WADHAM COLLEGE
UNIVERSITY OF OXFORD

CARBON EMISSIONS REPORT

2024/25

PREPARED BY: Frances Lloyd, Director of Sustainability, and Chris Cox, Estates Manager

This paper summarises the energy usage and carbon emissions in our College-operated sites since baseline data for 2021-22 was published in our Sustainability Strategy. The reporting period is 2024-25 with some tables and figures including past years.

Our key commitments in our Sustainability Strategy:

- **To achieve carbon net-zero by 2035**, aligned to the University of Oxford's targets, with interim targets set for 2030 (for our Scope 1, 2 and 3 emissions*).
- **To achieve 20-30% biodiversity net gain by 2035**.

***Scope 1** emissions are our direct greenhouse gas emissions that occur from sources that we control, e.g. emissions associated with fuel combustion in boilers and for cooking.

***Scope 2** emissions are indirect greenhouse gas emissions associated with our purchase of electricity.

***Scope 3** emissions include all sources not within our Scope 1 and 2 boundary. Scope 3 emissions, mainly relating to travel and transportation, represent the majority of our total greenhouse gas emissions. We are focusing on the following subset: Water; Waste; Business travel; Employee commuting; Supply chain.

Emissions have been calculated in line with the UK Government Greenhouse Gas (GHG) Protocol. We are reporting on our Scope 1 and 2 emissions and some of our Scope 3 emissions. We are continuing to work on our Scope 3 carbon emissions and will be able to report on more data at the end of the 2025-26 financial year.

Emissions figures in this report are based on the best information available at the time of reporting. In some Scope 3 areas, we use estimates where precise data are not available. This means the figures are not exact and may change as our data and methods improve.

Data in this report has not been externally audited.

Year/Financial Year = 1 August to 31 July

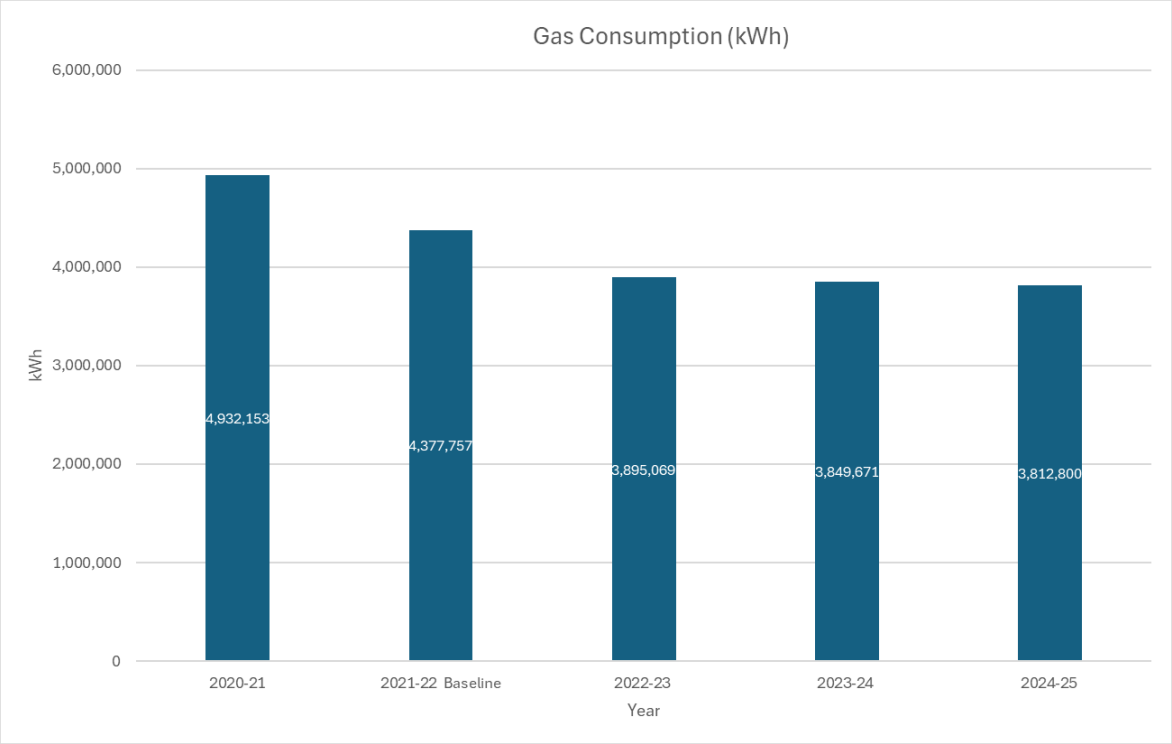
1. Energy usage and Scope 1 and 2 carbon emissions

