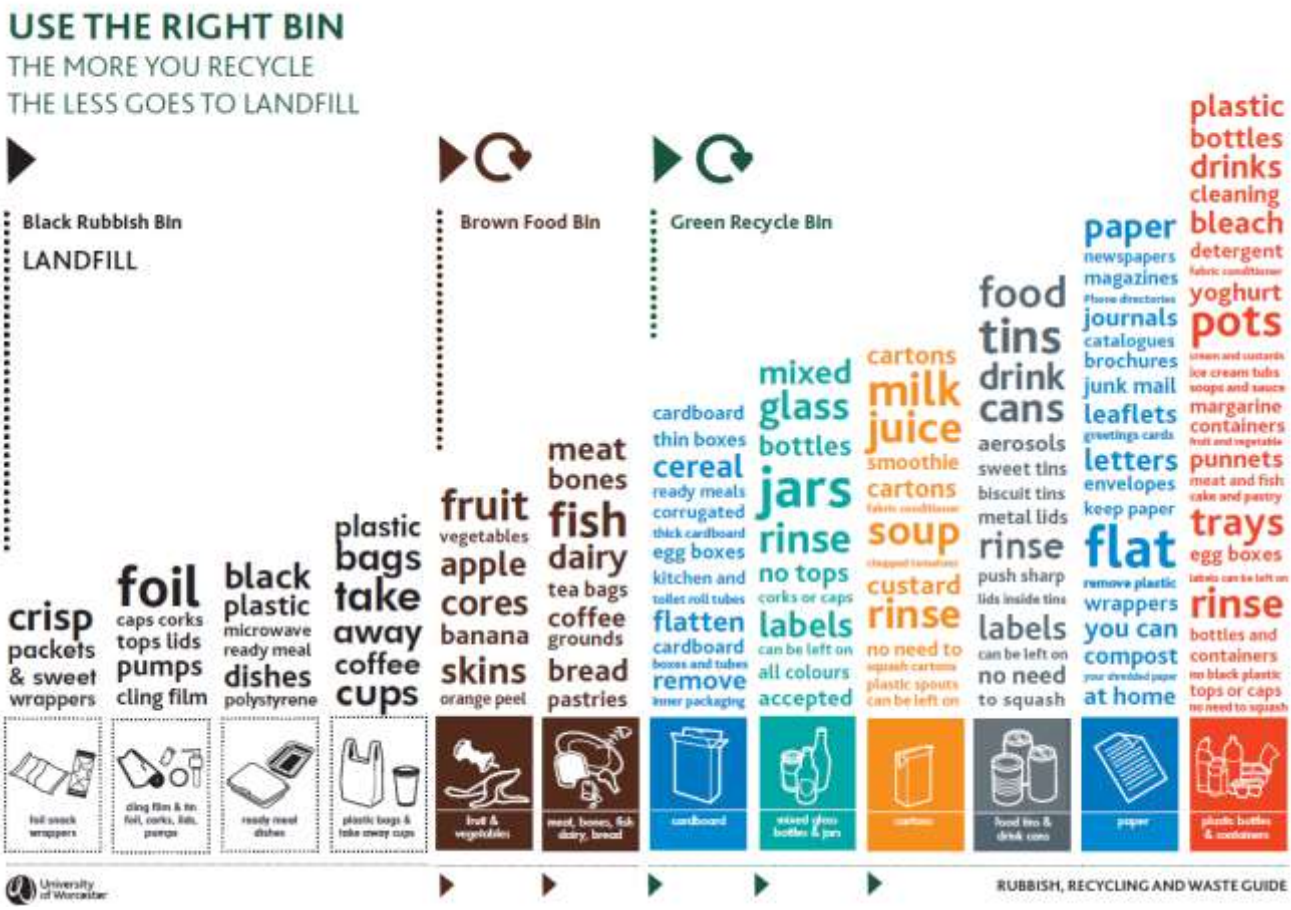
University of Worcester

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 third major revision necessary to bring it into alignment with the University net zero carbon target to be carbon neutral by 2030 and our declaration of a Climate Emergency in July 2019. It is written with a new 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 others including the Students' Union and the City Council collectively are 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. , Specifically, in the sustainability strategy Theme 3: 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 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.
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 1,200 staff and 11,000 students. Including 1100 bed spaces in residential halls on two of its major sites. The waste functions sits 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). The University has many activities including general teaching spaces, offices, laboratories, halls of residences, conference and catering facilities and the Students' Union.

