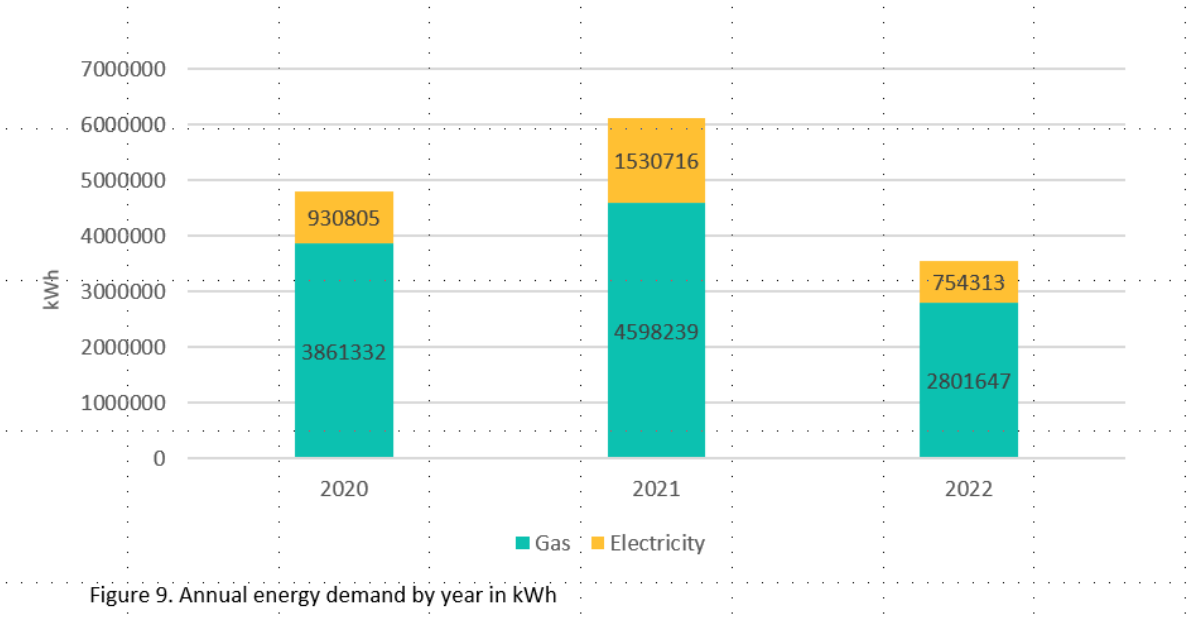

Figure 9. Annual energy demand by year in kWh

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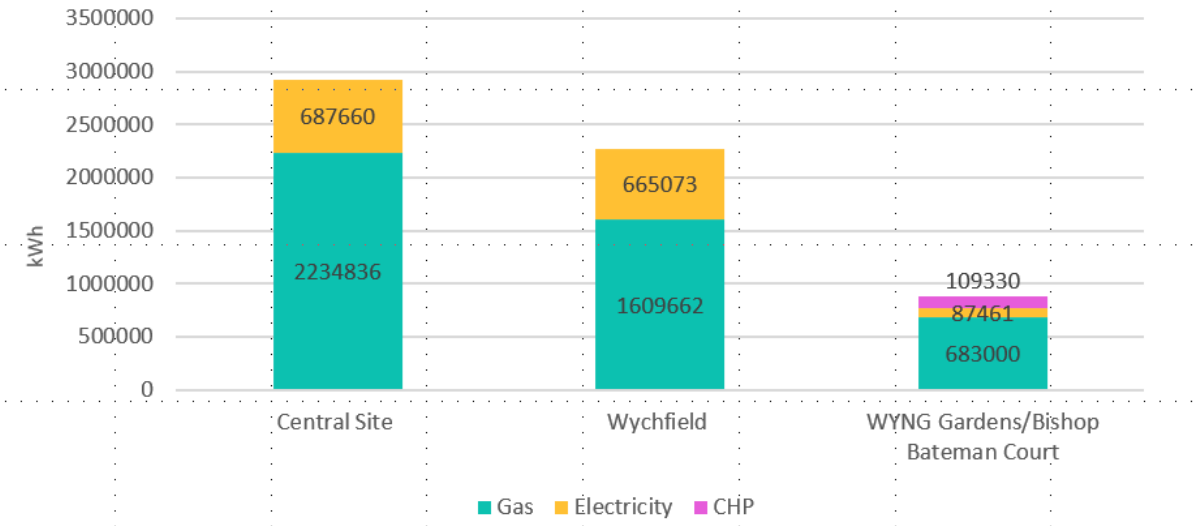


