UNIVERSITY OF CAMBRIDGE | Sustainability

Environmental Sustainability

Progress Report 2023-24

Disclaimer

Previously, we reported on Environmental Sustainability through Annual Environmental Sustainability Reports. Our reporting approach changed from the year 2023-24 onwards to make information more transparent and accessible, becoming the 'Our progress' and 'Case study' pages on the Environmental Sustainability website.

The newly formatted Environmental Sustainability Progress Report 2023-24 therefore represents a copy of the Our progress pages for the year 2023-24. All previous Annual Environmental Sustainability Reports are available up to 2022-23.

UNIVERSITY OF CAMBRIDGE
Sustainability

Carbon and energy

Our commitments

Scope 1 and scope 2 emissions

We are committed to reducing energy-related emissions from our operational estate to absolute zero carbon by no later than 2048, with a mid-term target of a 75% reduction against 2015-16 levels by 2030-31.

Scope 3 emissions

We have a target to reduce per capita emissions from business flights by 25% against 2014-15 levels by 2024-25.

Scope 1 and scope 2 annual carbon emissions

The following graph shows our carbon emissions from the operational estate for 2023-24 against our scope 1 and scope 2 carbon reduction commitment.

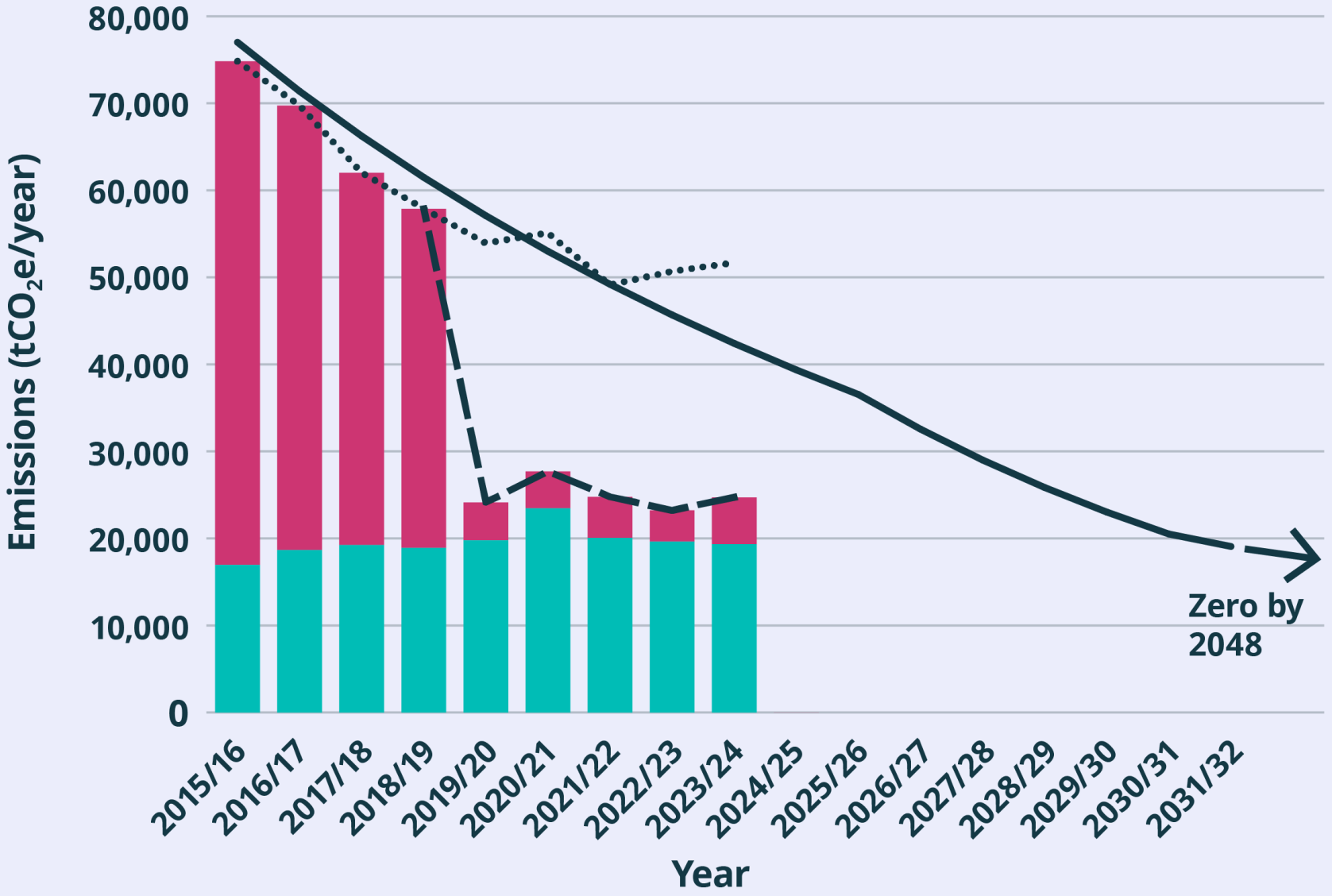
Actual emissions are broken down into emissions from gas, oil, biomass, diesel and petrol used on our estate (scope 1 emissions) and emissions from purchased electricity, heat and steam (scope 2 emissions).