1.1 Gas consumption

Gas consumption commitment (in so far as we can within the constraints of affordability): To reduce our gas consumption, year-on-year and, by 2035, have no gas appliances in our Oxford estate.

- We have gas consumption data going back to 2013-14.
- Our gas consumption has decreased year-on year since it peaked in 2020-21 at 4,932,153 kWh after opening the Dorothy Wadham Building, our student accommodation on the Iffley Road (138 bedrooms) in October 2019.
- We reduced our gas usage by 11% between 2020-21 and 2021-22.
- Our baseline year was set in 2021-22 when baselines for other areas were being established.
- 2024-25 was our lowest year for gas consumption since opening the Dorothy Wadham Building. It was 1,119,353 kWh lower than our highest consumption in 2020-21, a 23% reduction. It was 564,957 kWh lower than our 2021-22 baseline, a 13% reduction.

Figure 1: Gas consumption: Progress against baseline and four-year trend



- Around 50% of our gas consumption is used to heat hot water.
- In 2021-22, we replaced 3 gas calorifiers, providing hot water and heating, with electric boilers in the Warden's Lodgings and Staircase 9.

- Where possible we are replacing our gas boilers for heating hot water with Sunamps, which are energy-efficient thermal heat batteries working with mains electricity, or potentially solar panels or heat pumps, to deliver instant hot water. Starting in September 2025, we are trialling similar technology from Sunamp for heating one accommodation staircase on the main site, in conjunction with infra-red ceiling paper, and heating in one flat in the Dorothy Wadham Building located on the Iffley Road. In addition to decreasing our gas consumption, the Sunamps remove the need for electrically powered circulating pumps, water storage, gas servicing and compliance inspections, and greatly reduce flushing of water outlets when the areas are not in use for 7 days.
- We have a plan to continue to replace gas consumption for heating hot water with Sunamps on a rolling programme as funding and logistics allow.
- Where feasible and affordable, we anticipate that some of these Sunamps will be charged with renewable energy in the future.

Table 1: Progress on the installation of Sunamps, electric thermal heat batteries

Site	Number of Sunamps installed	Original source for hot water
Main Site	11 (10 for hot water and 1 for heating)	9 Gas Calorifiers 1 Gas Boiler 1 Electric Calorifier
Dorothy Wadham Building	2 (1 for hot water and 1 for heating)	Combined Heat & (CHP) Plant
Merifield	1 (for hot water)	Gas Combi Boiler
Total	**14**	

- A further two Sunamps have been purchased in 2025-26 to replace gas calorifiers. If affordable, in August 2026, we plan to replace the remaining 25 gas hobs in kitchens at our Merifield student accommodation site. The hobs will be replaced with energy-efficient induction hobs.
- We have removed gas from 4 buildings/staircases since 2021-22: Warden's Lodgings, Staircase 9, Staircase 20 and Staircase 23. The three staircases accommodate 36 students/guests.
- We have set ambitious targets to continue to significantly reduce our gas consumption in future years, mainly by removing gas calorifiers and boilers for hot water, and where possible heating, on a rolling programme as funds become available and it is operationally feasible.

Table 2: Gas consumption from 2021-22 to 2024-25 and reduction targets to 2029-30

Year	Gas consumption kWh
2020-21 Actual	4,932,153
2021-22 Actual and Baseline	4,377,757
2022-23 Actual	3,895,069
2023-24 Actual	3,849,671
2024-25 Actual	3,812,800

2025-26 Target	3,747,399
2026-27 Target	3,418,339
2027-28 Target	3,032,191
2028-29 Target	2,513,245
2029-30 Target	2,323,736

- To fully remove all gas appliances from our College-operated sites, including the gas hobs in our main kitchen and at Merifield, will require major investment if we are to achieve this target by 2035. Notably, we will need to undertake a major capital project to replace the main gas plant room on our Parks Road site, which provides heating and hot water for a significant proportion of the College. We are continuing to consult experts and explore technology solutions and funding opportunities to meet our target to stop using gas by 2035, or earlier if we can.