Figure 10. Consumption by site in kWh

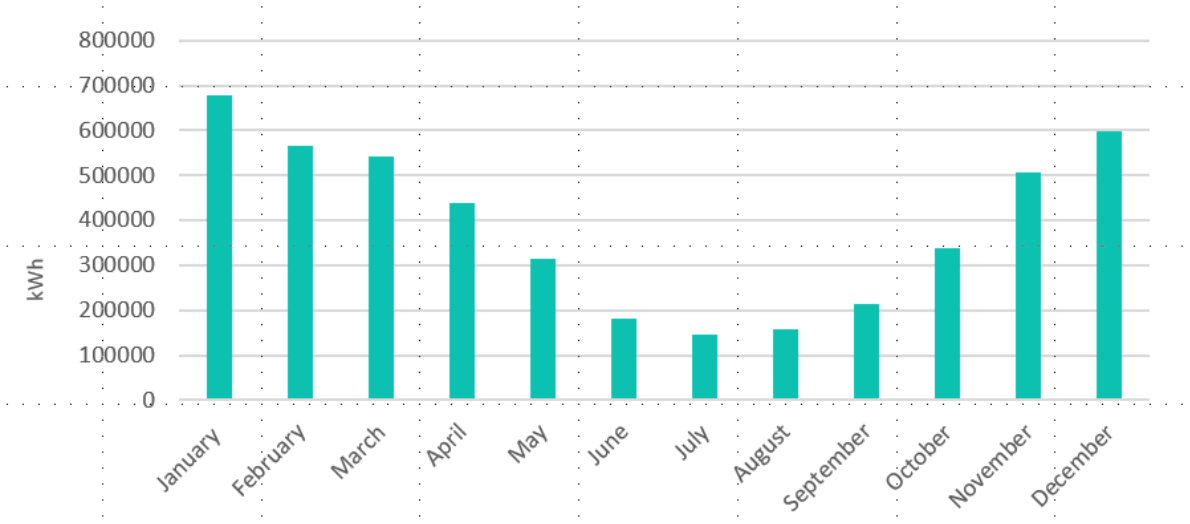


Figure 11. Estate seasonally adjusted gas baseline in kWh

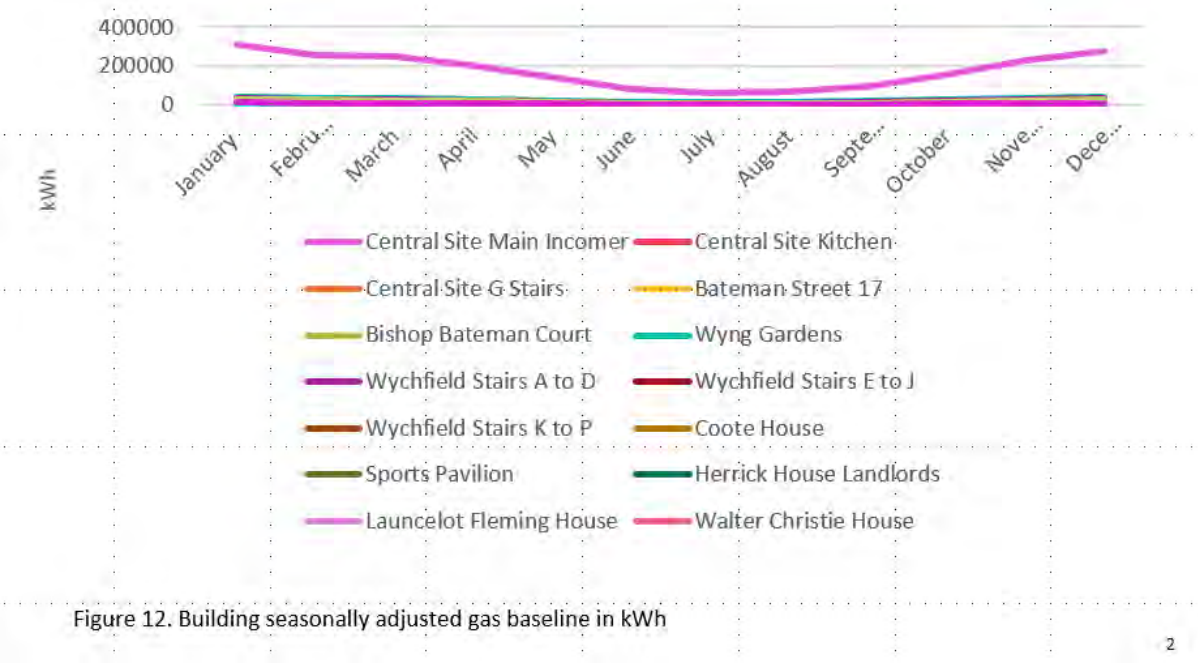


Figure 12. Building seasonally adjusted gas baseline in kWh

Going forward consumption data will be reported to Buildings Committee regularly and using academic years as shown in Appendix 3.

3. Carbon Reduction - Defining Net Zero

The term 'net zero carbon' can be determined as a state in which the College's emissions of carbon are balanced by their removal.

Trinity Hall will endeavour to control and reduce its emissions rather than finance sustainability initiatives elsewhere to net off its carbon contribution. Therefore, the College will focus on reducing demand for energy generally and transitioning over to self- generated or clean green energy to provide heating and hot water. Trinity Hall will focus on reducing Scope 1 and Scope 2 emissions where Trinity Hall has the control to effect change. Trinity Hall will provide advice for individuals to consider scope 3 within College and ensure the partners we engage with are looking at scope 1 and 2 within their organisations.

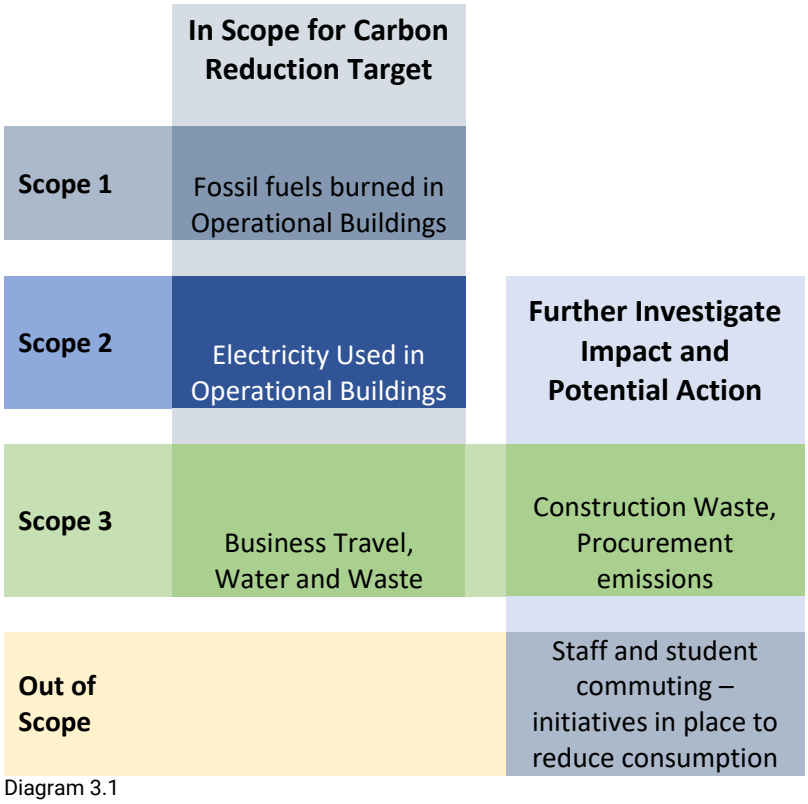


Diagram 3.1

3.1 Zero Carbon Pathway

In reviewing diagram 3.1 above, we can look at the pathway to zero carbon in 3 steps.

1. **All heating systems to be replaced** with low / zero carbon alternatives.
2. **More efficient use of electrical energy** reducing waste, improving efficiency and ensuring electrical appliances are as low carbon as possible.
3. **Capping and capturing business travel emissions**, including, through policy and technology alternatives and potentially carbon insetting / offsetting.

4. Estates & Operations Strategy

4.1 Buildings and Maintenance

New Buildings

The Masterplan considers both new buildings and refurbishment across its phasing. Any new buildings will be built to a minimal carbon footprint.

Retrofit

Where major refurbishments are undertaken, emphasis should be on future proofing for low carbon energy solutions, fabric upgrade and improvements whilst reviewing the embodied carbon in the buildings as a whole. Whole life energy cost and carbon cost assessments will be undertaken. Adaptive flexibility for evolving technologies will be designed in where viable.

Energy sources

The College will consider the following in executing its programme:

- Continuity of operations/security of supply
- Financial viability
- Student expectations
- Confidence in technologies and servicing/commissioning
- Carbon footprint of new technologies
- Lifespan of new technologies (Legacies)
- Planning/heritage constraints

The College intends to phase out the use of gas over the next 10-12 years and whenever possible, not to install replacement gas boilers, while noting that the retention of some gas capacity remains possible, even if only as backup to protect security of supply.

Heat

Air /ground /river source heat

Electrically powered heat pumps are currently the most developed alternative heating solution available.