Progress against our carbon reduction commitment is monitored against the "market-based" emissions figures calculated since 2019. For transparency, "location-based" emissions figures are also shown.

Market-based emissions figures reflect the amount of energy we used and their carbon intensity from our electricity suppliers. Carbon intensity is the measure of how much CO_2 and CO_2 equivalent of other greenhouse gases are emitted, per kilowatt-hour of electricity generated.

Location-based figures indicate what our emissions would be if all our electricity was sourced from suppliers that have the same carbon intensity as the UK power grid's average emissions intensity.

Annual scope 1 and 2 carbon emissions from the operational estate (tCO_2e) 2023/24



Target

Actual total emissions (Market-based)

Purchased electricity, heat and steam emissions

Gas, oil, biomass, diesel and petrol emissions

Actual total emissions (Location-based)

tCO_2e/ year = Tonnes of carbon dioxide equivalent per year

Summary

We remain on track with our carbon reduction target.

Emissions from gas were 2% lower in 2023-24 against 2022-23 levels.

Market-based emissions have reduced by 67% since 2015-16 and remain dominated by scope 1 emissions, particularly emissions from natural gas.

Market-based emissions increased by 6% in 2023-24 against 2022-23 levels. This is mainly due to a change in how emissions from heat and steam are calculated. The carbon conversion factor was amended to more accurately reflect the carbon intensity of heat and steam use.

Location-based emissions also increased in 2023-24 against 2022-23 levels. This is because electricity use on the main University estate increased by 2.5%, excluding the Cambridge Biomedical Campus. As our electricity is procured from zero-carbon sources this increase in consumption did not affect our market-based emissions figures.

The carbon intensity of the electricity used by the University at the Cambridge Biomedical Campus (energy supplier EDF Energy) increased by 60%. This is due to a change in the fuel mix used by the supplier in 2023-24.

Note

We have an Independent Limited Assurance Report for our scope 1 and scope 2 carbon emissions data.

Scope 1, scope 2 and scope 3 emissions breakdown

The following graph provides a breakdown of the University's market-based carbon emissions across scope 1 and scope 2 emissions from the operational estate, and selected scope 3 emissions categories.

Scope 3 emissions are calculated using carbon emissions factors published by the UK Government and the Higher Education Supply Chain Emissions Tool (HESCET). The selected scope 3 emissions are from the University's supply chain and associated transportation, business travel emissions (primarily from air travel), staff commuting, and for the first time, emissions associated with staff working from home. These are the most significant categories for the University's scope 3 emissions, as determined by our scope 3 screening assessment, and are also the categories where we hold sufficient data for meaningful emissions calculations. The categories not included in this graph are waste, water, emissions from downstream leased assets, and all types of student travel. In future, we hope to calculate and include these emissions sources in our environmental reporting.

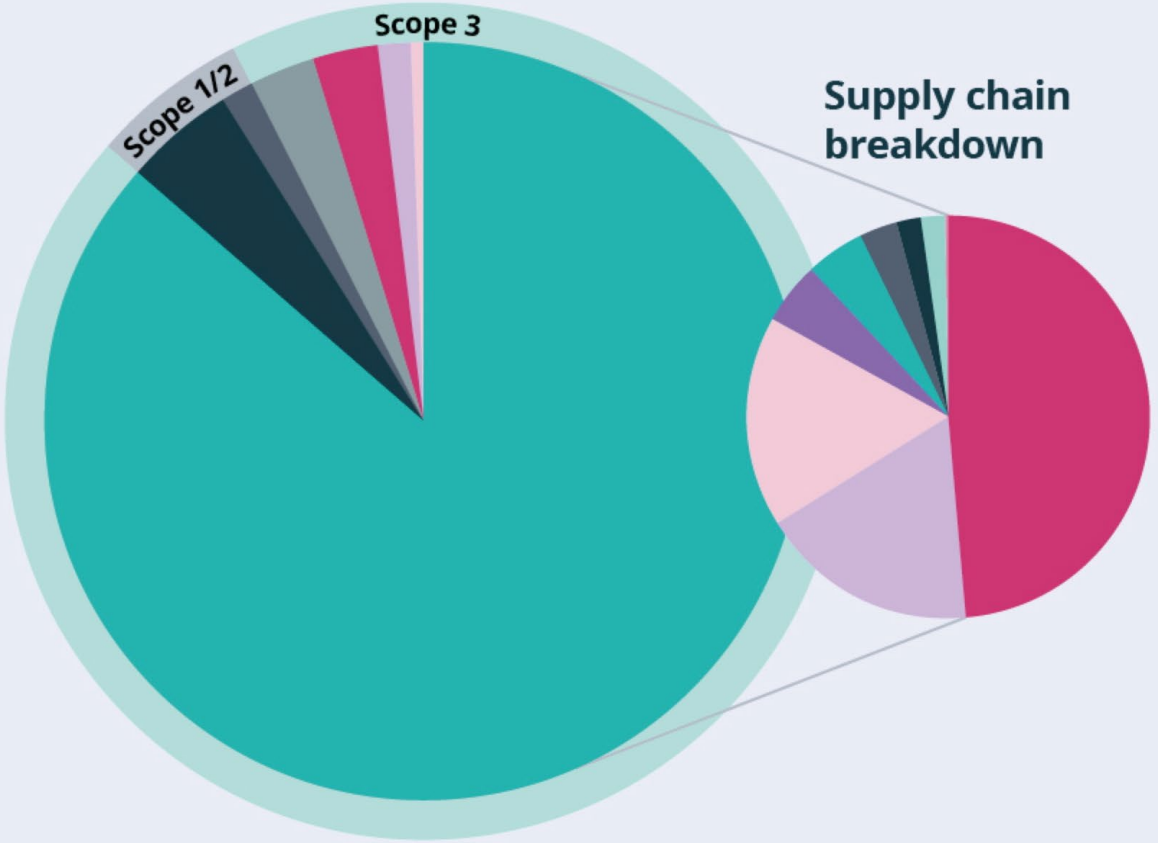
Scope 3 emissions from investments are also not included in this graph as emissions from the University's Endowment Fund are reported separately by University of Cambridge Investment Management.