Net Zero Carbon

6. Analysis of the University's carbon footprint and the likely trajectories for all carbon scopes in a 1.5 degree warming scenario have confirmed that the University needs to reduce total Scope 1, 2 and 3 emissions by 50% against a 2018/19 baseline.

	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. 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.

Waste management procedures are improving year-on-year and we aim to **reduce greenhouse gas (GHG) emissions from waste/recycling per FTE 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.

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

Current Performance

8. The university has measured and reported its waste and recycling as part of its carbon reporting since 2006. Detailed breakdown, including comparison each year, is published in annual sustainability reports available on the university website. The table below gives the data from 2018-2019, as the most recent data was affected by Covid so not fully representative. This shows

carbon emissions associated with the waste, recycling and food generated by the university activities has reduced by 25% between 2017/8 and 2018/19.

9. For completeness the table below also shows the tonnages of construction waste. The level of construction waste varies each year dependant on capital development and refurbishment programmes. Virtually all construction waste is recycled.

Waste & Recycling	**Weight in tonnes 2018-2019**
Academic	261.5
Residential	161.9
Total	**423.4**
Construction waste - landfill	5.5
Construction waste - recycled	131.26
	Carbon Emissions tCO2e
Academic	6.09
Residential	3.03
Total	**9.1**
Percentage reduction of the carbon emissions per FTE student/staff from 2017/18	**25%**
Per FTE student/staff	**0.00098**

10. There are many different waste streams generated by the operations of a 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.

2018/19								
Weight (tonnes)		(Preparation for) Re-use	Recycling		Energy Recovery		Composting	Landfill
			Open Loop	Closed Loop	Combustion	Anaerobic Digestion (AD)		
Non-Residential								
Black bin - Municipal waste	74.6		48.5		26.1			
Green bins - Municipal waste	31.8		31.8					
Skip General Waste - Municipal waste	40.4		26.1		14.2			
Municipal Waste Total	146.9		106.6		40.3			
Scrap Metal - Mixed	5.1			5.1				
Confidential Waste - Paper	40.1		40.1					
Greasy Water	21.5		24.4					
Skip Cardboard	8.0			8.0				
Glass	15.5		15.5					
Electronic/Scientific Lamp - WEEE Mixed	3.7		3.7					
Skip WEEE - WEEE Mixed	8.0		8.0					
WEEE Mixed Total	11.7	0	11.7	0	0	0	0	0
Clinical waste	9.4							9.4
Lamps (commercial & industrial waste)	0.7			0.7				
Batteries	0.9		0.9					
Printer and Toner (commercial & industrial waste)	0.3	0.3						
Chemicals (commercial & industrial waste)	1.4							1.4
Commercial & Industrial Waste Total	12.70	0.3	0.90	0.7	0.00	0	0	10.80
Sub-total	261.5	0.3	199.2	13.8	40.3	0.0	0.0	10.8
Residential								
Black bin - Municipal waste	84.2		54.7		29.5			
Green bins - Municipal waste	35.9		35.9					
Municipal Waste Total			90.6		29.5			
Food waste	38.2					38.2		
Clothings	3.6	3.61						
Sub-total		3.61	90.5876	0	29.4574	38.2	0	0
Waste Total								

Legislation

11. Waste and waste disposal is subject to numerous pieces of legislation, with new legislation coming into force regularly. The University's **compliance** register identifies 11 pieces of waste legislation, which currently affect the University. These range from The Waste Electrical and Electronic Equipment for the disposal of electronic and electrical goods to The Environmental Permitting (England and Wales) Regulations 2016 which covers the storage, treatment or disposal of controlled waste onsite, including composting and burning green waste and compacting of cardboard. Monitoring changes in the law and the implications of changes to the University's operations is an important 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.

12. 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.

    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 (eg for packaging, batteries, electric and electronic equipment, vehicles).

