

## Future of Waste and Recycling Modelling

In November 2022, the Environment Act 2021 became law and introduced a requirement for 'Consistency in recycling'. Amongst others, the statutory requirements were for:

- A wider range of materials to be collected as part of the dry recyclable waste streams
- A weekly collection of food

although there has been a significant delay in the implementation of these policies.

In order to comply, Winchester City Council began investigating options for changes to its collection system in order to be amongst the best in the country at recycling. Consultants WSP were engaged to identify suitable service delivery options for meeting the government requirements under the Environment Act 2021. This involved a quantitative options appraisal exercise to identify the costs, resources and performance of alternative collection and processing/disposal scenarios, including a high-level carbon impact assessment, and a qualitative options appraisal exercise to assess the suitability, practicability, and impact of the different scenarios on the Council.

Four options were identified initially and compared with the existing (baseline) service. WSP reported on this in May 2023. The baseline service represents the materials and frequency of the current collection service, which is shown in the table below. A number of working assumptions were agreed to standardise the details and enable modelling to be carried out.

**Table 1 WCC current baseline service (2021/22)**

	<b>RESIDUAL</b>	<b>Dry Mixed Recycling</b>	<b>GLASS</b>	<b>GARDEN</b>	<b>FOOD</b>
<b>Frequency</b>	Fortnightly	Fortnightly	4-weekly	Fortnightly	Not offered
<b>Standard container</b>	240l wheeled bin	240l wheeled bin	40l box	240l wheeled bin	-
<b>Households</b>	56,811	56,811	56,811	21,612	-
<b>Tonnes</b>	23,029	7,653	3,800	6,732	-

In September 2023 additional potential options were identified to improve recycling rates and cost efficiencies. In October 2023 the government consultation response announced that collection of dry mixed recycling in one bin - "co-mingled recycling" – was acceptable so a range of further options was modelled.

In total 11 separate options were modelled. However subsequently some were determined to be unsuitable:

- Every option includes a weekly food waste collection.
- All options include a fortnightly garden waste collection which is optional and can be charged for.
- All options include for the collection of plastic pots, tubs and trays in the dry mixed recycling; these are not collected currently.

The options and outcomes are discussed below.

	BASELINE	Option 1	Option 2	Option 3	Option 4	Option 8	Option 6	Option 7	Option 8
<b>Residual (Black bin)</b>	2 weekly 240l bin	2 weekly 240l bin	2 weekly 180l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 180l bin	2 weekly 240l bin	2 weekly 180l bin	2 weekly 240l bin
<b>Dry Recyclables (Green bin)</b>	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin Co-mingled	2 weekly 240l bin Co-mingled	2 weekly 240l bin Co-mingled	2 weekly 240l bin Co-mingled	2 weekly 240l bin Co-mingled
<b>Glass (Black box)</b>	4 weekly 40l box	In DMR	In DMR	In DMR	In DMR	In DMR	In DMR	In DMR	4 weekly 40l box
<b>Paper/card (Blue bin)</b>	In DMR	2 weekly 240l bin	2 weekly 240l bin	4 weekly 240l bin	In DMR	In DMR	In DMR	In DMR	In DMR
<b>Food (Brown caddy)</b>	None	1 weekly Food caddy	1 weekly Food caddy	1 weekly Food caddy	1 weekly Food caddy	1 weekly Food caddy	1 weekly Food caddy	1 weekly Food caddy	1 weekly Food caddy
<b>Garden (Brown bin)</b>	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin	2 weekly 240l bin
<b>Recycling rate</b>	42.8%	57.9%	57.9%	57.9%	57.9%	57.9%	57.9%	57.9%	57.9%
<b>Extra Trucks</b>	0	10	10	10	6	6	9	9	+8

<b>Total service costs</b>	<b>£3.39m</b> <b>100%</b>	<b>£5.09m</b> <b>156%</b>	<b>£5.22m</b> <b>160%</b>	<b>£4.87m</b> <b>143%</b>	<b>£4.14m</b> <b>122%</b>	<b>£4.28m</b> <b>126%</b>	<b>£4.72m</b> <b>139.2%</b>	<b>£4.86m</b> <b>143%</b>	<b>£4.86m</b> <b>143%</b>
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#### Explanatory Notes

- All options include a **weekly food** waste collection
- All options include a **fortnightly garden waste** collection (optional, charged for)
- All options include the addition of **plastic pots tubs and trays** in the dry mixed recycling, not currently collected.
- Options 2, 5 & 7 have a **smaller (180l) bin** for residual waste
- **Glass** is collected co-mingled with other dry recyclables for all options except 8
- In options 1, 2, & 3 **paper& card** is collected separately
- In Options 3 **paper & card** is collected every **4 weeks**
- In options 4-8 **paper & card** is co-mingled with other dry mixed recyclables.
- Option 8 is same as baseline, with food waste added ( & pots, tubs trays)

## Summary of Outcomes

All options provide improved performance in recycling, as more materials are being collected.

Increasing the frequency of collection of recyclables i.e. to weekly instead of fortnightly does not improve performance. Using a smaller bin size (180l) for collection of residual waste does not have a significant impact on performance.

The highest recycling rate that can be achieved is 65% using a twin stream collection system. This option may not be available to Winchester as the Council has to go with the system determined by the County Council. Most other options achieve a recycling rate of 57.9%.

### Costs

It should be noted that the costs provided may not reflect actual contract costs as certain costs elements were excluded from modelling, such as profit, mobilisation costs and disposal/treatment costs. The modelling cost outputs should therefore not be used for budgeting purposes and instead should be used as a strategic tool to compare the different options. All the options and the baseline have been based on the same cost assumptions.

The modelling in the report does not include the costs incurred as part of the roll out of any new scheme, including communication with residents, additional resources to support the roll out of the new service and the likely initial increase in queries about the new service. Nor does it include the costs of new enforcement staff to ensure that the new service is embedded and fully engaged with by residents.

For all options, the costs were primarily driven by the number of vehicles and as a result all options were more expensive than the baseline, due to the additional food waste vehicles. There was minimal cost difference between the options as most options required a similar number of vehicles.

Weekly collection of recyclables is more expensive than other options as more trucks are required on the road plus the additional resources associated with this.

Co-mingled collection of recyclables is cheaper than twin stream as fewer trucks and resources are required.

The additional costs for the introduction of food waste to the current baseline service (plus the increased range of dry recyclables) would be £1.17m

To introduce a fully co-mingled collection service with food waste, the cheapest option would be £ 750,000.

The additional costs for the cheapest twin stream option would be £1.4m to £1.5m.