Note

Emissions from capital goods (including building and refurbishment) and upstream transportation and distribution emissions have been included within our purchased goods and services emission calculations in line with the HESA calculation methodology.

Breakdown of 2023/24 scope 1 and 2 emissions (Market-based) and selected scope 3 emissions

- 5% Scope 1: Gas and fuels
- 1% Scope 2: Electricity, heat and steam
- 86% Scope 3: Supply chain
- 3% Scope 3: Energy well to tank and delivery
- 3% Scope 3: Business travel – air
- 1% Scope 3: Staff – commute
- >1% Scope 3: Staff – work from home



- 42% Lab equipment/ consumables
- 15% Business services
- 15% IT equipment
- 4% Construction
- 4% Other manufactured products
- 3% Other procurement
- 2% Food and catering
- 1% Manufactured fuels, chemicals, glasses
- >1% Other including paper

Summary

94% of our total reported market-based emissions come from scope 3 emissions.

86% of these total scope 3 emissions are attributed to supply chain-related activities.

Our supply chain emissions are dominated by four categories covering lab equipment and consumables, business services, IT equipment and construction. These account for 76% of our total reported market-based emissions across all scopes.

Business travel accounts for 3% of total reported emissions across all three scopes. Of that, air travel accounts for 96% of business travel emissions.

Staff commuting emissions should be considered alongside staff working from home emissions. If more staff work from home, staff commuting figures may go down, and vice versa.

Travel and transport

Our commitments

Sustainable travel modes

Our commitment is for 75% of staff to travel to work (commute) by sustainable modes. We provide a range of initiatives to support sustainable transport in and around Cambridge.