1.2 Electricity consumption

Electricity consumption commitment (in so far as we can within the constraints of affordability): To reduce our electricity consumption year-on-year.

- We have good quality data on electricity consumption going back to 2013-14, further enhanced by the installation of electrical metering on every staircase on the main site in October 2023 and the installation of Eyesense (see below).
- Our electricity consumption decreased significantly in the two consecutive years following the baseline year in 2021-22 when it was 1,867,241kWh. In 2022-23 our consumption dropped by 11% compared to the baseline year and reduced a further 2% in 2023-24.
- Our electricity usage in 2024-25 was 1,680,418 kWh. This was an increase of 4% compared to 2023-24; however, usage remained 9% below the 2021-22 baseline year.
- We have extensively installed Eyesense, an innovative energy management system with occupancy detection, designed by Cambridge researchers. We have installed 495 Eyesense devices linked to plugs to control heating and smart sockets to record electricity consumption. In addition to monitoring temperature and occupancy, the sensors are also recording humidity, electrical characteristics, light intensity and WiFi signal strength to ensure that rooms are optimised for comfort and efficiency.
- Using Eyesense and other interventions, such as replacing lights with LEDs and PIRs, we have managed to avoid significantly increasing electricity consumption whilst electrifying some of our hot water and heating systems, and trialling electric infra-red heating paper/panels in some rooms.
- The data from over 3,000 smart sockets to monitor the electrical usage profile of our buildings is being used to analyse and optimise electrical usage across the College.
- We are also continuing to motivate behavioural change by encouraging College members and visitors to turn off lights and unplug electrical appliances when not in use.
- Our electricity is procured from EDF with some of the supply from zero-carbon sources.
- Since writing our Sustainability Strategy, we recognise that it will not be possible to achieve year-on-year reductions in our electricity consumption whilst also transitioning from gas fuel to heat our hot water and provide heating for our buildings. We have set

ambitious targets to limit the increase in our electricity consumption as we decarbonise our buildings. Our aim is to slowly increase our electricity consumption and install more on-site energy renewables, in addition to the solar panels already installed on our new building. We have set a target to keep our electricity usage in 2029-30 lower than our 2022-21 baseline year whilst also significantly transitioning from gas.

Figure 2: Electricity consumption: Progress against baseline and three-year trend

