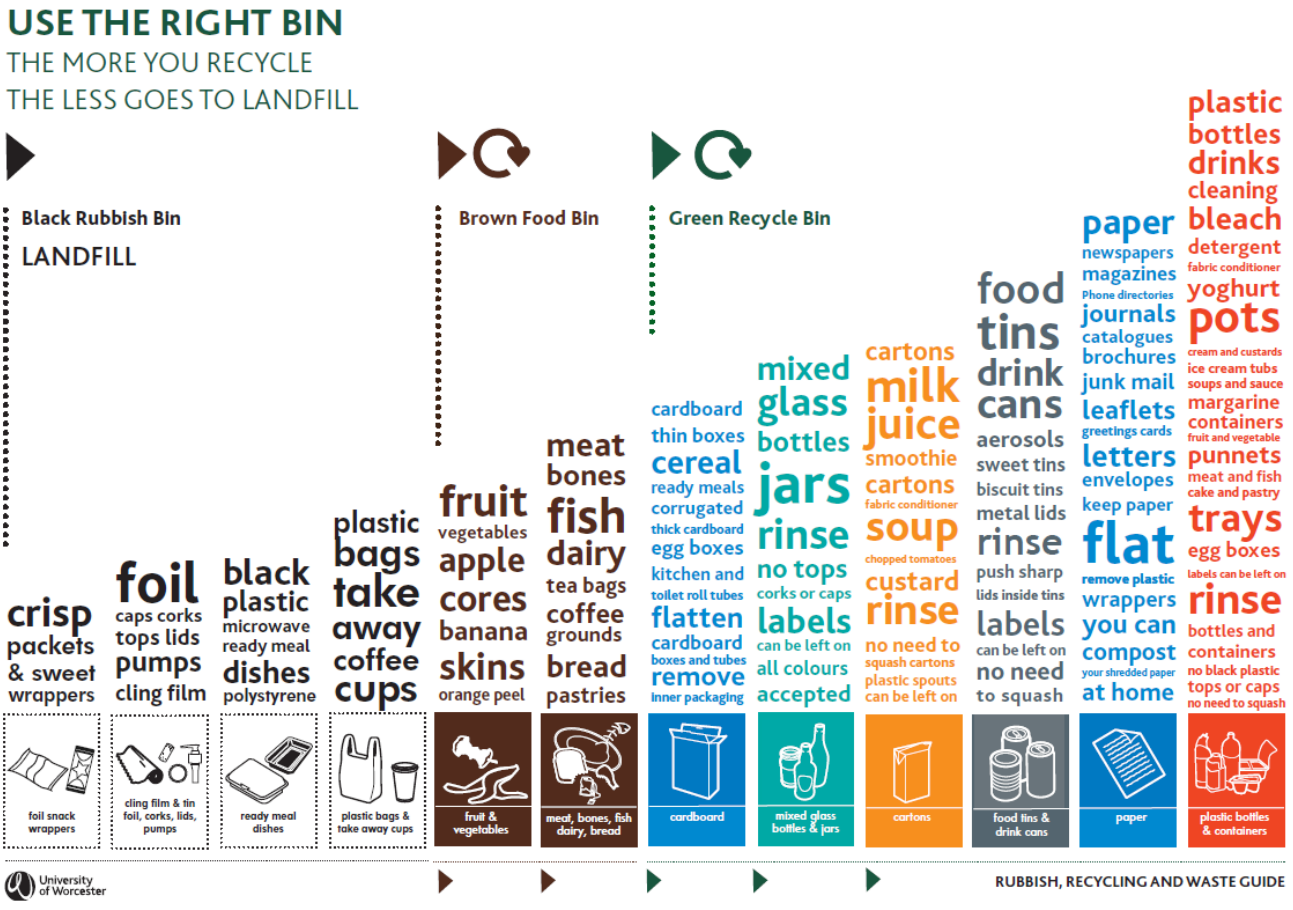
Moving towards zero waste

A Sustainable Waste Management Strategy for the University of Worcester

2020-2030



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Introduction

1. The first Zero Waste Strategy was adopted by the University in December 2007. Much was achieved during the lifetime of the strategy, and this is our fourth major revision necessary to bring it into alignment following Brexit and new waste tender. Previous iterations updated the strategy to take account of the University net zero carbon target to be net zero carbon by 2030 and our declaration of a Climate Emergency in July 2019. The current review takes place at the end of a 3-year trade waste and recycling contract in place with Worcester City Council who have themselves declared a Climate Emergency and are working towards a 2030 carbon neutral City. The University along with the Students' Union and the City Council, and others are also collectively working to remove single use plastics, and as such Worcester City was awarded 'plastic free community' status in September 2019.
2. This revision aligns to the University Strategic Plan 2019 and the Sustainability Strategy 2020-2030, and relates specifically to Theme 3 of the sustainability strategy: Mitigation, adaptation, and resource efficiency.
3. In 2018 the University signed the Sustainable Development Goals Accord committing us to report annually to the United Nations on our work in support of the SDGs (Sustainable Development Goals) and we have undertaken many community-based projects to help communities on and off campus, take a circular economy approach to waste. Based around the principles of a Circular Economy and focusing on waste reduction, material reuse, recycling and composting, landfill diversion, sustainable procurement, and sustainable estate development. One example teamed up university students, a local social landlord and primary school children to increase recycling rates. https://susthingsout.com/sustainable-young-minds-our-recycling-workshop-at-oldbury-park-school/
4. The Strategy provides a direction for the University to manage its material resources more effectively by thinking of waste as a resource, with the aim of achieving increased efficiency, cost savings, lower environmental impact, and positive carbon reductions. The aim is to reduce the unnecessary use of raw materials, encourage reuse of products, and reduce waste to landfill through recycling, composting or energy recovery.

Context and Scope

5. The University is based on 4 main campuses, has around 1,000 staff and 9,000 students. It provides 1100 bed spaces in residential halls on two of its major sites. The University has multiple facilities including general teaching spaces, offices, laboratories, halls of residences, conference and catering facilities and the Students' Union. The waste functions sit within Campus Services in the Estates and Facilities Department and are responsible for the management of all University waste streams by procuring, managing, and monitoring centralised contracts for general waste and recycling streams,