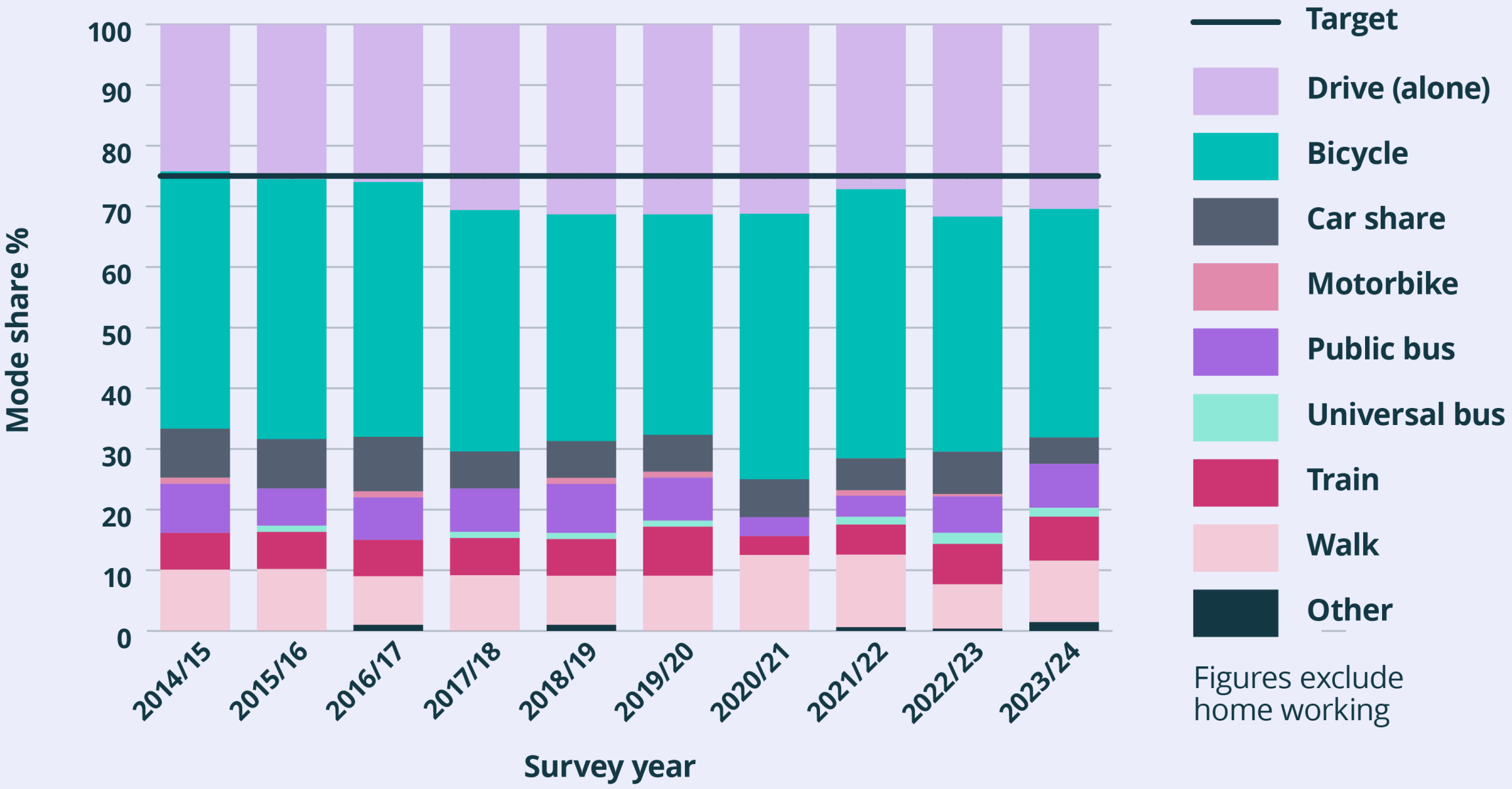
Business flights

We have a target to reduce per capita emissions from business flights by 25% against 2014-15 levels by 2024-25.

The 10 year trend of staff travel modes

The following graph shows the 10-year trend in staff travel modes compared to our 75% sustainable travel target, excluding those working from home.

10 year trend of staff travel to work modes



Figures exclude home working

Summary

The Transport Strategy target for 75% of staff to be regularly commuting by sustainable modes was only achieved in 2014.

The target was very close to being achieved in 2013, 2015, 2016 and most recently in 2021.

The target was relatively close to being achieved in all of the other years.

The worst year was 2022 at 68%, with an improvement in 2023 to 70%.

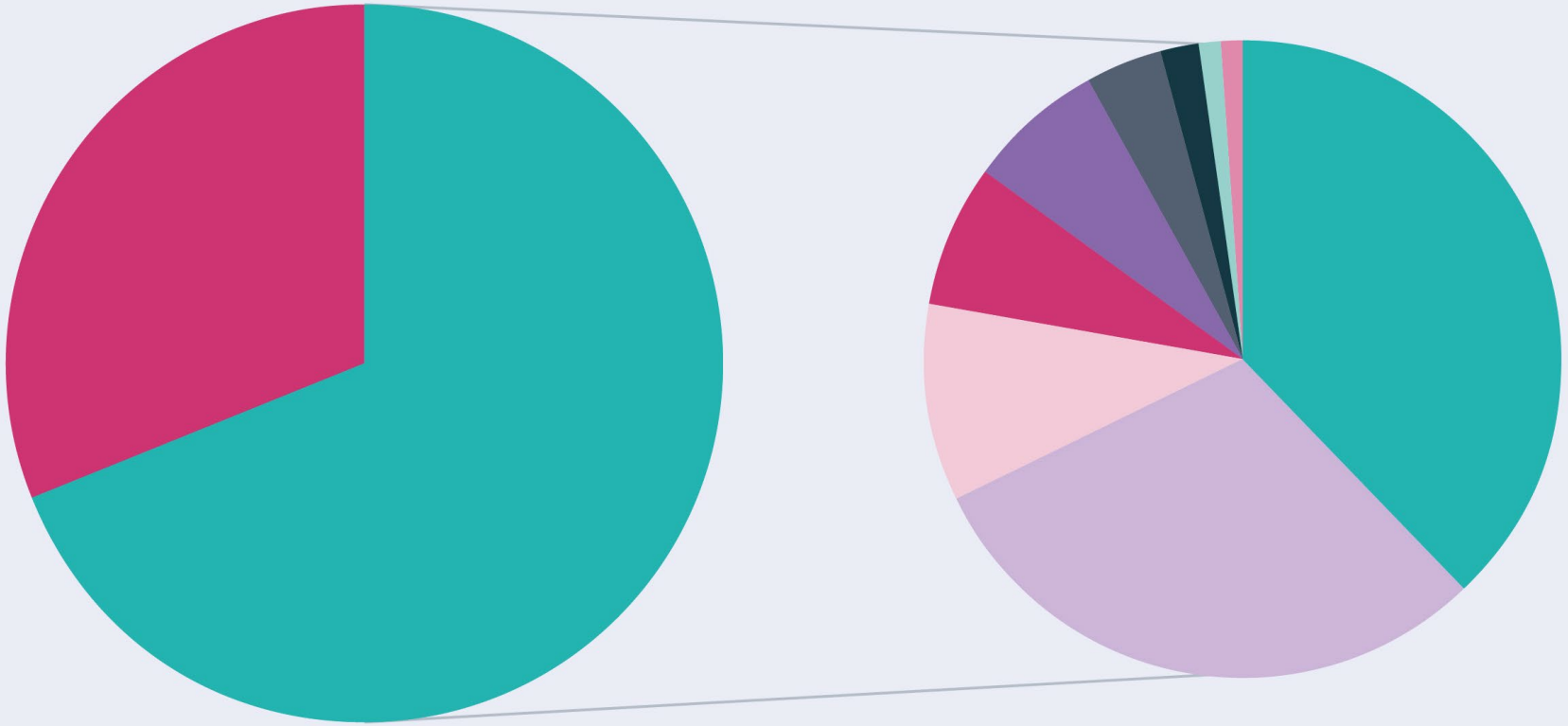
A breakdown of staff travel modes for October 2023

The following graph shows a breakdown of staff travel modes in October 2023.