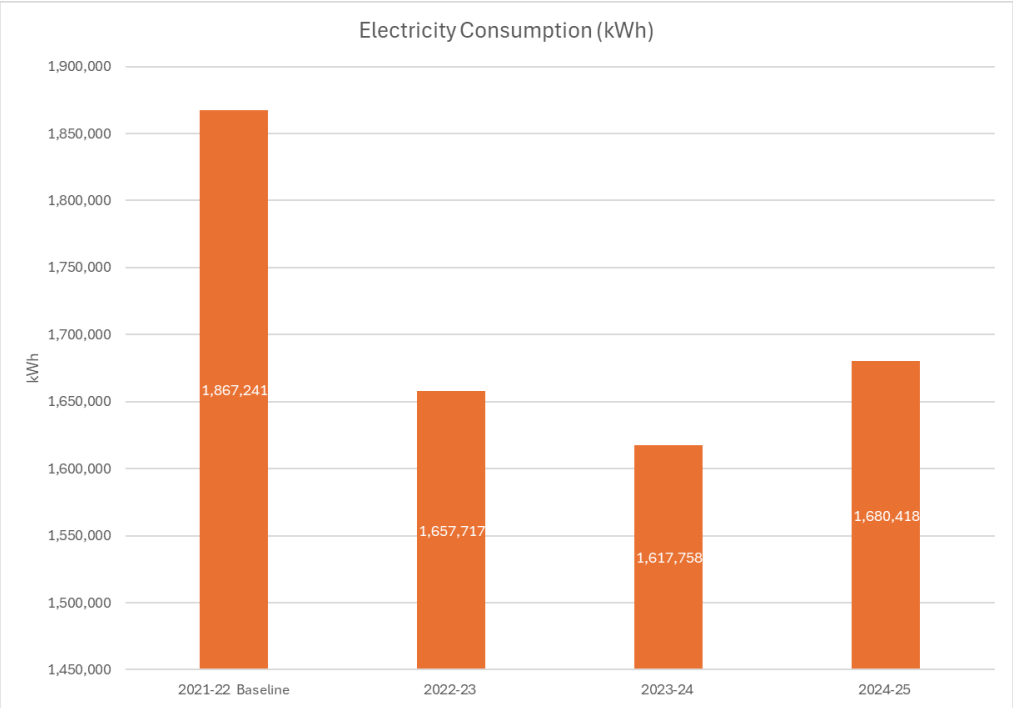


Table 3: Electricity consumption from 2021-22 to 2024-25 and targets to 2029-30

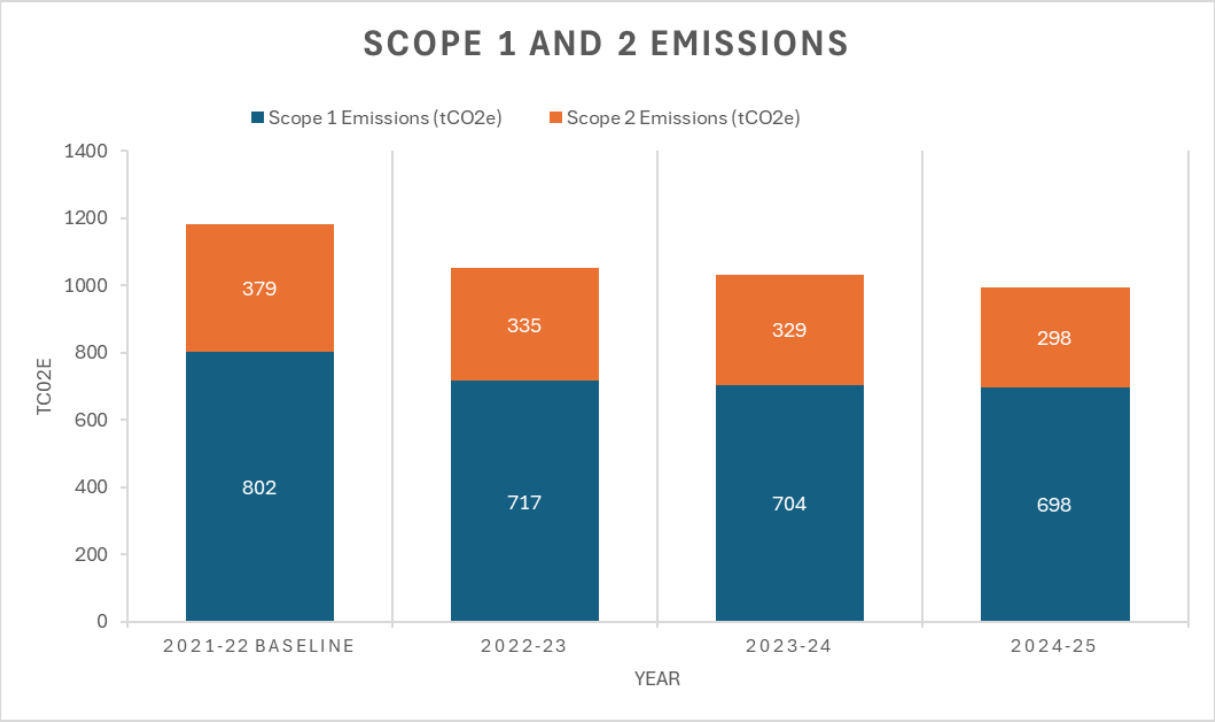
Year	Electricity consumption kWh
2021-22 Actual and Baseline	1,867,241
2022-23 Actual	1,657,717
2023-24 Actual	1,617,758
2024-25 Actual	1,680,418
2025-26 Target	1,714,026
2026-27 Target	1,748,307
2027-28 Target	1,783,273
2028-29 Target	1,818,938
2029-30 Target	1,855,317

1.3 Scope 1 and 2 carbon emissions

- We are using the GHG Conversion Factors – relevant factor for the financial year (e.g. 2025 GHG for the 2024-25 financial year) to track our carbon emissions.
- We are achieving our commitment to reduce our Scope 1 and 2 emissions year-on-year since our baseline data in 2021-22.
- Scope 1 emissions are around 13% lower in 2024-25 against 2021-22 levels.