and for high risk or hazardous streams (e.g., hazardous waste, clinical and biological waste, waste electrical and electronic (WEEE), etc).

Net Zero Carbon

6. Analysis of the University's carbon footprint and the likely trajectories for all carbon scopes in a 1.5°C warming scenario have confirmed that the University needs to reduce total Scope 1, 2 and 3 emissions by 50% against a 2018/19 baseline. This is a pre COVID-19 figure so a sensible baseline to set.

	Emissions (tCO2e)
Scope 1	1,833
Scope 2	1,399
Scope 3	18,701
Total emissions	21,933

Most of the University's emissions fall into Scope 3. The remaining emissions will need to be balanced with carbon removals, such as soil health and carbon sequestration and tree planting in managed woodlands.

The carbon targets set by the University are as follows:

- 5% p.a. reduction in carbon emissions in Scopes 1, 2 & 3, against a 2018-19 baseline, from 2020 to 2030.

These will achieve a 50% reduction in emissions by 2030 compared to 2018-19 levels. Annual SMART carbon reduction targets and other quantitative and qualitative targets will be set as milestones towards reaching this overarching target, along with carbon off setting schemes.

Waste management

7. These are our key principles:

1. Preventing and reducing waste in the first place: This is achieved by promoting sustainable practices such as reducing paper usage, encouraging the use of reusable containers, and minimizing food waste
2. Increasing the reuse of materials: We promote the reuse of materials across the campus through sharing portals, donation schemes, and recycling initiatives
3. Following the waste hierarchy: The waste hierarchy is a framework that prioritizes waste management strategies in order of their environmental impact. The University prioritises waste reduction, reuse, and recycling over disposal
4. Implementing a hazardous waste management plan: We have regulated hazardous waste, which includes the proper storage, handling, and disposal procedures
5. Encouraging sustainable behaviours: We encourage sustainable behaviours among staff and students by providing education and training on waste reduction and recycling,

utilising Green Impact, Student Switch Off and Green Impact Students' Union by collaborating with the SU and their societies

6. Monitoring and evaluating waste management practices: Monthly monitoring and evaluation meetings take place to ensure our waste management practices identify areas for improvement and to ensure that this strategy is effective

8. We are continually working at ways of reducing the number of items we procure (see procurement strategy for more details) minimising the amount of waste we produce and reducing the volume of waste sent to landfill. The University is aware of the importance of the Zero Waste Hierarchy and the need to:

- Refuse/Rethink/Redesign
- Reduce and Re-use
- Preparation for Reuse
- Recycling/Composting/Anaerobic digestion
- Material and chemical recovery
- Residuals management

9. Waste management procedures are improving year-on-year and we aim to **reduce greenhouse gas (GHG) emissions from waste/recycling per Full Time Equivalent students and staff by 5% annually from 2018-19 baseline to 2030**, by maximising re-use, re-distribution, and recycling. Recent initiatives include:

- Bin the Bin removing all personal bins and creating central recycling/waste to landfill bins
- Winning £15,000 Recycling League competition in St Johns Halls
- White bags project with local housing association and two local primary schools
- Introducing the regular Repair Café Worcester onto campus

Recycling schemes are also in place across the campus for toner and printer cartridges, computer equipment, books, batteries, cardboard, textiles, spectacles/hearing aids and shoes.

Current Performance

10. The University has measured and reported its waste and recycling as part of its carbon reporting since 2008/9. Detailed breakdown, including comparison each year, is published in annual sustainability reports available on the University website.

11. The table below shows our latest carbon emissions data and historic data for comparison and the detailed breakdown for 2021-2022 and how this was split into recycling and waste to energy, across the academic and residential estate.

	Base year 2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	annual % Change	% Change Base
															FY22	
FTE Students	5,204	5,717	6,718	7,012	6,964	7,675	7,377	7,772	8,109	8,403	8,153	7,852	7,495	7,568	1%	-7%
FTE Staff	664	718	741	760	826	938	981	1,009	1,035	1,138	1,151	1,011	971	1,137	17%	-1%
FTE Total	5,868	6,435	7,549	7,772	7,790	8,613	8,358	8,781	9,144	9,541	9,304	8,863	8,466	8,705	3%	-6%
GIA	47,362	62,515	68,038	69,669	75,647	76,140	76,140	80,978	81,328	81,090	81,172	81,172	81,904	93,575	14%	15%
Waste & Recycling	73	63	73	35	22	48	26	17	19	12	9	6	6.0	6.4	7%	-29%
Waste & Recycling - FTE	0.0125	0.0098	0.0097	0.0045	0.0029	0.0056	0.0031	0.0020	0.0020	0.0013	0.00011	0.00008	0.00007	0.00007	-6%	-39%

	Recycling	Combustion
Black		100.00%
Green	86.00%	14.00%

Non-Residentia	Weight tonr	Conversion	Co2e tonnes
Recycling	123.8	21.317	2.6
Combustion	86.4	21.317	1.8
			4.5

Residential	Weight tonr	Conversion	Co2e tonnes
Recycling	25.6	21.317	0.5
Combustion	56.7	21.317	1.2
Food waste	10.2	10.204	0.1
			1.9
			6.3

EMR Return				
	Recycling	Combustion	AD	Total
Non Residential	123.8	86.4		210.2
Residential	25.6	56.7	10.2	92.4

12. The level of construction waste varies each year dependant on capital development and refurbishment programmes. Virtually all construction waste is recycled.
13. There are many different waste streams generated by the operations of the University and the following table shows the volumes of waste produced by waste category and splits it between residential and non-residential parts of the estate in academic year 2021-2022.

Waste Stream	Tonnes
Green	81.8
Black	106.5
Food	10.2
Hazardous Waste (MyWaste)	6.9
Printer & Toner Cartridges	0.0
Clothes Textiles	4.2
Scrap Metal	7.9
Confidential Waste	36.0
Electronic/Scientific	0.0
Skips	24.6
Furniture Re-use	0.0
Greasy Water	24.6
Waste tonnes total	**302.7**
Carbon Conversion - waste	21.29
Carbon CO2 Tonnes	**6.44**
Residential	4.48
Non - Residential	1.97

Non-Residentia	Recycling	Combustion
56.9	48.9	8.0
53.3		53.3
6.9	6.4	0.5
0.0	0.0	
7.9	7.9	
36.0	36.0	
0.0		
24.6		24.6
0.0	0.0	
24.6	24.6	
210.2	**123.8**	**86.4**

Residential	Recycling	Combustion	AD
24.9	21.4	3.5	
53.2		53.2	
10.2			10.2
4.2	4.2		
92.4	**25.6**	**56.7**	**10.2**

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Black		100.00%
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			1.9

Legislation

14. Waste and waste disposal is subject to numerous pieces of legislation, with new legislation coming into force regularly. The University's Compliance Register which is updated annually identifies 11 pieces of waste legislation, which are relevant to all university waste. These include requirements for non-hazardous waste, including recyclables and food, hazardous wastes including chemicals and oils, and electrical wastes. The University strives to ensure that all waste streams are controlled in a manner that adheres to the Duty of Care, which is governed through the Environmental Protection Act 1990, Chapter 43, and the Waste (England and Wales) Regulation 2005. This requires that the University has rigorous controls in place to ensure appropriate storage, treatment, and disposal of waste, including composting, segregation of food waste, and compacting of cardboard.