The pie chart on the left shows the percentages of staff travelling to work and working from home.

Of the staff traveling to work, the pie chart on the right shows a breakdown of their travel modes.

Breakdown of staff travel to work modes, October 2023



69%	Travel to work
31%	Working from home

38%	Bicycle
30%	Drive (alone)
10%	Walk
7%	Train
7%	Public bus
4%	Car Share
2%	Other
1%	Universal bus
1%	Motorbike

Summary

A significant percentage of staff are working from home at 31%.

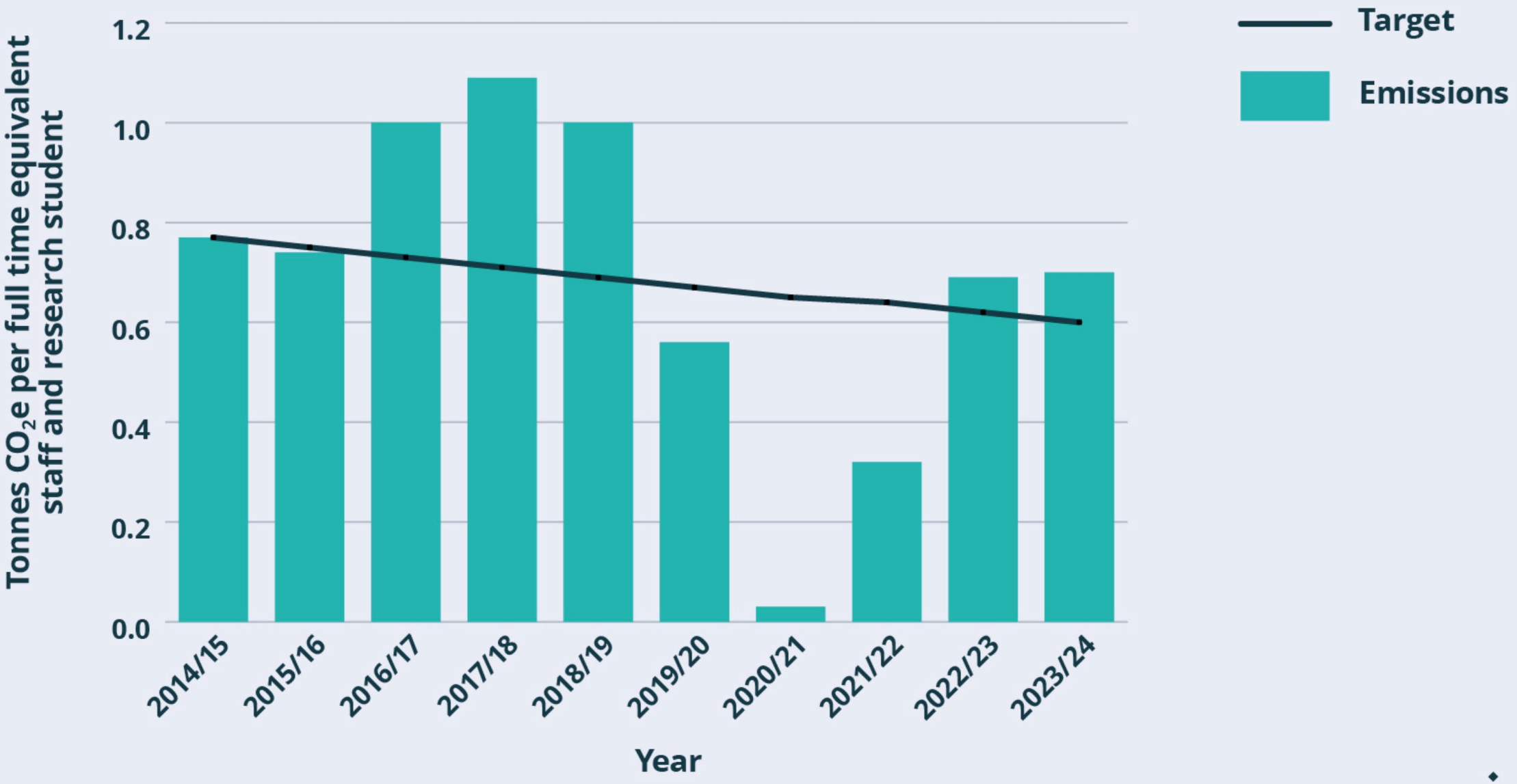
Of those that travel to work, the most common travel mode is bicycle at 38%, followed by driving alone (30%) and walking (10%).

Of those that travel to work, the Transport Strategy target of 75% of staff regularly commuting by sustainable modes has not been achieved. The most recent figure in October 2023 is 70%.