- Scope 2 emissions in 2024-25 are around 21% lower than 2021-22 levels.

Figure 3: Scope 1 and 2 Emissions: Progress against baseline and three-year trend



2. Scope 3 emissions

- Work is ongoing in 2025-26 to calculate our selected Scope 3 emissions. This is a complex and time-consuming process.

Table 4: Progress on selected Scope 3 emissions

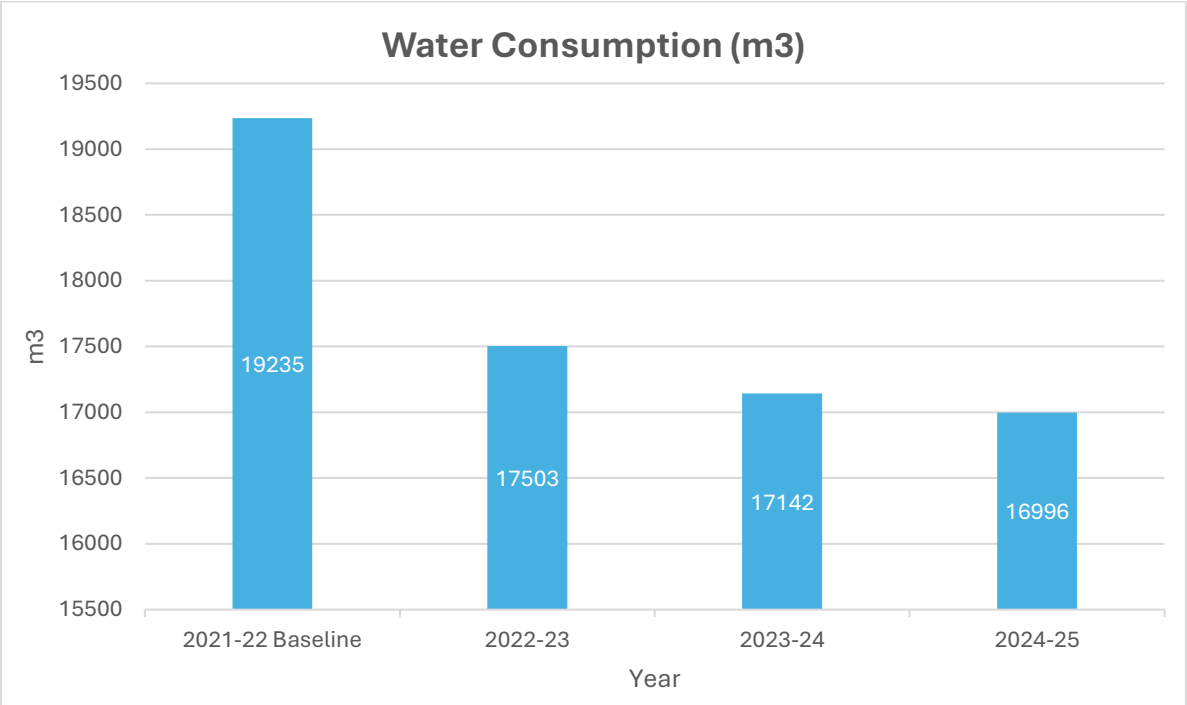
Selected Scope 3 emissions	Progress
Water	2021-22 Baseline year (recalculated in 2025) 2022-23 Data collected 2023-24 Data collected 2024-25 Data collected Targets set up to 2029-30
Waste	2021-22 Initial baseline year 2023-24 Data collected 2024-25 Data collected and a new baseline year set Targets set up to 2029-30
Business travel	2021-22 Baseline year Reviewing 2024-25 data in 2025-26 to calculate emissions and set a new baseline year
Employee commuting	2021-22 Baseline year Collecting data in 2025-26 to calculate emissions and set a new baseline year
Supply chain	Collecting data in 2025-26 to calculate emissions and set a baseline year

2.1 Water consumption and carbon emissions

Water consumption commitment (in so far as we can within the constraints of affordability): To reduce our water consumption year-on-year.