15. In addition, the University expects that all suppliers and contractors adhere to the same rules and dispose of waste via authorised waste contractors, who in turn demonstrate compliance with the Environmental Permitting (England and Wales) Regulations 2016. Monitoring changes in the law and the implications of changes to the University's operations is a crucial factor in this Waste Strategy. Being able to respond to change and resourcing, both with physical changes to infrastructure and processes, and keeping staff informed of changes are important to the management and continual improvement of our environmental performance.

16. The European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy which will boost global competitiveness, foster sustainable economic growth, and generate new jobs. The revised legislative proposal on waste sets clear targets for reduction of waste and establishes an ambitious and credible long-term path for waste management and recycling. To ensure effective implementation, the waste reduction targets in the new proposal are accompanied by concrete measures to address obstacles on the ground and the different situations across EU Member States. The continuing uncertainties of Brexit and the Governments response mean we are unsure when reviewing this strategy what are the full impacts of waste legislation.

    Key elements of the revised waste proposal include:

    - A common EU target for recycling 65% of municipal waste by 2030
    - A common EU target for recycling 75% of packaging waste by 2030
    - A binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030
    - A ban on landfilling of separately collected waste
    - Promotion of economic instruments to discourage landfilling
    - Simplified and improved definitions and harmonised calculation methods for recycling rates throughout the EU

- Concrete measures to promote re-use and stimulate industrial symbiosis –turning one industry's by-product into another industry's raw material
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g., for packaging, batteries, electric and electronic equipment, vehicles)

Resources and Training

17. Most of the waste generated by the University is removed from the campuses under one contract. Smaller contracts are in place for specialist waste streams, confidential waste, WEEE waste, batteries, clinical waste, textiles, and toners. The last two waste streams are given to support several charitable enterprises.
18. Campus services staff are responsible for the segregation and collection of waste streams on campus and manage the external contracts. They provide an internal waste collection service from all areas of the campuses. Students are responsible for emptying their own waste directly into Eurobins, both rubbish and recycling, and food. Cleaning staff are responsible for emptying waste bins and recycling bins in office and teaching areas.
19. The University has skips for cardboard and a (capacity 20 m^3) permanently on site located in the recycling compound at the rear of Woodbury Building. Estates contractors are not permitted to utilise these facilities, and they are used primarily for surplus furniture which cannot be re-used, non-re-useable fixtures and fittings and green waste by the grounds team.
20. Staff have undertaken several training courses including waste legislation, however further training would be beneficial to keep all staff involved up to date with this complex heavily legislated area.

Waste streams

21. At the University of Worcester, waste is generated from the following activities:

Office/administrative activities
Laboratory teaching, which produces chemical waste
Demolition, construction, and refurbishment of buildings
Grounds maintenance
Maintenance of a transport fleet and parking facilities
Catering services
On-campus residential accommodation
Students' Union shop, social and catering outlets

Much of the waste produced at the University falls into two specific categories – **hazardous and non-hazardous**. In addition, there is a significant amount of catering waste.