Per capita emissions from business flights, by year

The following graph shows the University's target and actual total business flight emissions in tonnes per full-time equivalent (FTE) staff and research student, by year.

Per capita emissions from business flights, by year



Summary

Total business flight emissions per FTE staff and research student has decreased by 9% in 2023-24 against 2014-15 levels. However, the University is not on track to meet its target to reduce per capita emissions from business flights.

Per capita emissions from business flights peaked in 2017-18 and then dropped substantially as a result of the COVID-19 pandemic.

The return to travel after the pandemic has resulted in emissions exceeding the target for 2023-24 by nearly 17%.

Waste and circular economy

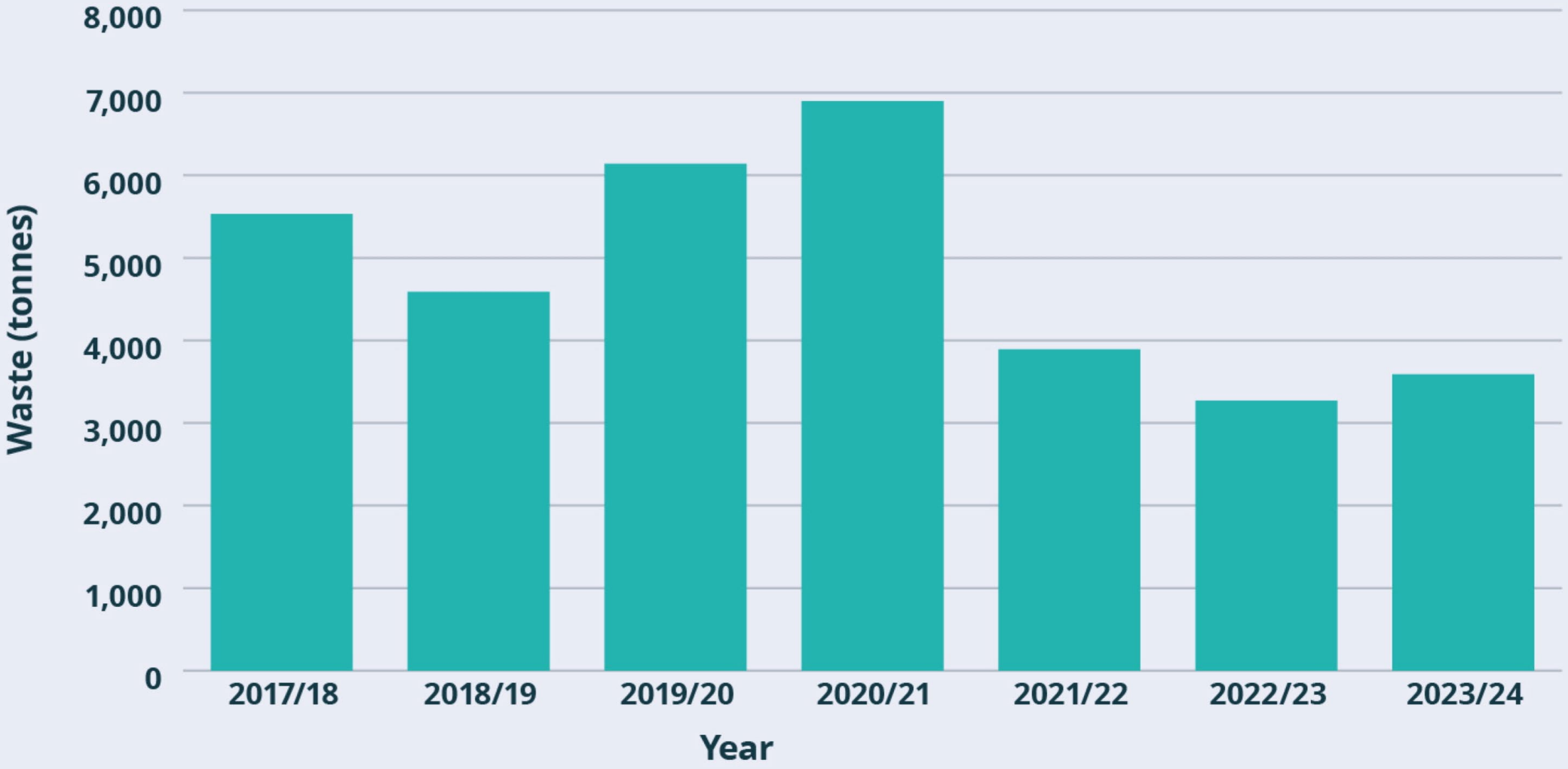
Our commitments

We have adopted targets to send zero waste to landfill via our main non-hazardous and chemical hazardous waste contracts, and to achieve a minimum 80% recycling rate for our non-hazardous waste contract.

Total waste produced per year

The following graph shows the total waste produced on the University's operational estate between 2017-18 and 2023-24.

Total waste produced per year



Summary

There has been a significant decline in the total amount of waste produced annually since 2020-21.

The large decrease in waste since the peak in 2020-21 is largely due to less construction waste as a result of fewer building projects. In future years we anticipate this downward trend in construction waste generation to continue as the University's Reshaping Our Estate programme should result in fewer new build projects.