A large rollout of heat pumps is therefore likely to be required to enable the College to transition from gas. This may include Ground Source, Air Source and River Source (Central Site) with the right technologies needing to be identified for each building or College site. Heat Pumps traditionally deliver heating flows at 50-55 degree C, lower than what is required for comfort in winter months. Although technologies are improving to increase the delivered temperatures, College needs to prepare for lower water temperatures with fabric improvements, larger diameter pipework/larger radiators or underfloor heating.

Electricity is currently significantly more expensive as a source of energy than gas. Therefore, the reduction of energy usage through fabric improvements and behavioural change is an essential component of implementing this strategy.

A heating retrofit programme across all four College sites is likely to cost in excess of £40m and be very disruptive. We will endeavour to reduce energy consumption via fabric

improvements in the first instance in order to regulate the load placed on heat pumps when installed.

Trinity Hall has operated a Building Management System (BMS) in almost all of its buildings since 2012. Included within the BMS, the College runs a weather compensation slope. This operates by reducing the energy fed to the boilers as the external air temperature increases, i.e. at an external temperature of zero degrees, the boilers would be heating water for heating to 70 degrees C. When the external air temperature rises, say to 15 degrees C, the boilers would be heating the hot water to 50 degrees C.

District heat

Trinity Hall is one of a group of colleges that has been financing a DPD (detailed project development) study into a City Centre District Heating Network via low/zero carbon energy centres delivering networked hot water to Colleges and businesses within the City Centre and expanding more widely as it develops. This is at an early stage but if feasible, will provide hot water and heating requirements to Central Site (and possibly Thompson's Lane) with lower disruption and capital cost. Consultants have been appointed, and a detailed project development study is expected to be available by December 2025.

Solar PV/solar thermal

In 2023, Trinity Hall installed a solar PV array onto the roof of Boulton House. In the first 9 months of operation, it has generated 4-19% of the energy demand of the northern half of Wychfield. Further arrays are being designed for Herrick House, Launcelot Fleming and Wychfield House. O staircase on Central Site is progressing with a solar thermal scheme that will pre-heat the water for O Staircase, therefore reducing the demand on gas.

Further PV and Solar PV arrays will be considered across the College estate with an emphasis on ensuring that all electricity / hot water generated can be utilised in College.

Heat Meters

The Baseline report in the Sustainability study enabled us to see the College's demand across the year but also highlighted weaknesses in its collection of data. Trinity Hall is installing Heat Meters in Bishop Bateman Court and some staircases on Central Site to enable the College to define peak demand loads to ensure any heat pump alternatives are sized appropriately.

Electricity

Trinity Hall is a member of a consortium of Cambridge College that purchases electricity as a group to achieve discounts. The electricity through the Consortium contract is provided by Smart Energy who purchase renewable electricity from two nearby solar photovoltaic farms accredited by the Carbon Trust.

Combined Heat and Power

Trinity Hall has one combined heat and power (CHP) unit, installed in WYNG Gardens in 2015 producing electricity from a gas-powered engine. In the future, CHP is expected to look increasingly less attractive from a carbon reduction perspective and the College will need to plan for a future beyond a CHP engine but in the meantime should use the money saved to develop lower carbon alternatives.

Capital Funding

The 2023 Masterplan of the College is only achievable through the application of existing resources, significant philanthropic donations and/or grant funds. The Masterplan sets out the projects that enable the College to degasify by incorporating new energy centres and technologies.

Maintenance

Low Energy Lighting (Circa 2010 onwards).

LED lighting was fitted in the dining hall in 2013 and has been adopted as standard since 2015. Trinity Hall will continue to implement energy efficient retrofits across its buildings to optimise heating, ventilation and lighting systems. Trinity Hall has targeted high use luminaires of all types, including CFL (Compact Fluorescents), Halogen and Incandescent; along with luminaires that are at the end of their useful life. By 2030 this will 100% of Incandescent, fluorescent tube and Halogen fittings will have been changed to LED and Compact Fluorescent, which are already a low energy fitting, will be replaced with LED as they reach their end of life.

Lighting

Astro dial timers, PIR's and Sensor Lighting have been in use across some College communal areas, to automatically control lighting and will continue to be introduced as widely as possible.

Roof Insulation

Fibreglass quilt insulation was installed in multiple roof voids across Central Site in 2010. Subsequently roofs in refurbished staircases have been progressively upgraded in line with the refurbishment schedule. Three further staircases remain, one of which will be completed by summer 2025 and the other two by 2028.

Hot Water

8 litre / minute flow restrictors in showers/taps since 2016

Mechanical Ventilation Heat Recovery (MVHR)

The College has been fitting MVHR to new-build and staircase refurbishments since 2007. This technology harvests heat within air that is being extracted to pre-heat incoming fresh air.

Windows

Windows in staircase refurbishments have been renovated to reduce draughts and air infiltration. Double/secondary glazing has been installed where planning permits as part of progressive staircase refurbishment.

Recycling

The Maintenance team have been recycling packaging materials since 2011.

Fleet vehicles

The College's three vehicles do not represent a large proportion of its carbon footprint. Nonetheless the College has transitioned two of its vehicles to electric vans with zero emissions. As the Gardens Van, the only remaining diesel road vehicle, comes to the end of its life, a switch to an electric alternative will be sought for its replacement. On Scope 3

emissions, the College has recently introduced a salary sacrifice Electric Vehicle scheme for eligible employees, allowing them the opportunity to lease an electric vehicle for social, community and business travel. The College is an active member of Cycle scheme, providing incentives for staff to purchase and use bicycles to travel to work.

4.2 Conference and Catering

Trinity Hall Conference and Catering Department is committed to incorporating environmental and socially responsible considerations in selecting suppliers and contractors to minimise negative environmental effects and to promote sustainable practices. The Department has adopted the following Environmental and Sustainability Policy:

Our menus and produce

- All of our food is sourced from reputable suppliers who are carefully vetted and monitored by a specialist group to ensure consistent high standards, positive environmental practices, compliance with food safety regulations and competitive prices.
- We aim to use seasonal and locally sourced products wherever possible which we reflect in the dishes on our menus.
- We ensure that animal welfare standards are adhered to using free-range eggs and Red Tractor
  Assured meat and poultry.
- Our game is mostly sourced from a local supplier with produce coming from the local area.
- All fish served is MCS (Marine Conservation Society) certified 'fish to eat'.
- The College is a member of the 'Sustainable Fish Cities' group.
- We promote environmental, ethically sourced and fairly traded products and a variety of Fairtrade certified items, including all our tea and coffee.
- Palm oil and soya products are all sustainably sourced.
- We continue to reduce the amount of ruminant meat served and have adopted Meat Free Monday and Fish Friday in the cafeteria.
- Vegetarian and vegan options are offered as standard in the cafeteria, coffee shop and at formal
  dining functions for students, Fellows and guests.
- We supply tap water in the cafeteria and coffee shop and offer filtered water at all College and client functions.