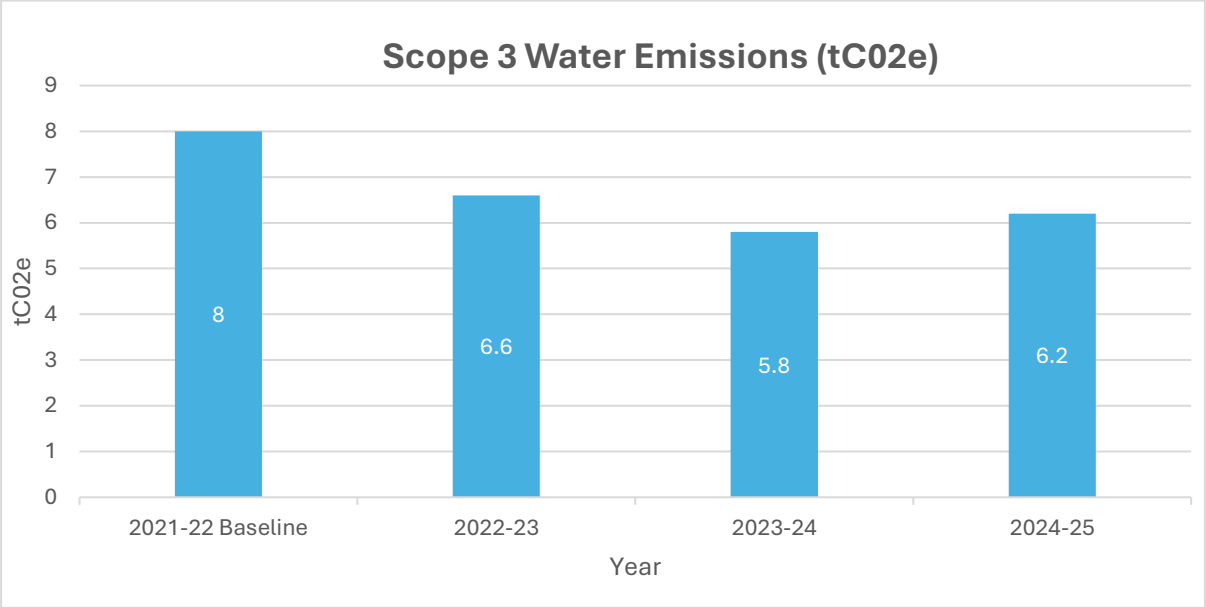
- We have reduced our water consumption year-on-year since our 2021-22 baseline year when it was 19,235 m3.
- Our water consumption dropped 9% in 2022-23 and a further 2% in 2023-24. The majority of the water saving came from working with Thames Water to complete a water saving survey and implement a number of measures.
- Whilst our 2024-25 water consumption (16,996 m3) was close to our 2023-24 usage (17,142 m3), there was still a small reduction to maintain our year-on-year commitment to reduce water usage, and it was 11% below the baseline year.
- In 2024-25, we trialled flow meters on all water outlets on three staircases to monitor the usage of each outlet. The trial provided useful data, including whether water outlets need flushing if they have not been used, high usage areas and whether any outlets have been left running. We are analysing all the data to inform next steps during 2025-26.
- We also installed a further 30 LED shower heads during 2024-25. The shower heads change colour to indicate how long the shower has been running to encourage water saving. We now have 80 LED shower heads installed on our main site.
- We are reviewing our flushing procedures during 2025-26, in consultation with our external water testing contractor, as part of our measures to save water wherever possible whilst remaining compliant with legislation and best practice. A reduction in water usage for flushing will reduce Scope 1, 2 and 3 emissions where water is heated by gas, and Scope 2 and 3 emissions where water is heated by electricity.

Figure 4: Water consumption: Progress against baseline year and three-year trend



- After a review of our data, we have recalculated the carbon emissions for our water consumption for the 2021-22 baseline year and this has reduced emissions to 8 tC02e (compared to 18 tC02e set out in our Sustainability Strategy).
- Whilst our water consumption was lower in 2024-25 compared to 2023-24, carbon emissions have slightly increased, by 0.4 tC02e, in 2024-25 due to a change in the GHG conversion factor for the reporting year.