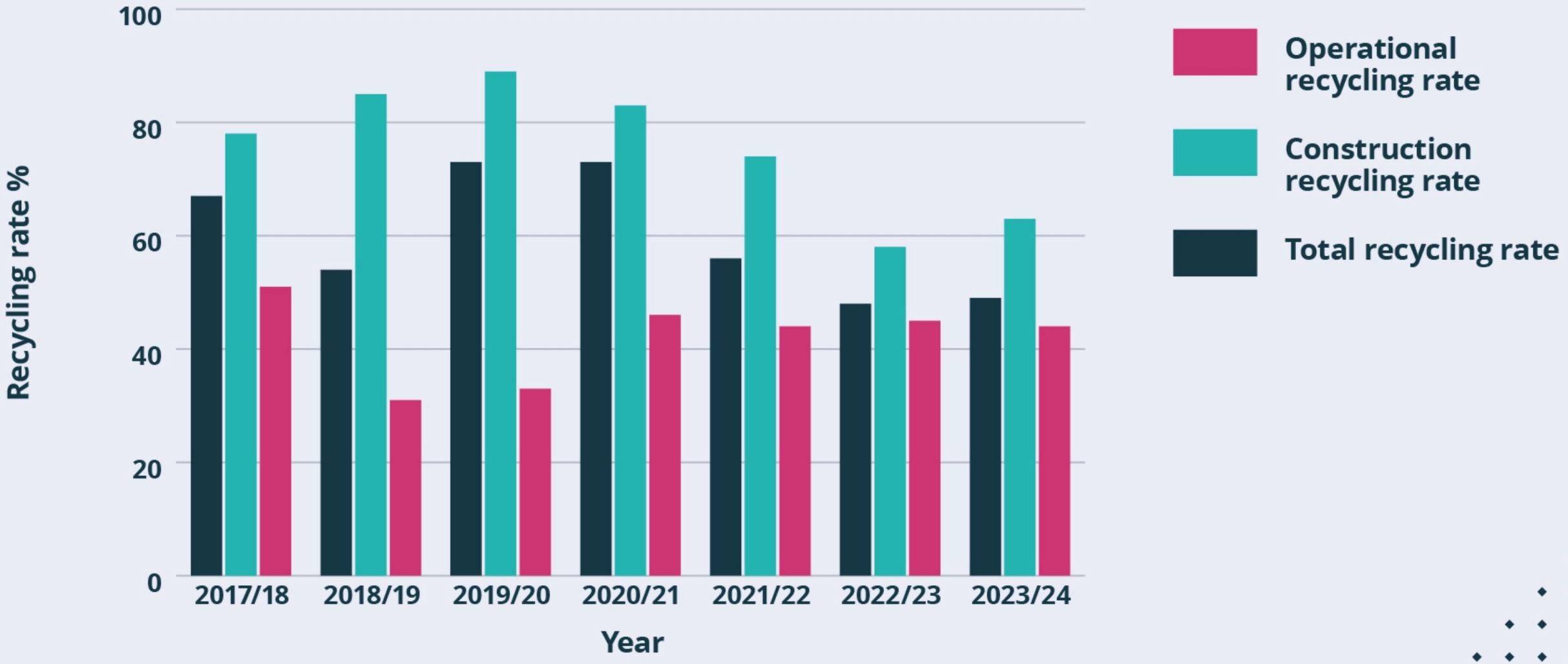
Note

Hazardous waste has only been included in our total waste data since 2022-23.

Annual recycling rates

The following graph provides the annual recycling rates (%) of the University's operational estate from operational waste, construction waste and total waste between 2017-18 and 2023-24.

Annual recycling rates



Summary

Recycling rates for construction waste are higher than for operational waste over all years since 2017-18.

Construction waste has recycling rates that are consistently at or above 60%.

Over the last 4 years operational recycling rates have steadied to between 44% and 46%.

Total recycling rates were on a downward trend between 2019-20 and 2022-23. Between 2022-23 and 2023-24, total waste recycling rate increased by 1% and construction waste recycling rate increased by 5%.

Note

Hazardous waste has only been included in our recycling rate data since 2022-23. Hazardous waste often requires incineration, thereby decreasing recycling rates.

A change to the University's main waste contract in 2022-23 resulted in improvements in data quality, which suggested that previous recycling rates are likely to be over-estimated.

Recycling also includes composted waste for reporting purposes.

In 2023-24, waste collections by one supplier accounted for approximately 19% of total waste collected. This supplier reported composted waste as energy-from-waste, rather than as recycled waste, meaning this proportion of our waste is not included in the total recycling rate shown for 2023-24.

Biodiversity

Our commitments

We have a commitment to maintain and improve the condition of broad habitat types across our estate.
We seek to deliver a significant and measurable improvement in the biodiversity of our estate, as well as across the Greater Cambridge area. We have also signed a nature positive pledge.

More information on our targets can be found in our Biodiversity Action Plan, approved by the University Council and published in 2020 as a 10-year vision.

Overview

Biodiversity changes occur over the long term, making short-term progress challenging to report in measurable terms. To address this, we're currently taking a narrative approach to biodiversity reporting to capture our progress and efforts, emphasising actions taken, outcomes, and long-term trends.