Disposable products

- We are working to reduce and where possible, remove the use of single use plastics.
- All drinks containers are either glass, tin or in recyclable cartons.
- All disposable packaging is either biodegradable or recyclable.
- Our disposable coffee cups are biodegradable, whilst take away salad containers and water cups are made from renewable resources and are compostable.
- We encourage the use of keep-cups in our coffee shop offering a discount to members using their own cup.

Energy, water and waste

- The College is committed to reducing unnecessary consumption through energy efficient operational practices.

- When replacing our catering equipment, we aim to improve efficiencies in energy consumption.
- We are committed to improving water efficiency through catering practices and purchasing water efficient equipment on replacement.
- We split all recyclable products down - paper, cardboard, glass, metal, plastic and recycle them via the appropriate route.
- We aim to minimise waste by evaluating our procedures and working with our suppliers to reduce any unnecessary packaging and use recyclable materials where practical.
- We are committed to reducing food waste through monitoring the uptake of dishes in cafeteria and systematic planned purchasing.
- Waste oil is collected and recycled with reputable suppliers.

Staff and training

- We aim to enhance employee awareness of relevant environmental effects.
- Chefs receive specific training in plant-based cookery and the use of high-quality seasonal produce.
- The kitchen management team consider seasonality, carbon reduction and environmental issues when procuring produce and equipment for the kitchen.
- All catering staff are trained on the importance of maintaining efficient working practices to reduce unnecessary water and energy use.
- The College is committed to promoting and encouraging sustainable travel to work options, including a cycle to work scheme.
- We promote our environmental and sustainable working practices throughout the College community.

4.3 Gardens

Landscaping

The Gardens team have developed landscaping to increase biodiversity, adapted to a changing climate and provided water harvesting and green roofs to improve sustainability.

Rainwater harvesting, New Build, Wychfield

The New Build at Wychfield, incorporates a number of large underground tanks which hold rainwater collected from the guttering system of the new accommodation blocks. This water is available via electric pumps for irrigation of garden features.

The planting design of the gardens surrounding New Build includes many drought-tolerant species and plants for pollinators, which flower over a long season.

Green roof, Wyng Gardens

Wyng Gardens features a green roof that attracts bees, butterflies and other insect life with nectar-rich planting. A green roof will also:

- absorb heat from the sun
- absorb CO^2
- absorb a large proportion of the water that falls on it (up to 70%)
- replace the ecology that the building stands upon.

General garden design and planting

There is a great deal of variety of plant species and wildlife habitats in the gardens at Wychfield in particular. About a third of the garden area is wooded with a variety of native and ornamental trees. Thick undergrowth in this area provides habitat for a variety of native mammals including foxes and badgers.

There are also hedges of beech, yew, hornbeam, box, privet, hawthorn and mixed native hedging including black-thorn and dog rose which are excellent wild bird nesting sites. We have breeding populations of green woodpeckers, long tailed tits, gold crests and many more common garden birds.

There are two meadow areas at Wychfield which are cut just once a year and encourage ground nesting bees and all kinds of insects and small mammals.

Horticultural practices

Composting

We have five, 3 bay compost systems across our sites allowing us to compost garden waste and return it to the beds as moisture retaining, weed suppressing mulch. This reduces the need for chemical herbicides and irrigation and, as we do not remove the waste from site, also reduces our carbon footprint.

Rechargeable battery-powered equipment

The College has been using battery powered hedge cutters and leaf blowers for c.10 years and is now branching out into battery powered mowers. This equipment reduces our use of fossil fuels. It is also lighter to handle and quieter, emits no harmful fumes and little vibration.

Reducing use of inorganic pesticides / herbicides

Particularly on our turf areas (including sports turf) we have been able to find organic alternatives, including biological controls, for many of the chemical fertilisers and treatments which were previously in use. We have also reduced the number of applications of herbicide per year and often use “spot” rather than “blanket” weed killer applications to further reduce quantities applied. We will continue to review available products and methods.

Propagation

In-house production of annuals for summer displays from seed and cuttings reduces our carbon footprint (a packet of seeds is a lot lighter and easier to transport than a Dutch trolley full of bedding plants). We use peat-free compost.

Irrigation

Across sites we are adapting our planting to include many more drought-tolerant plants reducing the need for irrigation with mains water (as well as using harvested rainwater wherever possible).

We use seep hoses on timers so that water can be delivered early in the morning or in the evening to reduce the amount of evaporation.

Further measures / Future projects

- Recycled bird boxes at Wychfield to encourage a greater diversity of species.
- Replacing the garden van and machinery, with rechargeable battery powered alternatives.
- Work towards eliminating the use of harmful pesticides by 2027.
- Continue to choose planting for a changing climate.
- Plan and build a pond to increase biodiversity at Wychfield.
- Trinity Hall will carry out annual measures of species in set locations across the sites to show a meaningful measure of biodiversity across our sites.

4.4 Housekeeping

- Recycling
  - Kitchen recycling guide in each kitchen area.
  - Recycling bins in all communal areas.
  - Recycling bags for student rooms.
  - Recycle batteries box at Porters Lodges.
  - Recycle all used mattresses.
- Reusable spray containers for cleaning products to reduce plastic use.
- The College has engaged with suppliers to reduce the amount of unnecessary packaging.
- All cleaning cloths are reusable.
- ECO toilet paper and paper towels supplied.
- Food waste scheme available for students and fellows.
- Volume reduction in use of chemical-based cleaning products 50% by 2030.
- Trial of plant based biodegradable cleaning products.

4.5 Information Technology

- For staff desktops and laptops, where it is an option, the College always picks Platinum rated power supplies over Bronze, dropping to Gold and Silver if forced to. https://www.pcworld.com/article/394951/pc-power-supply-ratings-80-plus-platinum-vs-gold-vs-bronze-vs-white-explained.html
- We've increased the use of virtual servers and so have been able to reduce the number of physical servers required to run services. This reduces electricity use and heat generated, and so the cooling required in our server rooms.

- Unless there's a good technical reason not to, we prefer the use of cloud-based applications. The data centres that host these services will be far more efficient than our server rooms.
- Enforced shutdown of staff computers which have been left on.
- We use a recycling company when disposing of our old equipment.
- The replacement of OSEC with a purpose-built server/switch room in MSEC should have greatly decreased energy required for cooling.

5. Investments

The College's investment policy is available at https://www.trinhall.cam.ac.uk/wp-content/uploads/2024/07/TH-Investment-Policy-v3-July-2024.pdf .

The College retains a range of fund managers and engages with them on their environmental, social and governance (ESG) policies. It expects managers to screen in order to avoid investing in companies which violate the United Nations Global Compact. Since May 2021, the College has excluded direct equity investment in companies whose primary activity is in fossil fuel exploration or extraction. As a result, the energy weighting within the College's endowment is less than 0.5% (MSCI All countries world index = 4%). The College continues to seek ways to bring this level down.