The uncertainties of Brexit mean we are unsure at time of writing the impacts to waste legislation.

Resources and Training

11. 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.
12. 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.
13. The University has skips for cardboard and a (capacity 20m3) permanently on site located in the recycling compound at the rear of Woodbury Building. Estates contractors are no-longer 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.
14. 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. As the staff are operational it may be worthwhile looking at e learning opportunities in CIWM courses.

Waste streams

15. 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.

Hazardous Waste produced by the University is summarised below:

Type and Method of Disposal of Hazardous Waste

Type of Waste	Method of Disposal
Batteries	Small number generated - recycling introduced May 09
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.
Fluorescent Tubes	Stored in specialist containers and removed periodically by our waste contractor
Fridges and refrigeration Equipment	Stored in a designated area and collected by our waste contractor.
IT equipment	Disposed of in accordance with WEEE Directive and/or donated to charity
Mobile Phones	Disposed of in designated boxes and collected by Green source solutions for recycling and re-use when required
Nappies/sanitary items	PHS Group
Oils	Waste contractor
Paint	Waste contractor
Products containing CFCs	Waste Contractor
Solvents	Waste Contractor
Toner and printer cartridges	Disposed of in designated recycling boxes and collected by Greensource Solutions for recycling and re-use as and when required

Non-Hazardous Waste is summarised below:

Type and Method of Disposal of Non-Hazardous Waste

Type of waste	Method of Disposal
Books	Collected by Print Waste or donated to local charity shops/Education resources for Africa
Cardboard	Skip on site and removed by waste contractor for recycling.
Furniture	Some re-used and some deposited in skips provided by Waste Contractor and removed to landfill
Magazines, card, paper, glass, cans (aluminium and steel), plastic – office/ catering and from Halls of Residence	Waste contractor
Paper – confidential	Collected by Print waste contractor and disposed of in accordance with directive.

Catering

11. WRAP (waste and resources action programme) undertook a detailed waste audit of the catering facilities and a summary of their findings is shown in the tables below. In understanding their findings it's important to understand the definitions of 'avoidable' and 'unavoidable' food waste. These are given below.

    Avoidable food waste *is food waste 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, egg shells, 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%

Some recent initiatives include the use of an in-vessel food digester- this turns waste food to water and is used alongside the brown food waste bins in our main kitchen. Too Good To Go Scheme will soon be introduced at St John's and City Campuses which enable the use of 'magic bags' with daily surplus to be purchased for students and staff. Other potential waste food bulk products and retail items including the provisions shop are diverted to the local Worcester Street Kitchen charity who distributes food to several charity organisers within our City.

The Future

11. There is a huge 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. There is already a strong focus on improving reuse and recycling and to make Worcester among the best performing of the universities in the UK for its elimination, reuse and recycling over the long-term. The provision of the reuse schemes, behaviour change programmes like the Recycle League and Green Impact staff programmes means much of the groundwork has already been set in place and just requires further investment in resources and effort.

12. An important element in moving towards zero waste is not procuring items as well as extending the life by repairing rather than disposal. These areas will be focussed on soon.

Action Plan – 2020-21 reviewed annually

Key Sus - Sustainability, CSer – Campus Services, Proc – Procurement, WBS Worcester Business School. SU – Students' Union

Action	Who	When	Action will assist in meeting target relating to:				
			Prevention	**Preparing for re-use**	**Recycling**	**Other recovery**	**Disposal**
Student/staff behaviour change	**Sus**		x	x	x		
food waste segregation throughout the estate (currently Halls only),	**CSer**				x	X	x
Central re-use	**CSer**			x			
Training	**CSer**		x	x	x	x	x
Auditing	**Sus/ WBS**		x	x	x	x	x
actions to manage resources more efficiently	**Proc**		x				
implement further measures to prevent and minimise waste,	**CSer**		x				
ensure recycling facilities are consistent across the University to maximise recycling	**CSer**				x		
initiate waste minimisation projects with key departments,	**CSer**		x				
Rationalise storage/removal	**CSer**						x
Review white goods procurement	**Proc**		X	X			

Further disseminate waste disposal policy	**CSer**						x
Further Implement removal of single use plastics	**Proc**		x				