Figure 5: Scope 3 carbon emissions from water consumption: Progress against baseline year and three-year trend



- We have set targets to continue to reduce our water consumption during 2025-26 and the next five financial years, mainly by continuing to install more dual flush toilets, water saving devices into taps to reduce the amount of water and increase pressure, LED shower heads, water saving campaigns, and exploring grey water and rainwater harvesting.

Table 5: Water consumption from 2021-22 to 2024-25 and reduction targets to 2029-30

Year	**Water consumption m3**
2021-22 Actual and Baseline	19,235
2022-23 Actual	17,503
2023-24 Actual	17,142
2024-25 Actual	16,996
2025-26 Target	16,826
2026-27 Target	16,656
2027-28 Target	16,486
2028-29 Target	16,316
2029-30 Target	16,146

2.2 Waste consumption/recycling rate

- We are spending a considerable time collecting and reviewing our waste data and this work will continue into 2026. Some of the data must be based on estimates as not all the waste has been weighed as it has left our sites.
- The housekeeping management team and Director of Sustainability carried out the College's first full internal waste audit on 2 June 2025. All waste collected on this date was inspected to understand our waste practices and whether any actions are needed. The audit found that around 40% of the refuse/general waste contained recyclable items and around 40kg of food waste. There were also 10 bags of recycling wate that were contaminated with non-recyclable items. The audit report was circulated to all students, staff and Fellows, and is published on our website.
- Over 400kg of leftover food, clothing and other items left by students were donated to charities at the end of Trinity Term 2025. Donations to the British Heart Foundation raised £1,425.
- We have set a new baseline year in 2024-25 with some data still based on estimates until improved information is made available.

Table 6: Recycling, refuse/general waste and food waste in 2023-24 and 2024-25

Year	**Waste Tonnes**
2023-24 Actual	98
2024-25 Actual and baseline	95

- Excluding food waste, our recycling rate in 2024-25 was 39% (61% refuse/general waste). We know we need to do much better. New waste posters have been produced and distributed across all College sites and we are using information on our website and videos posted on social media to encourage better recycling.
- Whilst all refuse/general waste is sent to incineration to create energy, we are committed to reducing this waste wherever possible.
- We have set targets to improve our recycling rate and reduce our overall waste year-on-year with a target recycling rate of 75% by 2028-29.

Table 7: Waste data for 2024-25 and reduction targets to 2029-30

Material Type	**2024-25 Baseline Tonnes**	**2025-26 Tonnes**	**2026-27 Tonnes**	**2027-28 Tonnes**	**2028-29 Tonnes**	**2029-30 Tonnes**
Dry Mixed Recycling	28	29	35	36	35	34
Refuse	43	35	23	16	12	11
Food	24	21	19	17	16	15
Total	**95**	**85**	**77**	**69**	**62**	**59**

- The rest of our waste streams are low level compared to our refuse/general waste, recycling and food waste. We will set out the weight for these streams in our 2025-26 report: battery

recycling, confidential paper shredding, metal recycling, wood recycling and Waste Electronic Equipment (WEEE), other waste (if any) to landfill.

2.3 Business travel and carbon emissions

- Carbon emissions from College travel was calculated as 760 tC02e in 2021-22 and is reported in our Sustainability Strategy. This calculation included business travel and staff commuting.
- We are reviewing data from 2024-25 to calculate a new baseline year and will report separately on our carbon emissions from business travel in future.

2.4 Staff commuting and carbon emissions

- Carbon emissions from College travel was calculated as 760 tC02e in 2021-22 and is reported in our Sustainability Strategy. This calculation included business travel and staff commuting.
- We are collecting data during 2025-26 to calculate a new baseline year and will report separately on our carbon emissions for staff commuting to work in future.

2.5 Supply chain and carbon emissions

- We are in the process of collecting and reviewing data to calculate the carbon emissions from our supply chain. We plan to set a baseline year at the end of 2025-26.

Carbon Footprint Methodology

A document setting out our Carbon Footprint Methodology, including Scope 1, 2 and 3 emissions, has been drafted and is being considered by our Sustainability Strategy Working Group in January 2026. The document will be presented to our Governing Body with the intention of publishing it on our website by July 2026.

December 2025