Type and Method of Disposal of Hazardous Waste	Method of Disposal
Batteries	Small number generated - recycling introduced: Collected by Batteryback /Wastecare Ltd for recycling
Chemicals	Review and disposal of all chemicals on campus carried out, new storage facilities completed this is controlled mainly by the lab technicians, with the register for Chemicals being kept in the control room.
Electronic/Electrical Equipment	Disposed of in accordance with the WEEE Directive -under control of our waste contactor Wastecare Ltd
Fluorescent Tubes	Stored in specialist containers and removed periodically by our waste contractor Wastecare Ltd
Fridges and refrigeration Equipment	Stored in a designated area and collected by our waste contractor. Collected by Wastecare Ltd
IT equipment	Disposed of in accordance with WEEE Directive and/or donated to charity. Collected by Stone since February 2023
Mobile Phones	Disposed of in designated boxes and collected by Stone for recycling and re-use when required
Nappies/sanitary items	Stored in yellow bins then incinerated by contractor
Oils	Waste contractor Wastecare Ltd
Paint	Waste contractor Wastecare Ltd
Products containing CFCs	Waste Contractor Wastecare Ltd
Solvents	Waste Contractor Wastecare Ltd
Toner and printer cartridges	Disposed of in designated recycling boxes and collected by Kyocera Ltd for recycling and re-use
Type and Method of Disposal of Non-Hazardous Waste	**Method of Disposal**
Books	Donated to local charities, shops/Education resources / book rescue @the Hive
Cardboard	Skips on site and removed by waste contractor for recycling
Furniture	Some re-used and some deposited in skips provided by Waste Contractor & incinerated for energy
Magazines, card, paper, glass, cans (aluminium and steel), plastic – office/ catering and from Halls of Residence	Waste contractor Worcester City Council
Paper – confidential	Collected by Restore Datashred Ltd and disposed of in accordance with directive

Food Waste

22. Food waste is segregated and collected both from the university catering provision and food caddies are provided in student halls and staff kitchens. The University currently uses a company called ReFood ltd to collect and dispose of our food waste across our sites. Students and Staff have small food bins located in the communal kitchens, when full they are tipped into the large 240 litre located outside the student halls and a central Hines bin store. Bins they are collected weekly by the contractor and incinerated for energy. We have around 25 x 240 litre food waste bins for students and staff. We aim to increase the number of bins and cover more sites going forward. Most food waste is generated from hospitality. The outsourced catering contract includes rigorous KPI's and training regimes to reduce both plate waste and kitchen waste. We also train key staff who order food for hospitality events, on how to best gauge food order numbers to minimise food waste from events. This includes student engagement and events including Green Impact Projects.

Catering

23. The waste and resources action programme (WRAP) undertook a detailed waste audit, and a summary of their findings is shown below. In understanding their findings, it is important to understand the definitions of 'avoidable' and 'unavoidable' food waste. These are given below.

    Avoidable food waste *is food that was, at some point prior to disposal, edible (e.g., a slice of bread, apples, meat) and could have been eaten if it had been better portioned, managed, stored and/or prepared. 'Avoidable' food waste also includes some food items that may or may not be eaten as a matter of consumer preference: such as bread crusts and jacket potato skins.*

    Unavoidable food waste *is food waste that is not, and has not been, edible under normal circumstances (e.g., meat bones, eggshells, pineapple skin, tea bags, potato skins from chip production).*

Kitchen/catering waste projected over the year

Waste Type	Tonnes per year	Percent of total weight
Avoidable food waste	6.77	44.74%
Unavoidable food waste	5.30	35.05%
Potential recyclables thrown away in kitchen/catering waste	1.29	8.55%
Other wastes	1.76	11.65%
Total kitchen/catering waste	**15.13**	**100.00%**
Of this total, the amount that was packaging waste	1.76	11.66%

The Future

24. The future direction for waste management in universities is being shaped by continuing to adhere to practices that prioritize waste reduction, reuse, and recycling over disposal. This can be achieved by following the waste hierarchy model, which sets out the most favourable and least favourable options for waste management. We continue to review new technologies that can improve waste management practices, such as waste-to-energy systems, smart waste bins, and innovative recycling techniques. The Sustainable Procurement Group continuously reviews circular economy models to recommend being adopted to promote a closed-loop system where waste is minimized, and resources are reused and recycled. The introduction of the Repair Café to campus will be monitored and reviewed to evaluate the impact.
25. We will continue to use Green Impact, and Student Switch Off to engage with staff, students, and other stakeholders to raise awareness about waste management issues and promote sustainable behaviour. Go Green Week will continue to a focal point for education and training programs, waste reduction campaigns, and community engagement initiatives.
26. We are committed to data-driven decision making, and the regular monitoring and evaluation of our waste management practices, to identify areas for improvement, and set targets for waste reduction and recycling. This will help us achieve improved recycling and reuse rates, cost savings, and reduced carbon emissions.
27. There is enormous potential for waste reduction at source, and despite excellent efforts there is still some room improvement in better waste segregation, more repair and re-use/ re-distribution of educational and office equipment, and resources and recycling.

Reviewed and updated – SSG (Sustainability Strategy Group) 6 June 2023