The College owns 50% of Cambridge & Counties Bank (CCB), a small business lender based in Leicester. During 2023 CCB become one of only three banks in the UK to achieve B-Corp status. This is an internationally recognised independent certification arising from a rigorous audit of CCB's ESG values, policies and impact.

Across its investment property portfolio, the College creates opportunities for low carbon energy opportunities and sustainability improvements. These include progressing solar farm developments, EV charging stations and biodiversity net gain unit creation.

6. Conclusion

Trinity Hall has been a place of education, learning and research for 675 years. As a perpetual institution and permanent member of the community in the Cambridge region we take our sustainability responsibilities with great seriousness. The actions and strategy outlined in this document are intended to:

- Reduce Scope 1 & 2 carbon emissions from the College's operating estate by up to 60% from 2023 levels by 2035.
- Engage and educate within and outside College, deploying our academic expertise to make sustainability enhancing contributions and discoveries across disciplines.
- Eliminate fossil fuel exposure from the Colleges' investment portfolio.
- Maintain Cambridge & Counties' Bank as a registered B-Corp.
- Enhance the sustainability of the College's investment property portfolio by installing EV chargers, solar farms and biodiversity net gain schemes where possible.
- Deliver meaningful reductions in College use of harmful pesticides (eliminate by 2027) and chemical products (50% by 2030).
- Encourage more sustainable transport to and from work, thus reducing Scope 3 emissions.
-

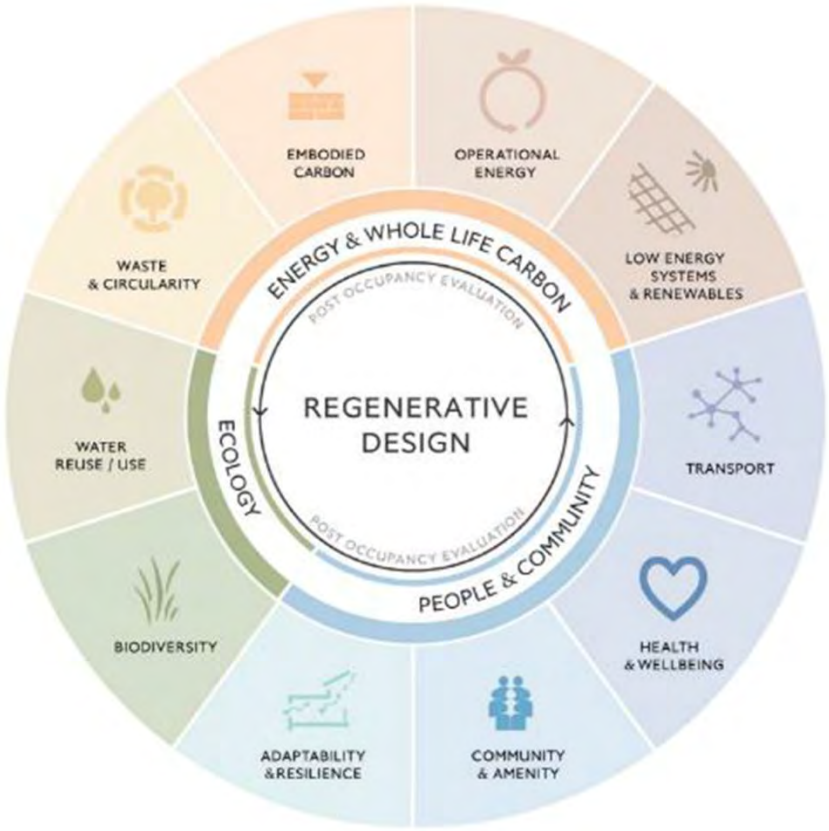
The College requires significant philanthropic benefaction to achieve the changes to its estate which are envisaged and will be making a major financial contribution from its own resources.

Performance against this strategy will be monitored by the Buildings Committee and reported to Governing Body.

Appendices

Appendix 1 - Ambition and Approach

In 2022, Trinity Hall commissioned a Masterplan strategy to cover the period from 2024-2040. As part of this exercise, Trinity Hall also commissioned Expedition to carry out a baseline energy report to establish an understanding of how Trinity Hall performs against environmental aspects of regeneration design principles. The Masterplan was informed by the principle of regenerative design illustrated in the diagram below:



The purpose of the baseline report is to:

- Set the context of the Masterplan in relation to Environmental Sustainability and regenerative design.
- Summarise the current position of the College in relation to sustainability in respect of regulations, reputation, financial and operational demands.
- Provide a summary of the current performance of the College against regenerative design criteria, with a focus on operational energy. The focus of the assessment is on the energy consumption and carbon intensity of its buildings and infrastructure. Expedition's baseline report for Trinity Hall is included in Appendix 2 of this strategy report.

Appendix 2 - Baseline Report – December 2022

SEE EXPEDITIONS BASELINE REPORT.

Appendix 3 - Building by Building Report

Site Name
Trinity Hall - Central Site

12 Month Names

	Previous Year	Previous Year	Previous Year	Previous Year	Current Year
Year	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
kwgar	1,977,074	2,195,239	1,992,095	2,004,685	1,905,449
Year	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
Carbon	361.7	401.6	364.4	366.7	348.6
Year	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
Electric	513,812	417,692	662,141	670,412	555,855

Electricity

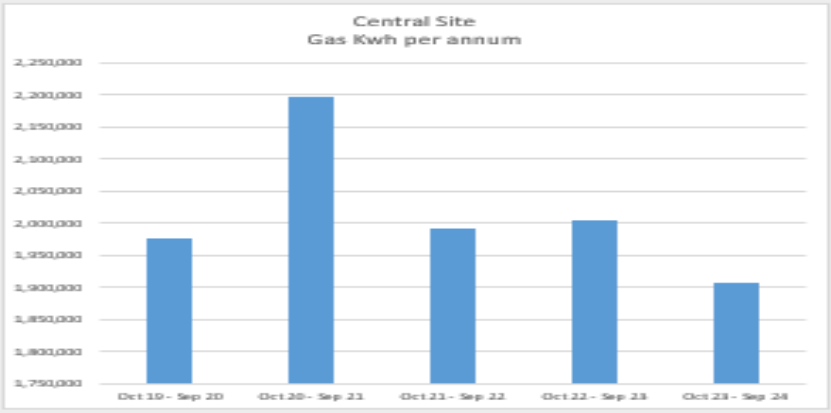
	Consumption
Previous Year	513,812
Previous Year	417,692
Previous Year	662,141
Previous Year	670,412
Current Year	555,855