Summary

We have made progress towards delivering our Biodiversity Action Plan (BAP) during 2023-24.

We have employed our first dedicated Biodiversity Manager.

We have stopped using external contractors for operational city site grounds work by bringing work 'in-house'.

To support the management of our sites with biodiversity considerations we have increased the size of our Estates Division (ED) operational grounds team, while providing advice, training and support. This includes delivery of grasslands-focused grounds maintenance training coordinated with the Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire. Recipients of this training include our ED operational grounds team, city grounds team, and some Cambridge College gardeners.

We have bought equipment (electric instead of diesel operated, where possible) to support the management of our grounds whilst considering biodiversity. For example, we purchased a machine better capable of dealing with cutting longer swards (stretches of grass) or annual cuts of wildflowers.

We have prioritised the management of lines of trees at Cambridge University Park Farm. During 2023-24, we secured consent to coppice 800m of overmature (overgrown) crack willows growing alongside a ditch.

Summary continued

We have improved the quality of grassland at Madingley Park (part of the University Park Farm and Rural Estate) in line with our Countryside Stewardship Higher tier Agreement. We have also commissioned a report from the Wildlife Trust for advice on achieving increased diversity among plant species within grassland.

We have reviewed management intervention to selectively thin dying and dead standing trees. Ash dieback and sooty bark disease led to necessary regeneration fells of several areas of University-owned woodland. Statutory consents were secured during 2023-24, as well as a tree health grant to partially fund restocking of trees.

We have considered options for tree restocking. During 2023-24, the tree restocking species mix was agreed with the Forestry Commission as part of the tree health grant. 75% of tree species have been predetermined, leaving 25% flexibility in the tree species that can be planted. We are arranging a meeting with researchers using Madingley Wood to seek their views on refining the mix, and the detail of restocking and future management in spring 2025. In autumn 2025, we aim to restock the sections of woodland that were felled during winter 2024.

We have increased the quality and extent of aquatic habitats. For example, asilted up pond at Park Farm was dredged and cleared of shading trees and scrub.

We are integrating our mapping, monitoring and recording in a way that works for nature on a landscape scale, whilst considering wider landholders (including Cambridge Colleges).

Summary continued

We are making sure we comply with mandatory Biodiversity Net Gain (BNG) requirements in a way that benefits nature as much as possible. This work is led by Head of Estate Strategy and Planning, with support from our Rural Surveyor, from Bidwells, and with expert advisory capacity from our Biodiversity Manager.

The Environmental Sustainability Team also continues to provide specialist ecological advice to the University and colleagues for major development projects including Cambridge West, Eddington and Reshaping our Estate, including reviews of maintenance contracts for our existing network of green roofs to ensure best outcomes for biodiversity.

Next steps

We are planning to carry out ecological surveys during spring/summer of 2025 to assess our progress against the targets laid out on page 26 of our BAP. Habitat surveys will be carried out at sites on our urban and rural estate where quantitative targets for biodiversity enhancement or protection have been set. The surveys will assess habitat condition against standard metrics (UKHab) depending on habitat type. We plan to survey grasslands, scrubland, hedgerows, and lines of trees.

We are also partnering with the Wildlife Trust to assess two county wildlife sites under our management. This will allow us to see how our management practices have been working and determine if we need to change anything. These surveys will be the first round of biodiversity monitoring since our initial surveying in 2017-18. Woodlands will be resurveyed at a later date.

Water

Our commitment

We’re committed to managing our water demand through efficiency measures and behaviour change. To inform our approach, we’ve undertaken work to identify where and why we’re using water, and opportunities for managing our use more effectively. This work is informing the development of a Water Management Plan for the University estate.

UNIVERSITY OF CAMBRIDGE
Sustainability

Overview

The following graph shows total water use on the University's operational estate between 2014-15 and 2023-24 in cubic metres (m^3).

Water consumption per year

Summary

Total water consumption was 15% higher in 2023-24 against 2014-15 levels. This is due to better understanding of consumption based on improved metering.

Water consumption reduced during the COVID-19 pandemic when much estate-based activity was paused, but has since returned to pre-COVID levels.

Note

The University began installing automated water meter reading devices on to its largest consuming water meters in 2023. This has allowed us to develop a more accurate understanding of our water consumption. Before 2023, year on year differences are a reflection of billing patterns and inconsistent meter reading schedules.

Also, the University has been receiving synchronous billing (i.e. real-time data) across both its water consumption and wastewater disposal since January 2023. This gives us a more accurate understanding of what we consume. Whilst these measures have increased our water footprint in 2023-24, the improved data is providing a baseline against which we will measure the success of future water efficiency initiatives.

Additional and historic data

All previous Annual Environmental Sustainability Reports are available up to 2022-23. Our reporting approach changed from the 2023-24 year onwards to Our progress pages to make information more transparent and accessible. Qualitative progress against our commitments can be found within our Case studies. These will both be updated on an ongoing basis as new data and material becomes available.

You can also read about the University's work on environmental sustainability in its Annual Report and Financial Statements. Further operational environmental sustainability information is available on request using sustainability@admin.cam.ac.uk.