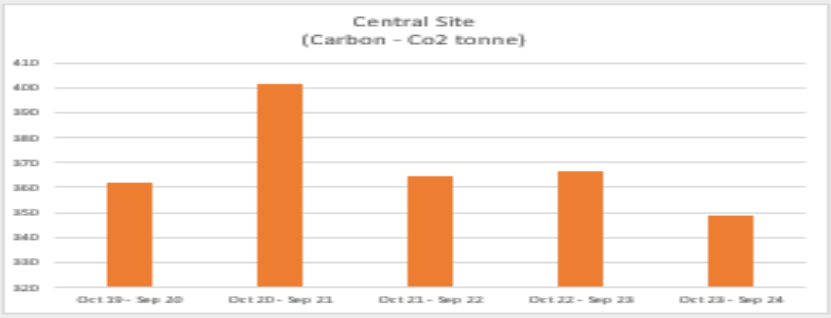
Gas

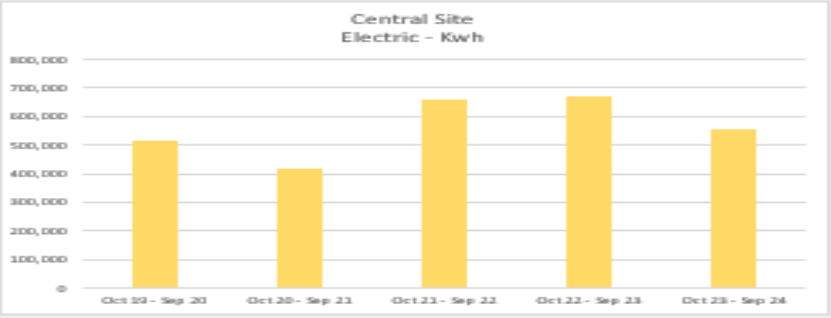
	Consumption
Previous Year	1,977,074
Previous Year	2,195,239
Previous Year	1,992,095
Previous Year	2,004,685
Current Year	1,905,449

Water

	Consumption
Previous Year	0
Previous Year	0
Previous Year	0
Previous Year	0
Current Year	0







Site Name
Trinity Hall - Wychfield

12 Month Names

	Previous Year	Previous Year	Previous Year	Previous Year	Current Year
Year kwgar	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
	3,321,547	1,626,043	1,516,490	1,449,538	1,434,933
Year Carbon	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
	607.6	297.5	277.4	265.2	262.5
Year Electric	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
	179,324	178,573	191,492	161,227	140,000

Electricity

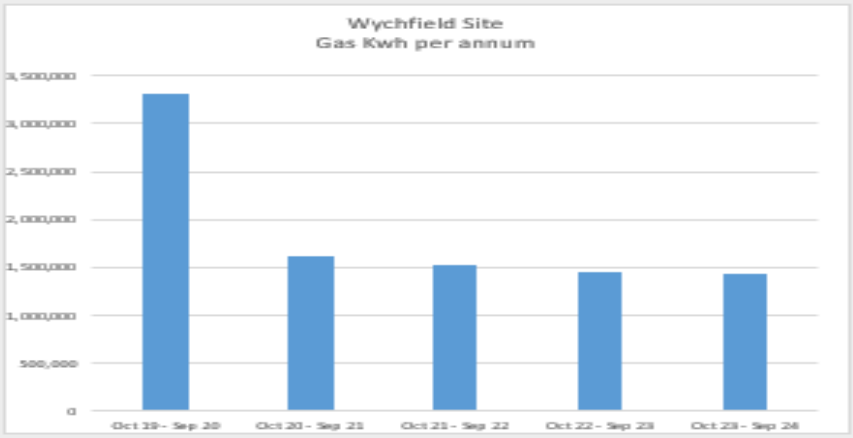
	Consumption
Previous Year	179,324
Previous Year	178,573
Previous Year	191,492
Previous Year	161,227
Current Year	140,000

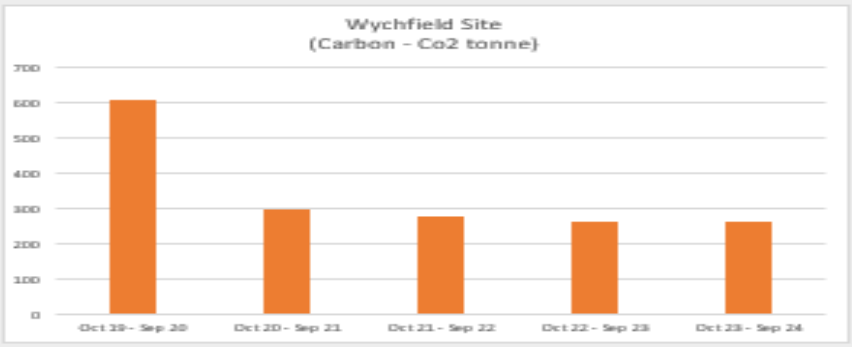
Gas

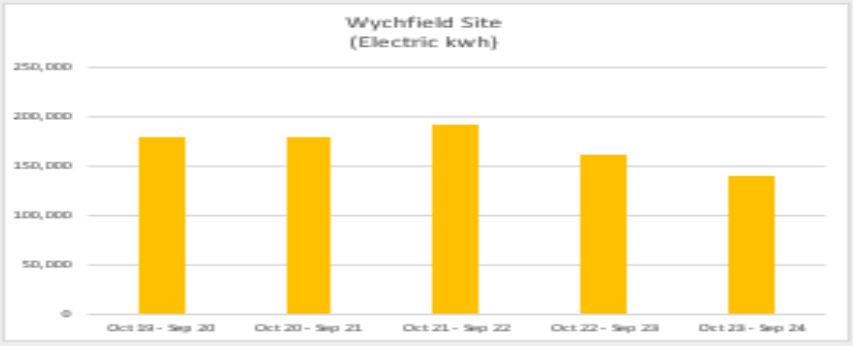
	Consumption
Previous Year	3,321,547
Previous Year	1,626,043
Previous Year	1,516,490
Previous Year	1,449,538
Current Year	1,434,933

Water

	Consumption
Previous Year	0
Previous Year	0
Previous Year	0
Previous Year	0
Current Year	0







Site Name
Trinity Hall -Thompson's Lane

12 Month Names

	Previous Year	Previous Year	Previous Year	Previous Year	Current Year
Year	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
kwgar	500,528	659,061	565,499	534,015	459,105
Year	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
Carbon	91.6	120.6	103.4	97.7	84
Year	Oct 19 - Sep 20	Oct 20 - Sep 21	Oct 21 - Sep 22	Oct 22 - Sep 23	Oct 23 - Sep 24
Electric	99,332	63,860	86,489	91,059	145,525

Electricity

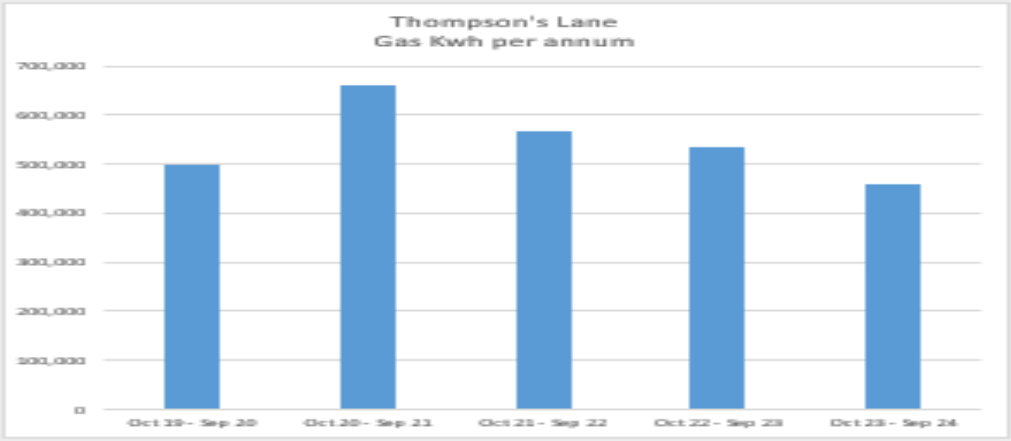
	Consumption
Previous Year	99,332
Previous Year	63,860
Previous Year	86,489
Previous Year	91,059
Current Year	145,525

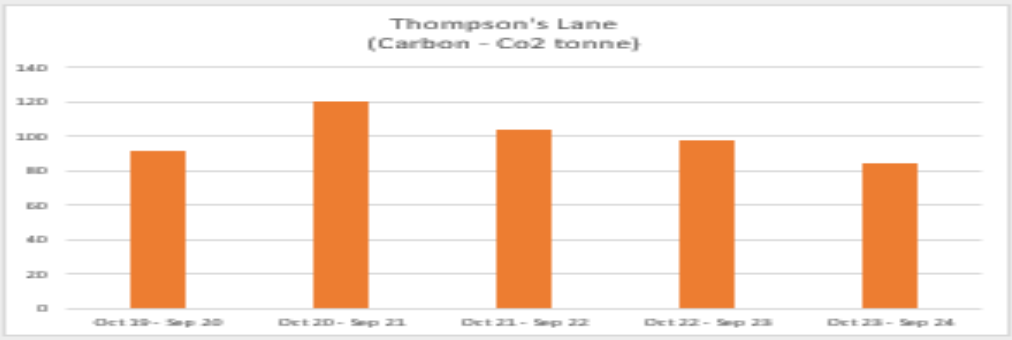
Gas

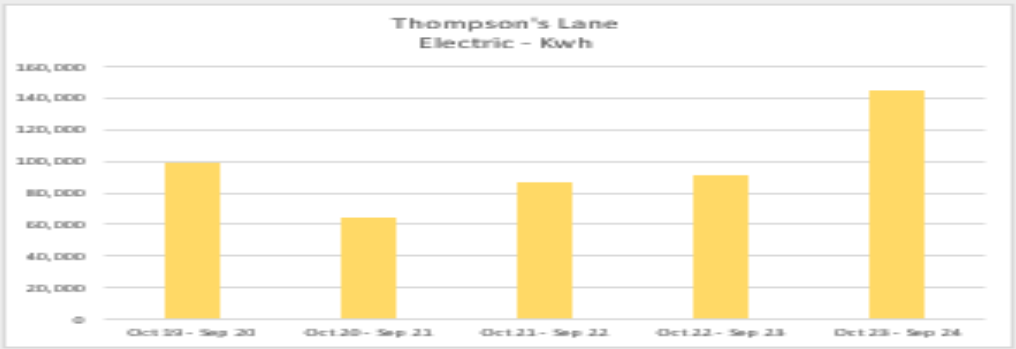
	Consumption
Previous Year	500,528
Previous Year	659,061
Previous Year	565,499
Previous Year	534,015
Current Year	459,105

Water

	Consumption
Previous Year	0
Previous Year	0
Previous Year	0
Previous Year	0
Current Year	0







LED Lighting Summary 2024

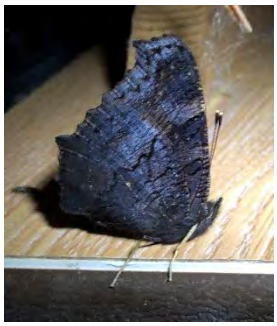
Building	Current LED Provision	Comments
WYNG Gardens	100%	LED Throughout since construction in 2016
Bishop Bateman Court	15%	Some LED in Bedrooms but remains mainly compact fluorescent lighting [CFL]. Refurb planned 2025-26
Boathouse	100%	LED Throughout
Wychfield House		Some LED but Majority Compact Fluorescent [CFL]
Boulton House		Some LED but Majority Compact Fluorescent [CFL]
Dean House		Some LED but Majority Compact Fluorescent [CFL]
Walter Christie House	100%	LED Throughout
Launcelot Fleming House	100%	LED Throughout
Lodge Cottage	10%	Mainly Low energy [CFL] – Upgrade planned Will be 100% before End of June 2024
Herrick House	0%	Currently Compact Fluorescent [CFL] throughout but upgrade to full LED planned for Summer Vacation 2024.
WF New Build	50%	Staircases, Corridors & Common Rooms upgraded to LED. Bedrooms & Kitchens remain Compact fluorescent
WF Gardens Compound	0%	Currently all compact fluorescent and Fluorescent Tubes. Upgrade in progress so will be 100% LED by end of May 2024
Pavilion		Mainly Fluorescent Tubes and CFL
Central Site		
Porters Lodge		Mix of LED spotlights and CFL
A		Mainly CFL
B		Ground Floor 100% LED, 1st Floor Mix of LED & CFL, Top Floor 100% LED.
C		Ground Floor 100% LED, 1st Floor Mix of LED & CFL, Top Floor 100% LED.
D		Mainly CFL
E		Mainly CFL
F	100%	LED Throughout
G		Mainly CFL
H	100%	LED Throughout
I	100%	LED Throughout
L	50%	LED Ground floor and Staircase, Rooms CFL
M	100%	LED Throughout
N	100%	LED Throughout
O		Under Refurbishment will be full LED when complete
P	5%	Partial LED, but mainly CFL
Q	5%	Partial LED, but mainly CFL
S		Some LED but Majority Compact Fluorescent [CFL] – Ground Floor Mix of LED & Fluorescent Tube, Upper Floors CFL

Building	Current LED Provision	Comments
T		Some LED but Majority Compact Fluorescent [CFL]
U		Some LED but Majority Compact Fluorescent [CFL]
Jerwood Library		A mix of LED and CFL
Aula Bar & Crescent Room		Mainly CFL
Dining Hall	100%	LED Throughout
Kitchens	100%	LED Throughout
JCR		A mix of LED and CFL
Lecture Theatre, Terrace Room and Music Room		A mix of LED and CFL
MCR	100%	LED Throughout
Wong Avery	100%	LED Throughout
GSR	100%	LED Throughout
Fellows Garage	100%	LED Throughout
Workshop & Plant Areas		Currently a Mix of LED, Fluorescent Tubes and CFL, planned to change Tubes for LED Fittings

Appendix 4 - Case Studies

Study on Overwintering Peacock Butterflies

Trinity Hall was one of several Cambridge colleges participating in a 2022/23 study into the overwintering behaviour of the peacock butterfly.



The gardens team was involved in student Harry Craig's study (his summary is below). We are also hoping to join other colleges in biodiversity surveys in coming years. These are being coordinated by Justin Gerlach, Fellow & Director of Studies for Biology Peterhouse and the University's Biodiversity Manager, Aspen Reese. We are committed to balancing the needs of our college community with those of our native wildlife.

2022/2023 Study on Overwintering Peacock Butterflies in Cambridge

Firstly, we would like to thank the college staff who granted us site access for our data collection. Thank you all very much for making this project possible and sharing your knowledge of the sites with us. We really appreciated all your help and engagement with the project! Presented below is a brief summary of our findings this year.

Introduction:

Peacock butterflies (*Aglais io)* overwinter as adults and are frequently found in artificial structures such as sheds, barns and pillboxes. The literature, however, is very limited about the details of their site selection. This project sought to improve our understanding of this overwintering behaviour and why certain sites get selected for these harsh months over others.

Results and implications: Overall, 63 structures were assessed and within these I found **216 peacock butterflies** overwintering total across 16 of these. The **maximum roost was 92 butterflies,** but the **mean average roost size was 13.5.** 31 structures were monitored over the entire winter.

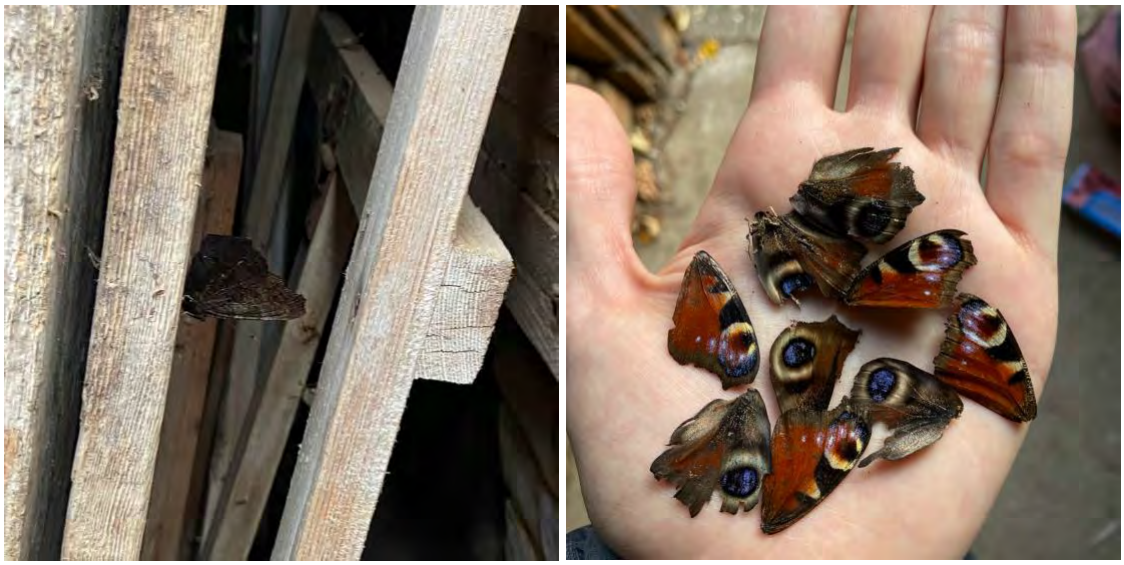
Between the structures, neither wind, temperature nor light were significant in determining the presence of butterflies. Within a structure however, the butterflies were initially found in cooler, darker locations with limited wind. Their presence/absence was seemingly also not affected by differences in long-term temperature trends for both selection between and within structures.

This leaves many unknowns, and suggests we are missing other key determinant(s) of their distribution, perhaps related to the material that structures were made of, the surrounding environment or disturbance from predators.

To better understand this overwintering behaviour, a long-term monitoring study needs to be conducted to assess these factors, and we hope to continue this work in the coming year. (from which they bounced back), but a further changing climate and

environment could put them at risk again. Peacock butterflies have already been through one population crash in.

The peacock butterfly is one of only 4 species of butterfly that spend the winter months in the UK as inactive adults, commonly inhabiting structures such as sheds, attics and wartime pillboxes during this time. Warmer, wetter winters could pose a threat to the peacock butterfly at this key stage in its life cycle. An understanding of what it is about a structure that influences whether it is chosen as an overwintering site by butterflies could prove useful for future conservation efforts. This project aimed to investigate structural factors that could be affecting the choice of peacock butterfly overwintering sites, with analysis conducted both between and within structures, and across years (by comparing our data with data collected by James Burrows in the previous year). 23 structures were surveyed in November 2022 across Cambridge and Chelmsford, with return visits made from late January to mid-February.



On the left is a peacock butterfly we found overwintering at Clare College. Some of the wings we collected at Girton College are shown on the right, indicating butterflies had visited the structure previously but were eaten by predators.

Results:

Of the 23 structures surveyed, 7 contained overwintering peacock butterflies. In total, we encountered 50 peacock butterflies.

Between Structures;

- Butterflies were significantly clustered across structures, meaning they were not distributed randomly between the structures. The implication of this is that there are factors influencing why some sites are chosen over others.
- However, no significance differences in substrate type, level of disturbance and total opening area were found between structures where butterflies were present and structures where butterflies were absent.

Within Structures;

- We found that light intensity, temperature, substrate type and orientation of the points where butterflies were found within structures were not significantly different from the same characteristics of random points.
- Peacock butterfly abundance in structures surveyed in 2021 showed a significant positive correlation with peacock butterfly abundance in those same structures in 2022. This implies that structures chosen by butterflies as suitable overwintering sites are likely to be chosen again.
- With the exception of the maximum temperature recorded at the structures, long term temperature data was unable to predict peacock butterfly abundance between years.

Further Implications:

None of the structural characteristics investigated significantly affected peacock butterfly overwintering site selection, both across and within structures. However, temperature and light levels were found to significantly impact within-structure site selection in the previous year. When combined with the difference in response of butterflies to maximum temperature across the two years, this implies that there are other factors underpinning the non-random distribution of butterflies across overwintering sites. It is also possible that factors indirectly related to the structures themselves, such as food availability around the structures in late summer and early autumn, could affect the significance of structural factors to site selection by peacock butterflies. Further study is needed to determine what underpins the peacock butterfly's choice of overwintering location. Ideally, this would give a greater understanding of the key overwintering stage in the lifecycle of the peacock butterfly and may prove informative for conservationists, especially given increased climatic uncertainty.